

21st Century Catch

# Toolkit

Practical approaches for sustainable inshore fishing communities



For more information, visit [www.gifsproject.eu](http://www.gifsproject.eu)

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## List of abbreviations

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<b>AEP</b>	Alternative Education Provision	<b>IFCA</b>	Inshore Fisheries and Conservation Authority
<b>BBC</b>	British Broadcasting Company	<b>IFREMER</b>	French Research Institute for Exploitation of the Sea
<b>CDPMEM / CRPMEM</b>	Les Comités Départementaux et Régionaux des Pêches Maritimes	<b>IUU</b>	Illegal, unreported and unregulated fishing
<b>CEFAS</b>	Centre for Environment, Fisheries & Aquaculture Science	<b>IMD</b>	Index of Multiple Deprivation
<b>CES</b>	Cultural ecosystem services	<b>ITQ</b>	Individually transferrable quota
<b>CFP</b>	Common Fisheries Policy	<b>JRC</b>	Joint Research Centre
<b>CM</b>	Choice Modelling	<b>LEK</b>	Local Ecological Knowledge
<b>CPO</b>	Cooperative Producer Organisation	<b>MCA</b>	Multi-Criteria Analysis
<b>CPUE</b>	Catch per unit of effort	<b>MEA</b>	Millennium Ecosystem Assessment
<b>CV</b>	Contingent Valuation	<b>MMO</b>	Marine Management Organisation
<b>DGCIS</b>	Direction generale de la competitive de l'industrie et des services	<b>MPA</b>	Marine Protected Area
<b>DMV</b>	Deliberative Monetary Valuation	<b>MSP</b>	Marine Spatial Planning
<b>DPMA</b>	Directorate for Sea Fisheries and Aquaculture	<b>NEAFO</b>	National Ecosystem Assessment Follow-On
<b>EAFM</b>	Ecosystems Approach to Fisheries Management	<b>NGO</b>	Non-governmental organisation
<b>EU</b>	European Union	<b>PEI</b>	Photo Elicitation Interview
<b>FAO</b>	Food and Agricultural Organization	<b>RNLI</b>	Royal National Lifeboat Institution
<b>FIS</b>	Fisheries Information System	<b>SWOT</b>	Strengths, weaknesses, opportunities, threats
<b>FLAG</b>	Fisheries Local Action Group	<b>TAC</b>	Total Allowable Catch
<b>FQA</b>	Fixed quota allocation	<b>TCM</b>	Travel Cost Method
<b>GIFS</b>	Geography of Inshore Fishing and Sustainability	<b>TDM</b>	Tailored Design Method
<b>GVA</b>	Gross Value Added	<b>TEV</b>	Total Economic Value
<b>GIS</b>	Geographic Information Systems	<b>TSO</b>	The Stationery Office
<b>GPS</b>	Global Positioning System	<b>UNESCO</b>	United Nations Educational, Scientific and Cultural Organization
<b>HFPS</b>	Hastings Fishermen's Protection Society	<b>VLIZ</b>	Flanders Marine Institute
<b>HP</b>	Hedonic Pricing	<b>WTP</b>	Willingness to pay
<b>ICES</b>	International Council for the Exploration of the Sea		
<b>ICM</b>	Integrated Coastal Management		
<b>ICZM</b>	Integrated Coastal Zone Management		

# Glossary of Terms

# Toolkit

## **Active gear**

The capture of fish is based on chasing the target species (e.g. trawls, dredges).

## **Blue growth**

A European strategy to support sustainable growth in the marine and maritime sectors.

## **Cultural ecosystem services**

The non-material benefits people obtain from ecosystems through spiritual enrichment, cognitive development, reflection, recreation, and aesthetic experiences.

## **Econometric analysis**

Using mathematical and statistical methods to analyse economic data.

## **Ecosystem services**

The benefits that humans receive from ecosystems, classified in the Millennium Ecosystem Assessment as provisioning, regulating, supporting and cultural services.

## **Gross value added**

A productivity metric for the amount of goods and services produced in an area (or a specific industry), less the costs of inputs and raw materials that relate to that production.

## **Inshore fishing**

In GIFS, a definition of fishing up to 12 nautical miles off the coast was adopted.

## **Interdisciplinary**

Research that is integrated across two or more academic disciplines, with researchers crossing disciplinary boundaries to produce coordinated results.

## **Local ecological knowledge**

Knowledge held by a specific group of people about their local ecosystem.

## **Multidisciplinary**

Drawing on multiple academic disciplines in one study, but researchers stay within their disciplinary boundaries.

## **Participation**

Engaging with stakeholders to ascertain opinions and inform decision-making.

## **Passive gear**

The capture of fish is based on movement of target species towards the gear (e.g. traps).

## **Pelagic**

Species that live in the open water column.

## **Place making**

A focus on the identity and distinctiveness of a place, especially in the design of public spaces that aim to promote well-being and benefits to local people.

## **Sense of place**

The characteristics that make a place special or unique, including the meanings and perceptions that individuals associate with a place or particular setting.

## **Qualitative research**

Used to gather an in-depth understanding of human behaviour and attitudes through methods such as interviews, focus groups, ethnography etc.

## **Quantitative research**

Research that uses numeric analyses through the application of mathematical models and statistics. In social science methods include surveys and questionnaires.

## **Quota**

A catch share to regulate the amount of fish that can be caught.

## **Social capital**

Networks among people and the shared values or benefits that arise from those networks.

## **Social cohesion**

The bonds that bring people together in a society or community.

## **Stakeholders**

Individuals, groups or organisations that have an interest or concern in a particular place or activity.

## **Towed gear**

Includes fishing gear, such as trawls and dredges, which are towed behind a fishing boat. Also known as active or mobile gears.





## Introduction

### How do we value the social, economic and cultural importance of inshore fishing?

The *21st Century Catch Toolkit* is a product of the INTERREG IVa 2 Seas project GIFS (Geography of Inshore Fishing and Sustainability). Work on the GIFS project was completed between January 2012 and September 2014 and was undertaken by a collaboration of six partners from four European countries bordering the Southern North Sea and English Channel. GIFS aimed to understand and capture the social, economic and cultural importance of inshore fishing to better inform fisheries policy, coastal regeneration strategies and sustainable community development. The project has involved a range of research projects, regeneration activities and case studies across southern England, northern France, Flanders and the southern Netherlands (Figure 1). GIFS partners have worked with local stakeholders and communities to explore the geographical diversity and similarities of fishing ports, harbours and people along the Channel and Southern North Sea.

# Toolkit



Photography: Vince Bevan



**Figure 1:** The 2 Seas region and location of GIFS partner institutes

- 1 University of Greenwich
- 2 University of Brighton
- 3 Université de Bretagne Occidentale
- 4 AGROCAMPUS OUEST
- 5 Flanders Marine Institute (VLIZ)
- 6 Municipality of Middelburg

Inshore fishing is at a crossroads with an uncertain future. This is set against a backdrop of the global fisheries 'crisis' with 73% of marine stocks reported as either fully exploited, overexploited, depleted or recovering (FAO 2014). Pressures on quota species include increased regulation and restrictions, access to fish stocks alongside uncertain markets and concerns over environmental sustainability. Alongside food provision and the resulting contribution to the coastal economy, inshore fishing also provides a range of broader social and cultural values and benefits, such as cultural heritage, community identity and social cohesion. The GIFS project set out to identify these values and develop methods to capture the often intangible benefits alongside the economic importance of fishing in order to inform policy and management decisions.

INTERREG cross-border working is challenging and complex trans-frontier projects succeed by shared and agreed partnership working. In the case of GIFS partners set the ambitious goal of

working on all aspects of the project collectively and collaboratively. In this way, the issues shared by coastal communities bordering the Channel and Southern North Sea were able to be addressed together leading to a rich set of results and a sense of looking to a common future.

The broader partnership of GIFS extended to the communities in which the partners worked along with national and regional decision makers in each country. This included a close relationship with the Hastings Fisheries Local Action Group (FLAG), whose members guided the project from the outset to ensure that it had real on-the-ground relevance and a partnership between the Municipality of Middelburg and the residents of Arnemuiden to deliver a programme of economic regeneration and public space enhancement.

This toolkit is a product of that collaboration which provides useful findings and advice on how to value the social, economic and cultural importance of inshore fishing today.

Photography: Vince Bevan



## About the

# Toolkit

It is hoped that the Toolkit will provide you with useful information to better understand the social, economic and cultural values of inshore fishing alongside practical examples of how the methods have already been applied. We believe that the more people understand about the special nature and importance of inshore fishing, the more they will want to sustain it, securing the livelihoods and way of life for our diverse coastal fishing communities.

This Toolkit provides you with the practical steps and inspiration to blending academic research with community engagement. From robust analyses of the contribution of inshore fishing to regional economies to photographic exhibitions highlighting the diverse cultural landscapes of fishing, from in-depth case studies seeking to identify best practice in local governance of inshore fisheries to the development of fisher-led educational materials, this resource enables you to take a holistic approach to understanding the socio-economic value of inshore fishing, together with its rich cultural identity and heritage.

The unique contribution of this Toolkit is that it draws on a range of different approaches from economics, town planning, human geography, social science and the arts, as well as working collaboratively with local communities to understand inshore fishing. The GIFS project provides a unique approach of blending interdisciplinary research along with interaction with practitioners and in depth community engagement.



Photography: Vince Bevan



Photography: Vince Bevan

The Toolkit describes the rationale behind each method used and gives the reader guidance about where and in what circumstances they might be applicable. Advice is given on how to use the tools, their applicability at different geographic scales, what they can be used for and practical issues such as the resources to implement them (e.g. time and money).

## Who is it for?

This Toolkit has been developed for anyone interested in the way that inshore fishing is valued economically, socially, culturally and environmentally, and its role for sustainable community development. So whether you are a town planner working for a local authority, a fishers' organisation, a member of a FLAG, a fisheries or marine planning officer, a scientist or an interested community member from a coastal fishing town this toolkit has something for you. It is intended to support informed decision-making but also to help communities take practical steps in valuing their local inshore fleet.

## What is the Toolkit?

The Toolkit provides an evidence-based framework for evaluating the socio-economic and cultural values of inshore fisheries and highlights the need for a deeper understanding of these values. Through the development of methodological approaches and practical case studies on both sides of the English Channel and Southern North Sea, it provides techniques that fishing communities, managers and decision makers can use to understand the value of inshore fishing to the economy and also to social and cultural issues such as heritage and community identity.

In simple terms, quantitative methods focus on data that can be analysed in terms of numbers, whereas qualitative methods focus on non-numeric data which can be in many forms, such as interview transcripts, photographs and textual data.

This Toolkit contains a wide range of quantitative and qualitative methods (see Table 12 on page 60). This is deliberate as it is believed that understanding the complex and diverse range of social, economic and cultural values necessitates the adoption of methods and approaches from a range of research disciplines. For example, innovative economic approaches have been explicitly used to develop baseline analyses of the economic performance and potential of inshore fishing. Alongside this, participatory and community engagement techniques have been adopted to better understand the complexity of social life and cultural expression in fishing communities. Exploring the usefulness of these approaches together can offer insights into the rich variety of cultures and activities embodied within inshore fishing communities in the early 21st century. Such a holistic approach allows for robust research supported by the reality of the day-to-day experiences of those who live and work in these communities.

## How has the Toolkit been developed?

The methods and approaches contained in this toolkit have been developed and implemented as part of the GIFS (Geography of Inshore Fishing and Sustainability) project. Many of the approaches used have been applied collaboratively through cross-border partnerships enabling knowledge exchange and comparative studies to be undertaken between the four participating countries of England, France, Belgium and the Netherlands.

Multiple case studies have been undertaken as part of the GIFS study, with two of these forming a central element of the GIFS work.

- Arnhemuiden, Netherlands: GIFS co-funded a regeneration project in this small historic fishing village in order to both make Arnhemuiden a better place for people to live and visit, and also to encourage the development of new economic opportunities. A programme of enhancing the look and feel of the public space has taken place over a period of two years, working in close partnership with the local community to ensure that the regeneration activity was undertaken sympathetically and in a way that was authentic to the historic fishing past of the village.
- Hastings, England: The GIFS project has worked closely with community partners, such as the FLAG and Hastings Fishermen's Protection Society (HFPS), in Hastings to deploy a range of the developed methods in one case study location. This has enabled the adoption of multiple approaches to value the Hastings fisheries, through, for example, questionnaires for residents and tourists, deliberative participatory methods with local residents and fisheries related stakeholders, the co-development of new education resources led by fishers and a detailed case study of local inshore fishery governance.



Photography: Vince Bevan

## What will this Toolkit help me to do?

The Toolkit provides a set of methods to help assess the economic, social and cultural importance of inshore fishing while also describing practical approaches for the regeneration of coastal towns. These tools can be used at local community level to regional or national levels and draw on examples from empirical research, practical applications and creative arts.

An important part of the Toolkit is to encourage people to think about how the socio-economic and cultural importance of inshore fishing can be valued:

- In monetary terms – such as through the application of economic valuation techniques to estimate the economic value of the non-market benefits of inshore fishing, such as its contribution to tourism.
- Quantitatively – for example assessing the direct economic benefits of fisheries or historic trends in employment and landings.
- Qualitatively – exploring the cultural diversity and value of inshore fishing through interviews or photography.

### Examples of what this Toolkit might be used for and who it is relevant for include:

- Fisheries organisations, NGOs and fishing communities: to gather evidence on the often implicitly understood, but not explicitly documented, socio-cultural value of inshore fishing as part of bottom-up community strategies for securing livelihoods and identity.
- To inform the decision making of social policy or town planners through an evidence-based approach.
- Tourism professionals: to learn how they might work with community-led regeneration projects to develop responsible tourism activities and so achieve sustainable economic renewal.
- Teachers who want to include fisheries as part of their local area-based curriculum.
- Entrepreneurs seeking to identify potential economic opportunities associated directly (e.g. new fish/seafood products) or indirectly (e.g. tourism) with inshore fishing.

## How the Toolkit is structured

This Toolkit is structured in seven chapters. Following the **Introduction** and **About the Toolkit**, Chapter 1 outlines the policy context in which inshore fisheries operate, while Chapter 2 presents some of the main issues associated with inshore fisheries, such as sustainability and community livelihoods.

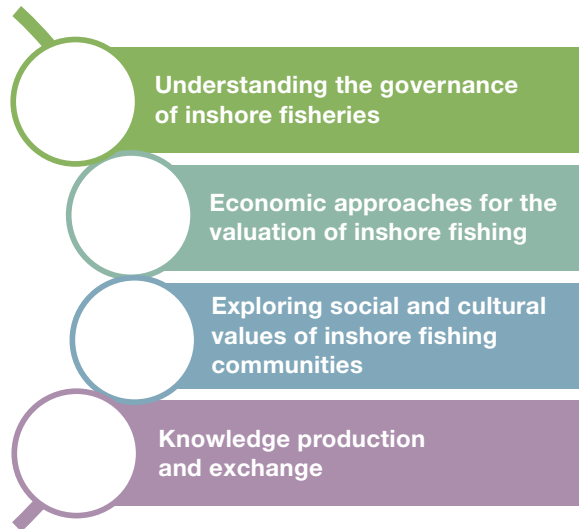
The approaches and case studies of the GIFS project are set out in Chapters 3-6 under the four themes of governance, economics, community and knowledge. Each thematic section outlines particular tools or approaches that have been developed, with case study examples to illustrate their application where possible. In order to allow users of the Toolkit to apply these approaches in their own contexts, a brief definition of each method is given, along with when it is appropriate



to use it, how to use it, resource considerations and the limitations. Where case studies are given they are used to illustrate the potential role for the method used, describing why it was used, what it aimed to achieve and what the outcomes were.

Finally, Chapter 7 concludes with a summary of the overall impact and main results of the GIFS project, with some suggestions for further work that will contribute to moving the agenda forward in understanding and recognising the socio-economic and cultural value of inshore fishing.

The different chapters in the Toolkit can be read either individually or sequentially. There are many examples of practical methods that can be referred to on a need to know basis, or explored via the case studies where those methods have been put into practice.







# The Policy Context for Inshore Fisheries

# 1

In order to use the methods and approaches presented in this Toolkit most effectively, it is important to understand how GIFS has defined inshore fisheries and the policy context in which inshore fishing operates in the Southern North Sea and English Channel regions.

## What do we mean by inshore fisheries?

The main focus of GIFS was the inshore sector, however, definitions of 'inshore' vary greatly between the member states (Box 1). Defining inshore fishing is not easy – do we define it by the length or power of the vessel, days at sea, gears used, distance from port travelled or by the target species?



Photography: Vince Bevan

### Box 1: Comparison of inshore fisheries definitions

In England, the inshore fishing fleet refers to vessels under 10 metres in length, that generally operate in coastal waters out to 6 nautical miles where the inshore management regime applies, although they can work out to the 12 nautical mile territorial waters limit. In 2010 there were 2,569 under 10 metre vessels registered in England and 552 over 10 metres [1]. However, although under 10 metre vessels make up around 82% of the English fleet, they only account for about 6.5% of the catch volume [1].

In France, in terms of legislation, fishing is categorised into *petite pêche* (time out of harbour less than 24 hours), *pêche cotière* (time out of harbour between 24 and 96 hours); *pêche au large* (time out of harbour between 96 hours and 20 days); and *grande pêche* (time out of harbour more than 20 days). Ifremer (French Research Institute for Exploration of the Sea) defines the fleets slightly differently, recognising the inshore fleet as vessels operating in territorial waters up to 12 nautical miles offshore for more than 75% of the time. For administrative purposes, inshore fishing is defined as vessels at sea for less than 24 hours. In 2011, there were 4,642 vessels in France, with most of these (3,685) being vessels under 12 metres.

In Belgium, the commercial fishing fleet consisted of 89 vessels in 2010. 46 of these belonged to the Small Fleet Segment with a maximum engine power of 221 kW. The legal definition of inshore/coastal fleet from February 2006 onwards is all fishing vessels that have an engine power of 221 kW or less, including any additional power and a tonnage of no more than 70 GT and that undertake trips with a maximum period determined by the Minister (currently 48 hours). Vessel owners need to actively register to be included in the coastal fleet segment (Source <http://www.vliz.be/imis/imis.php?module=ref&refid=209014>).

In the Netherlands, the definition of inshore fishing is fishing within the 12 miles zone with ships no longer than 24 metres and with a maximum capacity of 300 HP or 221kW (Source: Zeeuwse Visveilingen NV in Flushing, Holland). The Dutch fleet comprises mainly of 393 cutters (mostly beam trawlers). The average vessel power is 745 kW, and around 15% of companies own more than one vessel.



Fishing goes deeper than just individual livelihoods, it is a way of life contributing to the identity and sense of place of coastal communities.

At the EU level the term small-scale fisheries is used to distinguish operators working at a small-scale from industrial operators. In 2011 the European Parliament published a study called 'Characteristics of Small-Scale Coastal Fisheries in Europe' [2]. This study explains the difficulties of trying to establish a common definition across all member states and suggests the most specific description available is 'vessels under 12m in length not using towed gear'. However, some of the traditional fishing practices along the Southern North Sea and English Channel that are considered typically 'coastal or 'inshore' fisheries (such as brown shrimp bottom trawlers and sprat or herring pelagic trawlers), actually use towed gear. For the purposes of the GIFS project, we broadly defined inshore fishing as fishing activity carried out by vessels operating within

12 nautical miles of the coast (as well as shellfish harvesting conducted on foot or, in one instance, on horseback). Even though achieving a single definition was not possible, we wanted to include consideration of fishing activity that was applicable in the context of different member states while acknowledging a broad distinction between 'small-scale' and 'industrial' fishing operations.

## Fisheries policy

The strategic objectives in fisheries policy result in measures that influence the activity of fishers and the communities in which they live. For example, input and output controls such as gear restrictions, closed areas/seasons and quota can restrict when, where and how much fish can be landed in order to maximize sustainable yields from the marine fish stocks and resources. Fisheries policy can often be controversial with different stakeholders holding strongly entrenched views. It is important to understand the broader decision-making context within which policies are made and identify potential synergies (as well as conflicts) between different stakeholders.

In Europe, fisheries are regulated under the Common Fisheries Policy (CFP). The CFP was established in 1983 in response to the depletion of commercial fish stocks through overfishing. Its aim was to introduce conservation and management policies in order to ensure the sustainable exploitation of marine fish resources. The CFP's main approach to fisheries management has been to set upper limits or a Total Allowable Catch (TAC) on the quantities of fish that can be harvested annually from a given stock, and from which the quota of catch for each Member State are derived based on historically set proportions<sup>1</sup>. TACs are based on stock assessments produced by the International Council for the Exploration of the Sea (ICES) and are fixed after political negotiations between the Member States. Member States distribute quota nationally (see Box 2), alongside managing technical measures such as net mesh sizes, closed seasons or closed areas and decommissioning of the fleet.

<sup>1</sup> Note: For small-scale fishermen non-quota species often account for over 50% of their catch.

## Box 2: National approaches to quota distribution and fisheries management

**England:** Quota are allocated by the Marine Management Organisation (MMO) to the 23 Producer Organisations (which represent most of the over 10 metre fleet), the inshore fleet (under 10 metres) and the non-sector fleet (i.e. over 10 metre vessels that are not members of a Producer Organisation). Fixed quota allocation units (FQAs) are held by individual vessels in each group, or by a group collectively (but can be transferred, including between inshore and offshore fleets).

In addition, the MMO is responsible for regulation and licensing of fishing in England. The ten Inshore Fisheries and Conservations Authorities (IFCAs) are responsible for the sustainable management of inshore fisheries in their regions.

**France:** The Directorate for Sea Fisheries and Aquaculture (DPMA) regulates and manages fisheries activity in France. They allocate quota to Producer Organisations based on historic fishing activity, with part of the quota reserved for fishermen who are not affiliated with a producer organisation. There is no separate inshore fisheries organisation but inshore fisheries are represented by Les Comités Départementaux et Régionaux des Pêches Maritimes (CDPMEM/CRPMEM) and producer organisations.

**Belgium:** Fisheries are managed by the Ministry for Agriculture and Fisheries/Department of Sea Fisheries, and there is no separate inshore fisheries organisation. Quota is collectively managed by the state and industry. A quota commission operates within the only recognised Producer Organisation, the “Rederscentrale” and is made up of representatives of the different fleet segments.

**Netherlands:** Fisheries are managed by the Ministry for Economic Affairs. The national quota is divided into individually transferable quotas (ITQs) owned by fishing companies. Cooperative producer organisations (CPOs) may be either species specific, e.g. mussel, oyster, shrimp or community specific, e.g. Urk, Wieringen, Texel.

The emphasis of the reformed CFP on specific support for small-scale fisheries is significant and has potential to help local fishing communities boost and diversify their economies, and improve the viability and long-term security for this sector.

The latest reform of the CFP ((EU) No 1380/2013), effective from 1st January 2014, aims to transform fishing practice in Europe through a focus on improving the economic efficiency and competitiveness of the sector, banning discards, decentralising decision making, supporting small-scale fisheries and through a legally binding commitment to fish at sustainable levels. A new funding instrument, the European Maritime and Fisheries Fund, will implement the reformed CFP and help to boost Europe's Blue Economy. The emphasis on specific support for small-scale fisheries is significant and has potential to help local fishing communities boost and diversify their economies, and improve the viability and long-term security for this sector.

Inshore/small-scale fisheries and large scale fisheries differ enormously in their environmental, social and

economic impacts, therefore the Green paper on the reform of the Common Fisheries Policy (22.4.2009 – COM(2009) 163) put forward the idea of differentiated management regimes as a way of introducing social objectives: one management regime for large-scale fisheries with capacity adjustment and economic efficiency and one for small-scale fisheries in coastal communities with a focus on social objectives.

The regulation of the new CFP outlines the following:

- It should contribute to increased productivity and to a fair standard of living for the fisheries sector including small-scale fisheries.
- It shall promote coastal fishing activities, taking into account socio-economic aspects.
- In view of the precarious economic state of the fishing industry and the dependence of certain coastal communities on fishing, it aims to ensure the relative stability of fishing activities by allocating fishing opportunities among member states, based on a predictable share of the stocks for each member state.
- Member states should endeavour to give preferential access for small-scale, artisanal or coastal/inshore fishermen. This preferential regime is based on rules restricting access to resources within the 12 nautical mile zones of member states.



While it is encouraging to see recognition of small-scale fisheries and their social and cultural value, how social objectives in policy are going to be implemented is less clear. Often policy has focused on biological and economic objectives (including employment and safety issues), which is understandable given the imperative to halt the depletion of fish stocks and conserve marine resources. Alongside this, economists and ecologists share outlooks that are tacitly supported by policy makers based on quantitative methodologies and systems modeling approaches [3]. Such approaches are measurable, comparable and fit with the reliance of policy on numeric approaches. However, social life is often complex, messy and hard to define and understanding the social world calls for more holistic and multidisciplinary approaches that draw in a variety of approaches, techniques and expertise.

There is increasing evidence in the academic and wider literature that inshore fishing provides many important social goods, especially in remote and deprived areas – for example, in the UK the inshore sector supports at least 45% of fisheries employment, not counting informal and family labour [4]. Furthermore, it is recognised that fishing goes deeper than just individual livelihoods, it is a way of life contributing to the identity and sense of place of communities, providing “the glue that holds the community together” [5] (p. 56). Defining

and quantifying these values is often hard and this is perhaps one of the reasons why policy finds it difficult to set some clearly defined socio-cultural objectives. Yet clearly we need to incorporate them if we are going to achieve sustainable fisheries management and sustainable fishing communities for the future.

As well as providing a framework for evidence building to inform top down policy decisions, the Toolkit also offers approaches to assist community groups to understand the importance of inshore fisheries in coastal towns. In order to do this, it is imperative to understand the policy context within which decision makers operate: How are decisions made, what evidence do decision makers draw upon and what are the political forces that influence (either enabling or restricting) the inclusion of certain forms of evidence, while excluding others, into the decision making process? Integrated ways of understanding and valuing the social, economic and cultural importance of small-scale fisheries, alongside the environmental impacts, is crucial if the goals of the reformed CFP are to be achieved. This Toolkit provides a timely guide to approaches that will help to achieve these goals. For policy makers, it can assist in building a robust and credible evidence base to inform decisions. For communities, it can give them the tools they need to understand and influence policy and planning decisions that impact on their livelihoods and way of life.



[1] MMO. UK Sea Fisheries Statistics 2010. In: Almond S, Thomas B, editors. London: Marine Management Organisation, National Statistics & Defra; 2011.

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# Sustainability and Fishing Communities

# 2

The idea of cultural ecosystem services combined with economic and non-economic valuation approaches can help us think about the hidden or intangible benefits of inshore fisheries.

The importance of understanding social, economic and environmental aspects of managing natural resources is now widely recognised. The relationship between these three elements is commonly referred to as the 'triple bottom line'. Since the mid 1980s the term 'Sustainable Development' has become increasingly important when thinking about the impact people have on the environment they depend on. Although there is much controversy around the term sustainable development and how it can mean different things to different stakeholders, there is perhaps broader agreement that in order to effectively manage the natural environment we need to consider the importance of social and cultural aspects alongside the economic and environmental.

This is particularly true for the management of fisheries where, arguably, emphasis in the past has been on biological and economic aspects with less attention paid to social and cultural issues [2]. The European Union, Convention on Biological Diversity and other United Nations bodies are promoting an "ecosystems-based approach" or "ecosystems-based-management" as cornerstone concepts for long-term and sustainable development schemes, especially where development strategies are based on natural resources such as fish stocks.



Photography: Vince Bevan

GIFS was designed in order to address this lack of attention to social and cultural aspects of fisheries management alongside its importance for livelihoods and sustainable economic development in coastal communities. The project focused on the following four topics in the context of fisheries management:

- Governance
- Community & Regeneration
- Economy
- Knowledge

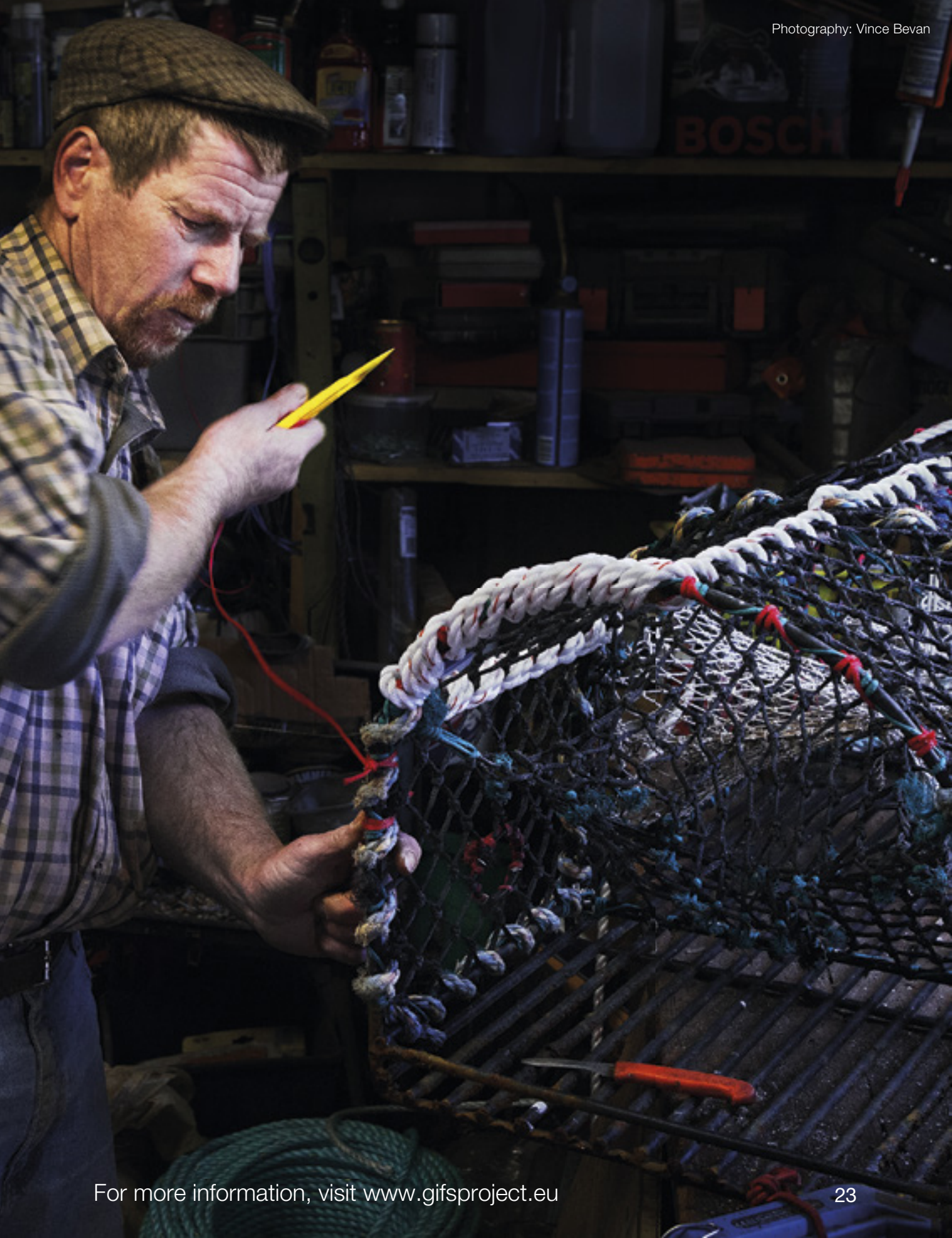
The aim of GIFS was to explore the importance of each of these aspects in relation to fisheries management. Marine fishing is an activity that connects a largely invisible undersea world with the terrestrial environment, although the majority of fishers only come into contact with this hidden world through the activities of their nets, pots, boats etc. Management of fisheries to date has been dominated by the important issues of the biological sustainability of different fish species and the economic gains from landing and processing the catch. However, this does not take account of the many ways that fishing is important for different coastal communities, for instance contributing to personal and community identity or perhaps as a backdrop to tourism activities. As we start to look at the broader importance of marine fishing it is imperative to think about how to understand and evaluate the contribution that fisheries make to society. GIFS set out to provide a comprehensive range of methods and approaches that could help to reveal not just the importance of marine fishing for communities, but also where new economic opportunities for sustainable development might exist for coastal communities.

## **Are inshore fisheries important?**

Another way of thinking about this is to ask the question, “are inshore fisheries important?” There are many different ways that this question might be answered. One particularly influential approach is to think about how the importance of fisheries might be understood in terms of ‘Ecosystem Services’.







An ecosystem-based approach to the management of natural resources, including fisheries, is becoming an increasingly popular management framework as policy makers try to grapple with the impact humans are having on global ecosystems. The idea of ecosystem management has developed since the 1960s as a response to concerns about the biodiversity crisis [3] and today there is increasing attention being paid to the idea of ecosystem services as a way of integrating ecosystem-related values into decision-making frameworks. The Millennium Ecosystem Assessment (MEA) [4] made the term ecosystem services popular by describing the benefits that humans derive from ecosystems that contribute to well-being [5]. These include provisioning services, regulating services, cultural services and supporting services (Box 3). The approach was developed as a way of trying to bridge the gap between ecology and economics [6] and to attempt to relate the well-being of society to the environment [7, 8].

The MEA (2005) introduced a new framework for considering ecological/social systems and had a wide impact in policy and scientific communities [9]. It also continued a debate about how the relationship between ecosystems and people should be conceptualised.

In essence, the MEA tries to capture the importance of the natural environment for society. This concept is directly relevant to the management of fisheries where the dominant way of thinking is to consider marine fishing as providing a provisioning service of food. While fundamentally this is what fishing sets out to do, the action of inshore fishing brings a wide range of other benefits to coastal communities as well. Through the work that has been carried out during the GIFS project it became increasingly obvious that inshore fisheries need to be considered in the context of the wide range of cultural services it provides – in addition to the provisioning ones.

### Ecosystem services, Total Economic Value and GIFS

An important idea that has fed into GIFS is to think about how people ‘value’ the environment and the activity of inshore fishing. The idea of valuation can be used in many ways and the MEA [10] uses it;

*“as a tool that enhances the ability of decision-makers to evaluate trade-offs between alternative ecosystem management regimes and courses of social actions that alter the use of ecosystems and the multiple services they provide”* (pg. 34).

### Box 3: Ecosystem Services

The MEA defines ecosystem services as the benefits people obtain from ecosystems. These include provisioning, regulating and cultural services that directly affect people and supporting services needed to maintain the other services [1].

#### Provisioning Services

*Products obtained from ecosystems*

- Food
- Fresh water
- Fuelwood
- Fibre
- Biochemicals
- Generic resources

#### Regulating Services

*Benefits obtained from regulation of ecosystem processes*

- Climate regulation
- Disease regulation
- Water regulation
- Water purification
- Pollination

#### Cultural Services

*Nonmaterial benefits obtained from ecosystems*

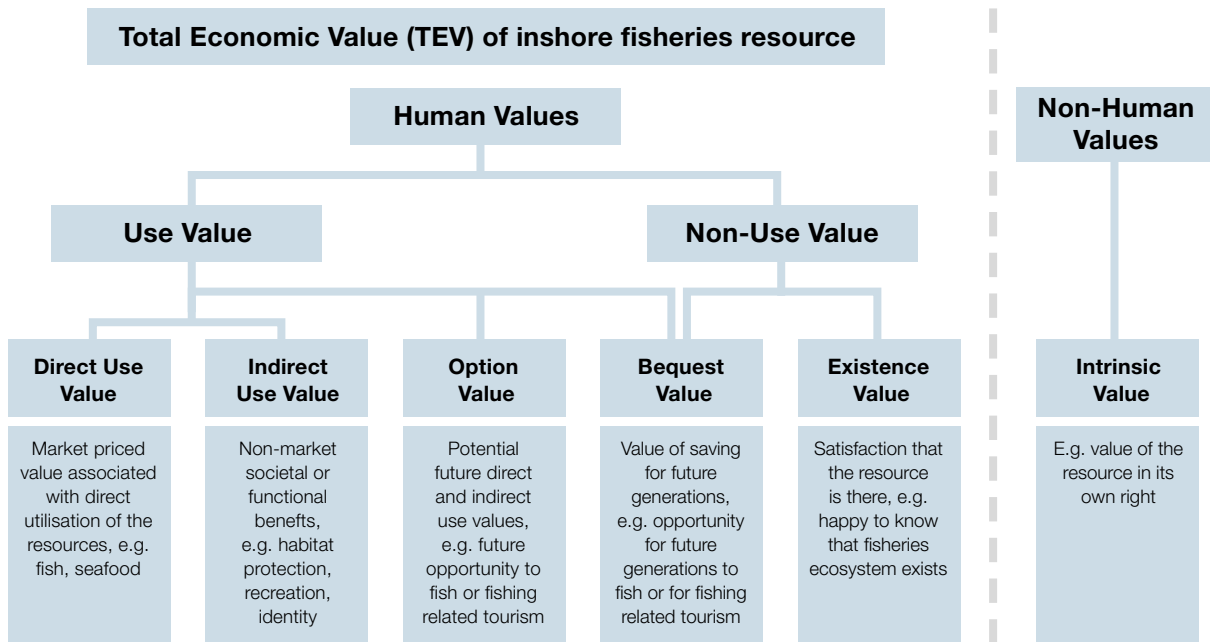
- Spiritual and religious
- Recreation and ecotourism
- Aesthetic
- Inspirational
- Educational
- Sense of place
- Cultural heritage

#### Supporting Services

*Services necessary for the production of all other ecosystem services*

- Soil formation
- Disease regulation
- Primary production

This is quite a complicated statement and in the context of GIFS we wanted to simplify this idea so that it is of more practical relevance to a broad spectrum of people. The idea of value can be broken down into two broad categories, intrinsic value (something that has value in itself) and instrumental value (the value of something because of its usefulness to humans). GIFS focused on thinking about the way that inshore fisheries could be considered in terms of their broad usefulness to people (including the importance that some attach to the intrinsic value of nature). In policy making the idea of Total Economic Value (TEV) (see Box 4) has become very important in the context of natural resource management generally and in the assessment of ecosystem services in particular (Figure 2).



**Figure 2:** Total Economic Value (adapted from [11])

While economics can provide a range of valuation techniques for most types of use and non-use values, GIFS also recognised that the importance that inshore fisheries might have for coastal communities can be elicited in other ways as well. Using the idea of cultural ecosystem services combined with economic and non-economic valuation approaches can help us think about the hidden or intangible benefits of inshore fisheries [6] [12] [13]. For instance, how might the presence of fisheries impact upon the aesthetic characteristics of a place, or what recreational potential might inshore

fisheries create in an area? These cultural ecosystem services have implications for the development of new economic opportunities and regeneration in coastal towns.

To provide a framework to help understand the approaches used in GIFS the relationship between TEV, ecosystem services and inshore fisheries is presented in Figure 3. This diagram illustrates the multiple human values that can be associated with inshore fishing activity. Two important distinctions are between direct use value and indirect use value.



#### Box 4: Total Economic Value

Environmental economics and in particular environmental valuation recognises that not all elements (or assets) of an environmental system have a monetary value. There may be a range of other so-called public goods that arise from environmental systems that do not have a direct market price but contribute to human well-being. Therefore, the concept of Total Economic Value (TEV) seeks to provide a measure that is based on putting a monetary value on the preferences that humans have towards a natural system.

As can be seen in Figure 2, the TEV of the inshore fisheries resource consists of a combination of use values and non-use values. Use values can be 'direct' (i.e. fish extraction) or 'indirect' (i.e. societal values in terms of recreation, identity, heritage associated with fishing etc. or functional in terms of ecosystem regulation). Option values relate to the option of protecting the resource for future use, and can either be direct or indirect.

Non-use values are composed largely of bequest values and existence values. Existence values are the perceived values of the assets unrelated either to current or future use, i.e. simply because it exists. Bequest values are the value associated with passing on the resource to future generations.

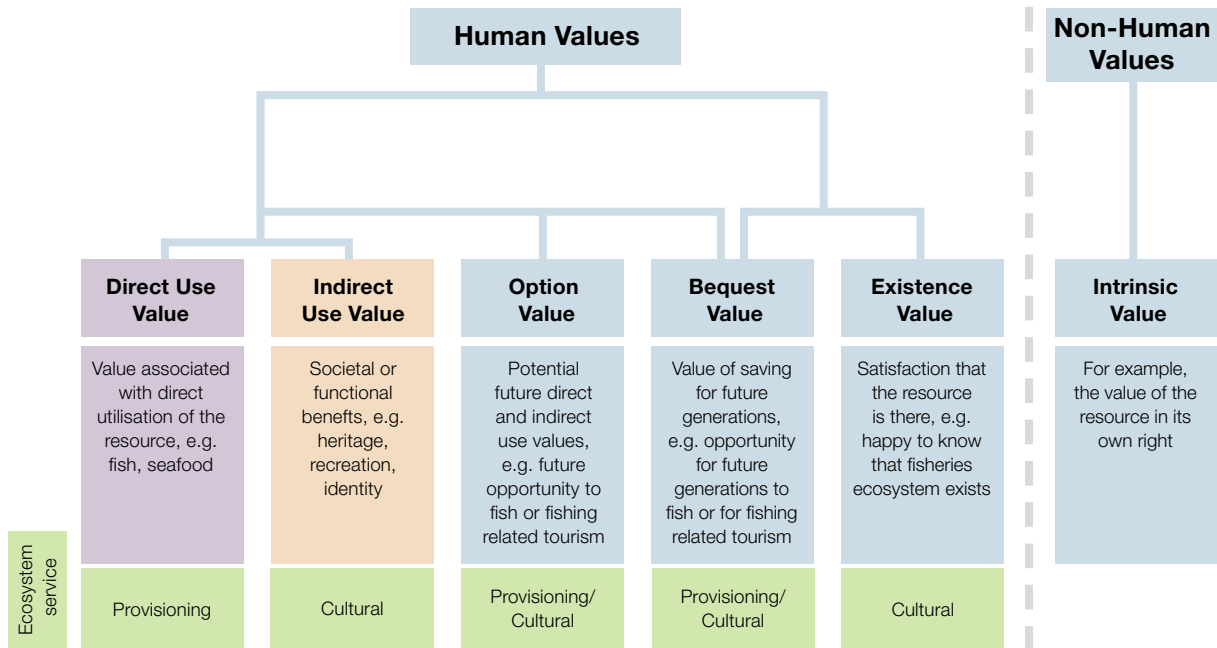
It is argued that by including an economic value for the non-market benefits (indirect use value + non-use value) that people gain from an environmental system enables them to be considered in cost benefit analyses and better decisions can be made that take into account the broader environmental and social values of a natural resource.

It is important to remember, however, that TEV is related to the valuation of people's preferences (human values in Figure 2) and not to the intrinsic value (the value of something in itself, referred to as non-human values in Figure 2).



In the context of this Toolkit we are interpreting direct use value as the economic value associated with the direct utilisation of the marine resource, such as catching fish to sell as food (a provisioning ecosystem service). However, inshore fishing also generates indirect use values (heritage, identity etc.). These values might have a market price which can be calculated through cost based approaches (e.g. tourism revenues from taking tourists on board a fishing boat), but these values also refer to intangible cultural

attributes that might have an important individual or societal function that cannot be assessed using cost-based approaches. To capture these 'intangible' values requires using other valuation techniques in addition to market measures. These might include non-market valuation techniques and quantitative/qualitative social survey methods. A strength of the GIFS approach is adopting a holistic multidisciplinary approach to capture the range of values that emerge as a result of inshore fishing that are important for sustainable community development.



**Figure 3:** Valuing the ecosystem services of marine fisheries through the TEV framework in GIFS.

The following chapters describe the methodological approaches that were developed and include reports on a selection of case studies where these methods were applied.

[1] MEA. Chapter 2: Ecosystems and Their Services. Ecosystems and Human Well-Being: A Framework for Assessment. Island Press, Washington D.C.: Millennium Ecosystem Assessment; 2005.

[2] Symes D, Phillipson J. Whatever became of social objectives in fisheries policy? Fisheries Research. 2009;95:1-5.

[3] Grumbine ER. what is ecosystem management? Conservation Biology. 1994;8:27-38.

[4] MEA. Ecosystems and Human Well-being: Synthesis. Wshington, DC: Island Press; 2005.

[5] Mace GM, Norris K, Fitter AH. Biodiversity and ecosystem services: a multilayered relationship. Trends in ecology & evolution. 2012;27:19-26.

[6] Chan KMA, Satterfield T, Goldstein J. Rethinking ecosystem services to better address and navigate cultural values. Ecological Economics. 2012;74:8-18.

[7] Mace GM, Bateman I. Conceptual framework and methodology. The UK National Ecosystem Assessment: Technical Report. Cambridge: UNEP-WCMC; 2011.

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[9] Carpenter SR, Mooney HA, Agard J, Capistrano D, DeFries RS, Diaz S, Dietz T, Duraiappah AK, Oteng-Yeboah A, Pereira HM, Perrings C, Reid WV, Sarukhan J, Scholes RJ, Whyte A. Science for managing ecosystem services: Beyond the Millennium Ecosystem Assessment. Proceedings of the national academy of sciences of the United States of America. 2009;106:1305 - 12.

[10] MEA. Ecosystems and Human Well-Being, Synthesis Report. Washington, D.C.: Island Press; 2005.

[11] Turner RK, Pearce D, Bateman I. Environmental Economics: An Elementary Introduction. Hemel Hempstead: Harvester Wheatsheaf; 1994.

[12] Milcu AI, Hanspach J, Abson D, Fischer J. Cultural Ecosystem Services: A Literature Review and Prospects for Future Research. Ecology and Society. 2013;18:44.

[13] Daniel TC, Muhar A, Arnberger A, Aznar O, Boyd JW, Chan KMA, et al. Contributions of cultural services to the ecosystem services agenda. Proceedings of the National Academy of Sciences. 2012;109:8812-9.

# Understanding the governance of inshore fisheries

# 3

There is a need to understand how inshore fishing is incorporated into different legal, social, economic and political arrangements in different countries and regions.

Coastal zones are subject to an array of different policy and management regimes that often operate in a complex setting of stakeholders. Inshore fisheries are affected both by these policies *and* play an important role in putting these management regimes into practice. Integrated coastal zone management (ICZM), local development plans, marine spatial planning (MSP), coastal habitat and species and marine protected area (MPA) management are a few examples of management regimes that both affect and involve inshore fisheries.

There is a widely acknowledged need to introduce the ecosystem approach in fisheries planning and management in order to comply with EU policies and international conventions. On the other hand, there is increasing recognition that more devolved and participatory management structures are required to achieve this. However, formulating and introducing successful practices is not a straightforward exercise and requires an understanding of the different legal, social, economic and political arrangements that exist across different countries and regions and the way that inshore fishing is incorporated into these.



Photography: Vince Bevan

An in-depth understanding of governance mechanisms for inshore fisheries requires a dual approach:

- **Top-down:** exploring and describing the features of formal fisheries governance mechanisms and structures that are in place in the different regions.
- **Bottom-up:** understanding social and political processes of governance (power, social capital, participation, identity) and the specific fisher and community engagements that are in place in the different localities. This approach uses case study examples to analyse the role of local fisheries management and key ways in which the existing infrastructures and governance processes engage positively with economic, environmental and socio-cultural sustainability issues.

Alongside the in-depth insight into the specific governance workings of each case study, this research aims to gain insight on how inshore fishing is incorporated into the range of existing governance mechanisms (e.g. ICZM, MSP). The research is intended to identify:

- opportunities for wider integration of fisheries management in coastal management and potential areas of conflict.
- appropriate governance structures for different areas depending on fishery type, scale and stakeholders.
- best practices in coastal zone governance and inshore fishing throughout the study area, identifying potential win-win situations for the fishing sector and its interaction with the wider coastal community based on the case studies.

## Scoping formal mechanisms and structures of fisheries governance

The key aim of this top-down approach is to undertake a rapid assessment of the formal governance arrangements at national and regional level. It describes how inshore fisheries interact with policy-making and key decision-makers at multiple scales of governance (locally, nationally and Europe-wide) and maps the formal mechanisms and structures that are in place to support these interactions in relation to integrated coastal and marine management.

**Step 1: Background study.** A review of the relevant literature is undertaken to collect information on formally established instruments (legislation, policies and plans, formal organisations and mechanisms such as advisory boards etc.) in order to inform the questionnaire design.

**Step 2: Questionnaire design.** The questionnaire survey is designed to capture expert judgment and opinions. It was constructed from the perspective of the key principles of ICZM and MSP. All key principles of ICZM and MSP were taken into account in the questionnaire design, however the questions address these principles through issues that relate directly with inshore fisheries, such as:

- tangible issues on inshore fisheries policies, organisation and management
- the relationship with other sectors and policies
- the representation of inshore fisheries in consultation structures at local, national or international scale
- the existence of agreements, quality labels or co-management arrangements for inshore fishers
- the presence of specific training, education and monitoring programmes related to inshore fisheries
- the use of local assets and local knowledge

A questionnaire approach involving expert judgment is considered valuable in addition to a literature study on inshore fisheries governance, as it adds information on, for instance, how networks and relationships work, how well inshore fisheries are taken into account, etc. The findings in this explorative method are backed up and validated with appropriate literature to add depth and create a more complete picture. In addition, this exploratory phase





has informed the development of a more in-depth case study approach (on page 32).

**Step 3: Collecting the data.** The questionnaire was sent out to targeted experts that were selected on the basis of their involvement with inshore fisheries governance and broader coastal and marine management. The targeted respondents typically worked for producer organisations, ministries, non-governmental organisations (NGOs) or management organisations at the national and sub-national level. The experts were asked to respond from their own personal professional viewpoint, and not as a representative of their organisation.

Questionnaires were sent out to 29 people (10 in England, 7 in France, 9 in the Netherlands and 3 in Belgium) in September 2012. Non-responses were followed up by sending reminders via e-mail or telephone. A total of nineteen completed questionnaires were received by January 2013.

The survey was conducted in the respective languages for Belgium, the Netherlands, France and England. Respondents in Belgium, the Netherlands and France were contacted by e-mail from one central coordinator in Belgium. In France, GIFS partners conducted the surveys by telephone and in England, the surveys were undertaken through face-to-face interviews and/or by telephone.

**Step 4: Analysis of the data.** A thematic analysis approach was used (see Box 6 on page 34). It emphasises pinpointing, examining, and recording 'themes' within data. Themes are patterns across data sets that are important to the description of a phenomenon and are associated with a specific

### Considerations when using this method

In the methodology used in this explorative phase, experts were approached with a questionnaire. Since experts were asked to respond from their own personal professional viewpoint, and not as a formal representative of their organisation, responses have to be interpreted carefully and in combination with the outcome of the literature study. In addition, the number of responses and the importance of the inshore fisheries sector was different in the regions under study. This has to be taken into account when analysing the results.



Photography: Vince Bevan

research question. The themes are then used as categories for analysis. For the literature study and the questionnaire, these themes were based on the ICZM and MSP principles, which allowed the researchers to draw conclusions exploring the role of inshore fisheries in relation to ICZM and MSP. A selection of themes that emerged from the analysis is given below.

- Organisation for inshore fisheries management
- Training and education
- Policy for inshore fisheries
- Formal agreements regarding inshore fisheries
- Co-management involving inshore fisheries
- Interaction of fisheries with other sectors
- Local ecological knowledge
- Quality labels

### What will this method help me to do?

- A rapid assessment can be made of the formal governance arrangements at national and regional level.
- The exploratory nature of this approach can act as a scoping study for more in-depth local case studies.

## A case study approach to explore inshore fisheries governance

In order to explore the different forms of governance at the local level, in-depth case studies were undertaken in eight locations across the 2 Seas region: Nieuwpoort (Belgium), Arnemuiden (Netherlands), Hastings (UK), North Devon (UK), Cornwall (UK), North Norfolk (UK), the Bay of Granville (France) and Saint Brieuc Bay (France) (Figure 4).



**Figure 4:** Location of the eight governance case studies researched

### Introduction to using case studies

A case study approach can be described as an “*Intensive study of an individual, group, or place over a period of time. Research is typically done in situ*” (pg. 276) [2]. It can employ a number of individual methods to achieve this intensive study. In this example of governance in fishing communities a combination of approaches were used, including scoping meetings with key community members, desk research and in-depth semi-structured interviews with a purposively (see page 33) selected sample group of participants. The data captured were then analysed using thematic analysis (see page 33 and Figure 5).

The case studies were selected as a result of the findings from the rapid assessment scoping exercise undertaken (see pages 30 and 31). By building on the relationships between each GIFS partner and the respective case studies it was possible to access key stakeholders, work together to devise the

methodology and better understand the complexity of the governance processes involved in the different nations of the GIFS study area.

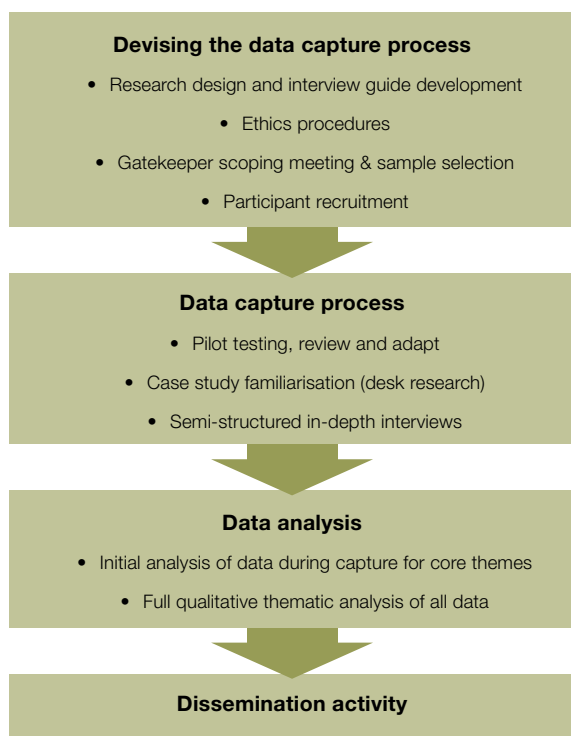
### Why use this approach?

This approach enables in-depth qualitative data concerning complex and dynamic social processes of governance (such as power, social capital, participation and identity) to be generated. This is particularly valuable when studying inshore fisheries given the diverse and changeable nature of each locality and fleet, but also due to the relative impact of these social processes upon small communities. Within GIFS the depth of data captured through the case study methodology enabled an analysis of fisheries governance not just from a policy/technical perspective, but also from a socio-political perspective which involves understanding who is involved, who has influence and why. A case study approach takes better account of the impact of this unique context and inter-linkages.

A case study approach can be used to understand social processes of governance (such as power, social capital, participation and identity) and the differing experience of fisher and community engagement.

Using case studies makes available a variety of sources of evidence that can be used to check gaps and reinforce themes identified and as such provide greater confidence in the findings [3]. A case study approach is also particularly well suited and commonly used to investigate complex organisational structures and related socio-political phenomena like governance [3].

### How to use this methodology



**Figure 5:** The methodology used in the case studies



#### Step 1: Decide on a sampling strategy.

A 'purposive sampling strategy' (see box below) was employed in this study. The sample was informed through a detailed scoping meeting with a core community member / stakeholder in each location to secure the project sensitivity to the local context and improve participant access and background case study data. This type of sample may often evolve and grow depending on the findings from initial interviews. The initial sample of interviewees is selected based on relevant research criteria specific to each project aims. For example, in this project the criteria for participant selection was:

- Stakeholders from a mix of sectors involved in the fishing fleet including public, private, voluntary and the fishing industry itself to understand the nature of their participation from a range of positions.
- Stakeholders in a range of scales of governance from local, regional, national and international to understand how and why the fleet engages/ participates or not at different scales.
- Stakeholders with varying levels of experience with the community to gain a perspective of the evolving role of governance and participation relating to fishing over time.

### Purposive sampling strategy

The sample is taken by the researcher based on a range of criteria such as specialist knowledge of the subject or willingness to participate in the research [1].

The following list covers stakeholders from sectors that were typically interviewed in these case studies:

- Fish auction
- Fisheries Local Action Group (FLAG) member
- Harbour master
- Training and Education
- Industry
- Local politician
- National lobbyist
- Regional conservation management body
- Science and academia
- Tourism sector

**Step 2: Designing the interview format.** Semi-structured interviews were undertaken using an interview guide (see Box 5).

### Box 5: Interview Guide

An interview guide is a list of topics to be discussed in the interview rather than specific questions. It is intended to ensure all relevant topics are covered but also enables a degree of flexibility so that new directions can be explored that might not have emerged using a structured or fixed question approach. The design of the guide is largely informed by the main research aims in addition to themes and questions identified through a review of the relevant literature. The guide provides opportunities to expand or introduce new themes during the interview.



Photography: Vince Bevan

**Step 3: Testing the interview guide.** In order to check the appropriateness of the topics in the interview guide, several test interviews were undertaken in Hastings. As a result, the interview topics were adjusted and simplified. The testing and evolving nature of the guide aims to improve the validity of the findings by generating more open discussions where the participant was comfortable with the language and accessibility of the questions posed [4].

**Step 4: Conducting the interviews.** Interviews will vary in length depending on the participant's availability. There are benefits in conducting the interviews in person in the participants place of work or in a community space to ensure effective communication, and enhance the convenience, comfort and privacy for the participant. Digitally recording the interviews can improve the accuracy of the data collected. Where the participant requests not to be recorded research diary notes can be taken. It is preferable for participants to receive the research project information and consent forms (i.e. ethical procedures) in advance and these can be discussed again at the point of interview to ensure the participants understand the nature of the project, what is expected of them in the interview, their right to withdraw at any time and the steps taken to ensure the anonymity of the data collected.

**Step 5: Analysing the data.** In this example, a thematic analysis approach (see Box 6) was used to analyse the data [1] (note other methods of analysis are available). Using thematic analysis, the interview scripts were analysed to establish key themes, similarities and differences between the case studies. Thematic analysis is not a straightforward process and many steps were repeated, or fed back into earlier steps over the course of the analysis. To demonstrate key themes, the use of full quotations from interviewees can be useful in the research outputs to reinforce findings.

### Box 6: Thematic analysis process

1. Familiarisation of the texts: i.e. reading and re-reading.
2. Identification of key themes and sub-themes.
3. Interpretation of the key themes within the context of the research.

## Taking the results further

This approach includes an exploration of both top down and bottom up community approaches to inshore fisheries management and comparison between case studies. It leads to a deeper understanding of the ways in which local knowledge can be successfully applied to marine resource management leading to better community engagement within governance frameworks.

As an example of the findings, the results from the Nieuwpoort, Belgium case study are presented in this Toolkit (see page 36). The full results and findings of all the case studies can be found in the GIFS main report <http://www.gifsproject.eu/en/themes/coastal-zone-governance-and-marine-fishing>. For each case study a summary of the key ways in which the existing infrastructures and governance processes engage positively with economic, environmental and socio-cultural sustainability issues is presented. Next to the in-depth insight into the specific governance workings of each case study, this research also offers insight into broader conceptualisations of collaborative and participatory approaches to fisheries governance that can be utilised to inform their evolution and delivery in other fishing communities. The diverse governance picture the case studies have highlighted and the number of common issues around challenges and opportunities for co-management can be used to illustrate best practices in fisheries governance. It is anticipated that these views and insights on the opportunities for inshore fisheries governance will inform national, regional and EU strategies and policies for inshore fisheries.

### What will this method help me to do?

- Help secure successful fisher and community engagement by understanding the specific processes of governance involved (such as power, social capital, routes to participation and identity).
- Identify good practice in fisheries governance structures at the local level to help work towards sustainable community goals.
- Identify barriers to a more inclusive and co-management approach to fisheries governance that currently obstruct these goals so that these might be overcome or mitigated against.

## Considerations when using this method

When applying this method to multiple case studies across different countries, working co-operatively with partners in the relevant sites has considerable logistical and research quality benefits, such as language support, improved access to stakeholders, existing baseline knowledge of the case studies and ease of logistics. These are important resource considerations for others attempting a comparative study.

This methodology is time and resource intensive for both participants and researchers and this should be an important consideration in research planning. However, using semi-structured interviews can help to build trust between the interviewees and the interviewer, thus enabling participants to provide detailed accounts of their feelings about the governance landscape (both positive and critical).

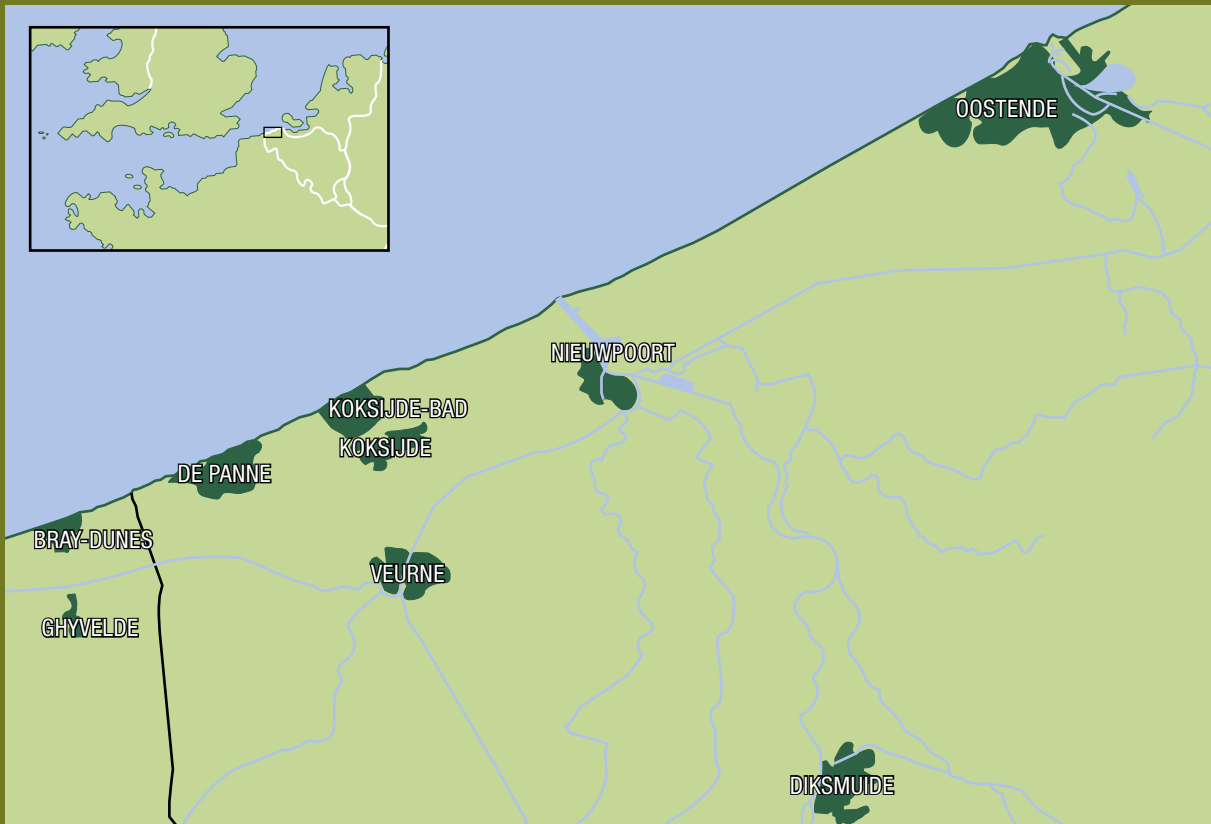
The value of this method is in accessing the personal experiences and perceptions of stakeholders in any given social context. Such complex data is not readily captured in quantitative questionnaires. As a result of the subjective nature of the findings, the results from the interviews should be carefully presented within the broader context of the case study so that the reader situates the data accordingly.

If interviews are conducted by different researchers (as was the case in this project) this can inevitably lead to varied researcher impact throughout the research process. The research team can limit this variance by working together on devising the methodology and ensure that a common interview guide and framework of analysis is adopted that is suitable for all the case study locations.



# Case study

## Coastal zone governance and inshore fishing in Nieuwpoort, Belgium



**Figure 6:** Location of the Nieuwpoort case study

The Nieuwpoort case study summarised here investigates if/how inshore fisheries are connected and embedded in governance processes in the coastal zone and if/how existing governance processes can strengthen inshore fisheries.

The identity of Nieuwpoort is strongly associated with fisheries, and it is one of Belgium's coastal municipalities where current fisheries practices

are closely linked with tourism. The city council plays a specific role in these processes, as it is the owner of the fish auction. In 2014, a total of nine commercial fishing vessels were registered in the port of Nieuwpoort, six of which have the characteristics that allow them to enlist in the register of the 'coastal fleet segment'; however, only one of these has effectively chosen to do so. Conversely, recreational fisheries in all its different expressions have increasing

importance as an economic activity or as a driver for economic turnover in the area. This case study explored how the linkages with both the public sector and tourism operate in order to support Nieuwpoort fisheries and its wider community. The results can help to formulate specific recommendations with the aim of a sustainable and vibrant inshore fishing fleet for the future.

A diverse range of stakeholders was selected to participate in the interviews (Table 1).

Interviewee	Sector / role
Participant A	Ex-fisher/Cooperative organisation
Participant B	Private sector (restaurant)
Participant C	Local council/Fisheries Local Action Group
Participant D	Fisheries organisation + fish shop owner
Participant E	Local government Politician 1 (fisheries + fish auction)
Participant F	Local government Politician 2 (tourism)
Participant G	Local government/Civil servant
Participant H	Active fisher

**Table 1:** Nieuwpoort case study interviewee sample

The interview guide used for the semi-structured interviews in Nieuwpoort explored the following themes:

- governance practices;
- the governance landscape in terms of dominant structures, stakeholders, agendas, routes to and barriers to participation;
- examples of partnership structures and sector inter-linkages (e.g. with conservation, tourism, cultural/heritage, and education and training).

The interview guide was adapted for different stakeholders to reflect their interests and expertise.

A thematic analysis of the interview transcripts (see Box 6) resulted in the following key themes being identified:

- **Lack of representation of the Nieuwpoort fishers in governance structures:** existing representation of fishers is through the central shipowners' association. However, it was felt this association does not adequately represent the interest of inshore fisheries. Despite this, participants thought that there would be limited value in having a distinct entity to represent their interests due to the small size of the Nieuwpoort fleet.
- **Strong collaboration between fisheries and local government:** the Nieuwpoort fish auction is recognised as a catalyst for other economic activities in the city (fishmongers, restaurants, tourism) and the value of supporting the inshore fishing fleet for the wider coastal economy was underlined by all interviewees.
- **Importance of the fishing industry to the city in terms of its contribution to tourism and place marketing:** the city council and the fishing industry are continuously exploring ways to develop novel projects along with tourism that are related to the fishing industry and community.
- **Innovation in the supply chain in efforts to secure a better price for fish:** opportunities to obtain a better price including direct fresh fish sales to consumers and closer cooperation between fishers, traders and local restaurants.
- **Interactions with the environmental and conservation sectors through data collection, fish labelling and marine spatial planning:** there is a general understanding that there is a new role for fishers with, for example, increased involvement in co-management and cooperation with fisheries research.

Analysis of the themes resulted in some key conclusions and sustainability issues for the Nieuwpoort case study. Firstly, the fishing industry in Nieuwpoort is unique in Belgium, mainly because of the role the city council plays. Maintaining a flourishing fishing industry in Nieuwpoort is an important policy priority for the council. The council, which owns and operates the fish auction, also has a close relationship with the remaining fishers.

Also unique for Nieuwpoort is the existence of an organisation (Promovis) which promotes Nieuwpoort fisheries and supports the commercial fishing fleet and fish market. Of all Belgian coastal municipalities, Nieuwpoort is the one associated mostly with fresh fish. This is due to the location of the fish auction in the centre of the city, the presence of many fishmongers and fisheries-related activities that are organised for different target groups (such as tourists and schools). Tourism and fisheries are strongly interrelated in Nieuwpoort. The city council wants to invest in small-scale fisheries (freshly caught fish) as a niche market, although current legislation represents serious barriers in making this transition happen at present.

The semi-structured interviews provided insight into the governance system in Nieuwpoort. The key findings can be found in the main report <http://www.gifsproject.eu/en/themes/coastal-zone-governance-and-marine-fishing>.

[1] Brewer JD. *Ethnography*. Buckingham: Open University Press; 2000.

[2] Hay I. *Qualitative research methods in human geography*. 2nd edition ed. Oxford: Oxford University Press; 2005.

[3] Yin RK. *Case study research. Design and methods*. 4th edition ed. Thousand Oaks, California: Sage; 2009.

[4] Fielding N, Thomas H. *Qualitative interviews* In: Gilbert N, editor. *Researching social life*. London: Sage; 2008. p. 245-65.



**Figure 7:** N58 and N93 in front of the fish auction of Nieuwpoort (Source: VLIZ, Collection Daniel Moeyaert)



# Economic approaches for the valuation of inshore fishing

# 4

A range of economic approaches was used in the GIFS project to assess the economic impact of inshore fishing across the study area in England, France, Belgium and the Netherlands.

The aim was to use techniques to both assess the direct contribution of inshore fishing to local economies, and to look at how the presence of fishing impacts upstream businesses in the local economy (e.g. suppliers). In addition, fishing fleets in coastal towns can provide a magnet for tourism, so the study also used economic valuation techniques to estimate the touristic value of inshore fishing.

The methods presented in this chapter can help build a picture about how money flows through a local economy with specific focus on the economic linkages between inshore fishing and the rest of the local economy. The approaches discussed can also show how inshore fishing has broader social and cultural impacts in coastal towns. Valuing the range of benefits of inshore fishing (such as tourism value) can inform policy makers when making decisions about the allocation of subsidies, setting quotas or other regulatory measures and determining planning applications. Also, they can empower local communities to fully recognise and value the broad contribution that inshore fishing makes to their local economies.

The aim of this chapter is to present an introduction to the economic approaches used in the GIFS project to help readers understand what can be achieved and to decide whether these techniques will be useful in their own situation. While specialist knowledge of economics is not necessary to understand the case examples, a description of some of the key terms and principles are presented in Box 7 that relate to economic valuation to help readers understand the basic economic concepts that underpin these case studies.



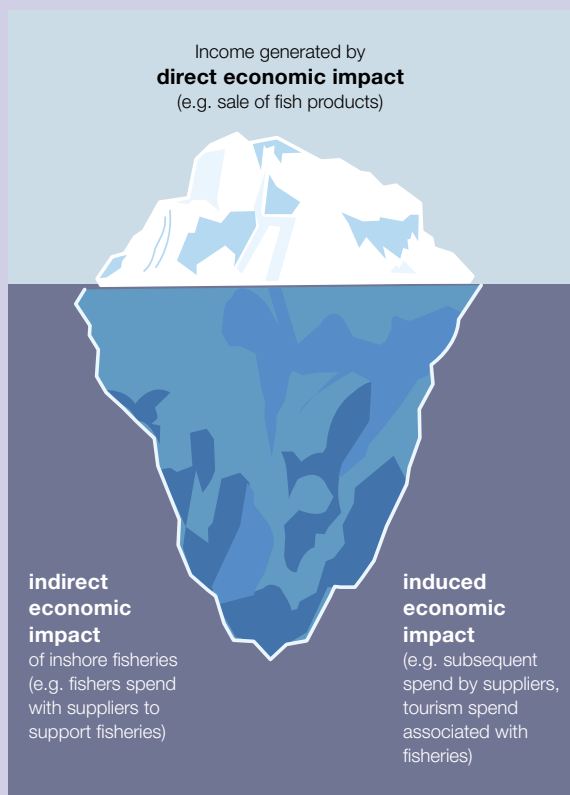
Photography: Vince Bevan

## Box 7: The Economics... an explanation of key terms

In Chapter 2 the Total Economic Value (TEV) framework was introduced as a way of valuing inshore fisheries that allows for inclusion of both market priced values (such as the sale of fish products) and non-market values (e.g. recreation) (see page 25). In the GIFS project a range of economic techniques have been applied that allow the estimation of both direct use values and indirect use values (see Box 4 on page 26 for an explanation of these terms) of the inshore fishing fleet.

### Key Term 1

**Direct economic impact.** The direct economic impact relates to direct use values and involves those products and services that have a market value. So, in the context of inshore fishing, this would involve the capture and sale of the fish product. This element is fairly straightforward to measure, such as assessing the value of landings or the income generated through fish sales. However, direct economic impact (such as through the sale of fish products) is only the tip of the iceberg (see Figure 8) and there are wider economic impacts on the local economy, which are classed as indirect and induced economic impacts (see Key Terms 2 and 3).



**Figure 8:** The direct, indirect and induced economic impacts of inshore fisheries.

### Key Term 2

**Indirect economic impact.** Indirect economic impacts (a form of indirect use values) relate to the expenditure that occurs as a result of the fisheries activity (such as fishers buying from suppliers, boat repairs etc.) and further downstream spending.

### Key Term 3

**Induced economic impact.** Induced economic impacts relate to the spending of income in the local economy from the wages of fishers and suppliers, along with the spill over economic impacts of fisheries activity (sometimes called 'positive externalities'), such as tourism spend associated with fisheries. These subsequent rounds of spending can have a significant impact on the local economy, known as the multiplier effect (see Key Term 4).

### Key Term 4

**The Multiplier effect.** The multiplier effect refers to the circulation of money in a local economy. Inevitably some money will leak out (for example, residents paying utility bills to a national supplier) but a proportion gets re-spent within the local economy. Reducing the amount that leaks out is important for sustainable local economic development as it maximizes the amount that gets re-spent (and potentially re-spent again) within the local economy, thereby increasing local wealth (e.g. the fisher spends £10 in the tackle shop, the tackle shop owner spends that £10 in the butcher, who then spends £10 in the pub and so on) and providing new enterprise opportunities for people. An example of how reducing economic leakage can be achieved is through encouraging spending at locally-owned independent businesses rather than chain stores or businesses owned by multinational corporations. In this regard, Transition Towns such as Lewes in East Sussex encourage local spending by initiatives such as the Lewes pound designed to be spent and re-spent with local traders.

## Key Term 5

**Non-market benefits.** Non-market benefits are a form of indirect use value that reflect the benefits that society receives from use of the resource that do not have a monetary value. In terms of inshore fisheries this can include, for example, recreation and tourism (such as watching the boats being landed) and the cultural identity associated with fishing ports and their heritage and attractive coastal settings. Neglecting to take into account the economic value of these social benefits in policy and decision-making can lead to an underestimate of the value of inshore fisheries and a misallocation of resources (e.g. subsidies) and investment in the sector. Economic valuation of the non-market benefits of inshore fishing can, therefore, aid in the development of sustainable fishing communities. There are two main approaches within environmental economics for valuing non-market benefits: stated preference methods (Key Term 6) and revealed preference methods (Key Term 7).

## Key Term 6

**Stated preference methods.** Stated preference methods involve the estimation of an economic value for a good or service based on what people say they will do in a hypothetical situation. The most common stated preference methods are:

- **Contingent Valuation:** Contingent Valuation (CV) asks participants how much they would be willing to pay for something to be conserved or how much they would be willing to accept as compensation for its loss [1]. Generally participants are presented with a hypothetical market for a good or service (e.g. how much would they be willing to pay to watch fishermen land their catch).

**Considerations:** There may be issues in terms of the reliability of the willingness to pay values generated due to the difficulty for participants to ascribe a monetary value to a non-monetary benefit. Providing enough information that is clear and not overly technical is important in order for respondents to make reasoned judgments.

- **Choice Modelling:** The Choice Modelling (CM) approach is similar to Contingent Valuation but it gives respondents multiple alternatives to choose from. Respondents are given a number of choices or attributes that they are asked to rank according to their preferences.

**Considerations:** This approach can lead to a large set of attributes and alternatives which can be impractical to present to respondents. It also assumes that participants are largely well informed which can lead to inconsistent responses.

## Key Term 7

**Revealed preference methods.** Revealed preference methods look at how people actually behave and use a proxy for estimating economic value, often travel costs or house prices. The most common revealed preference methods are:

- **Hedonic Pricing:** Hedonic Pricing (HP) assesses the relative contribution (as a percentage of property price) of a particular environmental or social asset (e.g. the view of the fishing harbour) to property prices. It is based on the assumption that house prices are impacted by the characteristics of the area in which they are located.

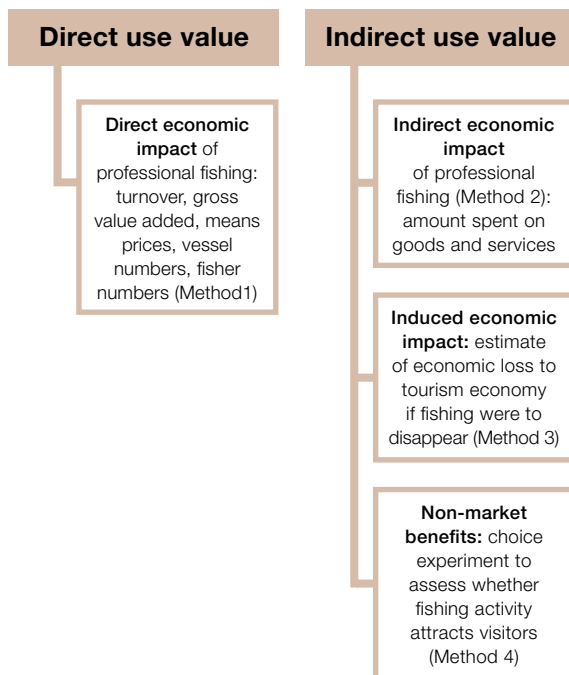
**Considerations:** This method involves complex assessment of property prices and is limited to those aspects that are directly observable from the property.

- **Travel Cost Method:** The Travel Cost Method (TCM) is often used to evaluate recreation or tourism activities. It is based on the assumption that time and cost are involved in travelling to a particular recreational or tourist area and from this the recreational/touristic value can be inferred [1].

**Considerations:** The Travel Cost Method is most appropriate when significant travel is involved but the estimated value can be affected by nearby similar sites which may be visited on the same trip.

All valuation methods, both market and non-market, are useful but it is important to consider the pros and cons of each method. Different methods may be suitable for different projects so care must be taken to ensure the appropriate approach is adopted.

The following sections summarise some of the economic approaches used in the GIFS project. The aim was to assess the economic value of fishing, not just in terms of direct revenue, but the further indirect and induced economic impacts and the non-market benefits of inshore fishing (see Figure 9).



**Figure 9:** Summary of the economic methods adopted in the GIFS project.



## METHOD 1: A regional comparison of the profitability of inshore fishing fleets

The **direct economic impact** (see Key Term 1 on page 40) of inshore fishing can be estimated by assessing the economic performance of inshore fishing fleets. In this study, the economic characteristics and profitability of different segments of the fishing fleets across the GIFS study area (see map on page 7) were compared in order to understand if some regions or fishing communities are gaining more economic benefits than others from the marine resources exploited<sup>1</sup> and examining if differences in performances occur between different regions/communities. The examples given here demonstrate how economic analyses can help to reveal the economic contribution of discrete segments of the fishing fleet.

### Step 1: Identifying and obtaining the relevant data.

In order to undertake this sort of assessment, the first challenge is to obtain relevant and comparable data. Differences in scope, accessibility and the type of data collected is variable and will involve locating, obtaining and, in some cases, reprocessing the relevant datasets. For example, fisheries economic data are collected at national level by the European Joint Research Centre (JRC), and are aggregated at large fleet levels (e.g. ‘bottom trawlers’ for any vessel using a bottom trawl, despite the other activities conducted, such as dredging or netting).

<sup>1</sup> For further information, see Robert and Le Gallic, 2014. *Performances économiques des pêcheries commerciales côtières en Manche et sud de la Mer du Nord. Comparaisons France/Angleterre/ Belgique/Pays-Bas*. Project Interreg IVa – GIFS on the AMURE website : [http://www.umr-amure.fr/pg\\_electro\\_rap.php](http://www.umr-amure.fr/pg_electro_rap.php)

As a result, the scope of analysis considered in their Annual Economic Report did not match the particular parameters required for the GIFS analysis:

- From a geographical point of view, as the data available was not specific to the GIFS study area;
- From a technical point of view, as the data available did not specifically address inshore fleets in most cases (see the definition of inshore fishing in Chapter 1).

Therefore, a range of data sources was used in this study in order to compile a suitable dataset:

- Synthèse des flottilles de pêche (France) (Fisheries Information System (FIS)), where the focus is on the Channel and North Sea fleets
- Observatoire économique regional des pêches de Bretagne (France)
- Seafish annual economic fleet report (England)
- Uitkomsten Belgische Zeevisserij (Belgium) Annual national reports

### Step 2: Reprocessing data.

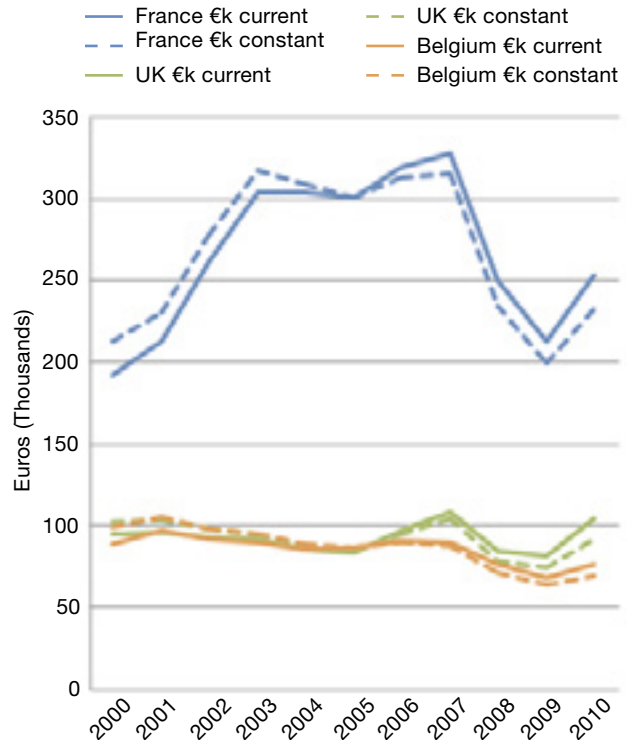
For most of the sources, the published information was directly used. For England, however, most of the information was only available at British level. In order to get the information at the GIFS level, it was necessary to reprocess the data collected by Seafish. This had to be done by a consultant accredited by Seafish directly in their Edinburgh Office where the data are stored.

### Step 3: Analysis of the reprocessed data.

The economic analysis was undertaken by compiling and comparing the indicators common to all available reports used in the study, namely:

- Turnover
- Gross Value Added (3.4 billion EU wide)
- Mean prices
- Number of vessels
- Number of Full Time Equivalent crew members

**Results:** Some of the results from the analysis in terms of value of landings, Gross Value Added and the calculation of an efficiency indicator for the fishing fleets are presented in this section, comparing the findings between the countries.



**Figure 10:** Value of landings by active French, British and Belgian vessels from 2000 to 2010. (Source: French & British data: Atlas des pêcheries de la Manche; Belgian data: Departement Landbouw en Visserij).

*Value of landings:* The value of the landings in the GIFS area during the 2000-2011 period shows different trends in the French, English and Belgian areas (Figures 10). Only Belgium is characterised by an on-going decreasing trend in turnover.

*Gross Value Added (GVA):* GVA is a measure of the wealth generated by an economic activity. As shown in Tables 2-5, the relative importance of inshore fishing regarding wealth generation varies across different countries. While half of GVA originates from under 12 metre vessels in France, the corresponding figure decreases to 42% in England, 33% in the Netherlands and 22% in Belgium. However, these findings indicate that inshore fishing activity has a significant economic importance in all four countries.

## Belgium

		No. of vessels per fleet	Mean GVA per vessel	Total GVA per fleet (€k)	Share of the total GVA of the area (%)
Vessels ≤221 kW	Kustvissers	20	96,274	1,925	5%
	Eurokotters	20	285,763	5,715	15%
	Other vessels ≤221kW	5	126,984	635	2%
Vessels >221 kW	Bokken ≥662 kW	32	820,907	26,269	69%
	Others > 221 kW	9	363,460	3,271	9%
<b>Total</b>		<b>86</b>		<b>37,816</b>	<b>100%</b>

**Table 2:** Gross Value Added of fishing activity in the Belgium

## Netherlands

		No. vessels per fleet	Mean GVA per vessel	Total GVA per fleet (€k)	Share of the total GVA of the area (%)
Fixed gears	<10 metres	199	22,106	4,399	7%
	12-18 metres	4	-3,750	-15	0%
Dredgers	<10 metres	16	736,375	11,782	20%
Beam Trawlers	12-18 metres	11	555,182	6,107	10%
	18-24 metres	170	77,218	13,127	22%
	24-40 metres	32	194,594	6,227	11%
Bottom Trawlers	<10 metres	25	132,400	3,310	6%
	18-24 metres	14	324,071	4,537	8%
	24-40 metres	23	416,652	9,583	16%
<b>Total</b>		<b>494</b>		<b>59,057</b>	<b>100%</b>

**Table 3:** Gross Value Added of fishing activity in the Netherlands

## France

		No. vessels per fleet	Mean GVA per vessel	Total GVA per fleet (€k)	Share of the total GVA of the area (%)
Fixed gears	Under 12 metres	586	82,024	48,066	26%
	12-40 metres	58	386,943	22,443	12%
Towed gears	Under 12 metres	428	95,230	40,758	22%
	12-40 metres	276	268,523	74,112	40%
<b>Total</b>		<b>1348</b>		<b>185,379</b>	<b>100%</b>

**Table 4:** Gross Value Added of fishing activity in France

## England

		No. vessels per fleet	Mean GVA per vessel	Total GVA per fleet (€k)	Share of the total GVA of the area (%)
Fixed gears	Low activity	661	1,399	925	1%
	Under 12 metres	598	31,293	18,713	27%
	12-40 metres	38	235,722	8,957	13%
Towed gears	Under 12 metres	185	53,813	9,955	14%
	Above metres	100	303,683	30,368	44%
<b>Total</b>		<b>1,582</b>		<b>68,919</b>	<b>100%</b>

**Table 5:** Gross Value Added of fishing activity in England

The total Gross Value Added originating from the fishing sector in the study area accounts for around €350 million (10% of the EU fisheries sector) (see Table 6). French fleets are the biggest contributor to wealth generation in the area, accounting for half of it. As 50% of the French Gross Value Added is created by inshore fleets, this means that the inshore sector in France contributes to 25% of the total wealth generation in the study area.

	GVA (in k€)	Contribution to the total GVA generated in the GIFS area (in %)
Belgium	37,816	10.8%
Netherlands	59,057	16.8%
France	185,379	52.8%
England	68,919	19.6%
<b>Total GIFS area</b>	<b>351,171</b>	<b>100%</b>

**Table 6:** Relative contribution of each GIFS territory to wealth generation (2011 figures)

*Efficiency indicator:* In order to further investigate the efficiency of the fishing fleets in the GIFS area, a traditional efficiency indicator was calculated: the ratio Gross Value Added divided by the turnover. This ratio indicates the level of wealth generated for 1 euro of seafood product landed. The higher the ratio is, the more efficient the fleet (see Table 7).



	Country	Registration area	Fleet	GVA as % of turnover
Passive gears	France	English Channel	Netters <12m	63.0
	France	English Channel	Netters, pots and traps <12m	65.0
	France	Brittany	Other passive gears (lines, long-lines etc.) <12m	60.3
	France	Brittany	Other passive gears (lines, long-lines etc.) <12m	58.4
	England	South-east	Pots and traps <10m	57.5
	England	South-west	Pots and traps <10m	59.0
	England	South-east	Pots and traps (10-12m)	49.1
	England	South-west	Pots and traps (10-12m)	52.7
	England	South-east	Netters <12m	66.6
	England	South-west	Netters <12m	64.4
Active gears	France	Brittany	Dredgers <12m	59.4
	France	English Channel	Dredgers <12m	63.0
	England	South-east	Dredgers <10m	46.7
	England	South-west	Dredgers <10m	38.5
	England	South-east & south-west	Dredgers (10-12m)	42.0
	England	South-east	Trawlers <12m	57.5
	England	South-west	Trawlers <12m	58.8
	France	Brittany	Trawlers 12-16m	49.3
	England	South-east	Beam trawlers <221kW	27.7
	England	South-west	Beam trawlers <221kW	58.2
	Belgium		Beam trawlers <221kW	43.1
	Netherlands		Beam trawlers 12-18m	42.9
	Netherlands		Beam trawlers 18-24m	35.2

**Table 7:** Efficiency indicator, per fleet and country. Note: passive gear = capture of fish is based on movement of target species towards the gear (e.g. traps). Active gear = capture of fish is based on chasing the target species (e.g. trawls, dredges).

Table 7 shows that the most efficient vessels, regarding the capacity to generate value added, are under 12 metre vessels using passive gears, and in addition the over 12 metre Brittany passive gear fleet. Conversely, vessels using beam trawlers, especially the largest ones have a relatively low efficiency ratio. Such a feature might be explained by the fact that trawlers in general are more dependant on fuel, and the large vessels cannot exploit similar marketing strategies to inshore vessels. These elements are further analysed in the full report ([http://www.umr-amure.fr/pg\\_electro\\_rap.php](http://www.umr-amure.fr/pg_electro_rap.php)).



## Considerations when using this method

The main issue with undertaking this sort of economic analysis is obtaining relevant data, especially when the analysis concerns a specific geographical area or particular fleet segments such as in the GIFS project. This can limit the type of analysis that can be undertaken as well as generating time and money implications.

The most efficient vessels, regarding the capacity to generate value added per fish landed, are under 12 metre vessels using passive gears.

## METHOD 2: Estimating the indirect economic impacts of marine fishing

The **indirect economic impacts** (see Key Term 2) of marine fishing can be estimated by assessing the links between various users of marine resources and the stakeholders upstream of the fishing sector, namely the goods and services suppliers (see Figure 11). By assessing the economic behaviour of fisheries suppliers the potential associated benefits for the local economy can be estimated.

Input-output models (see Box 8) are commonly used in order to quantify the indirect benefits of a particular activity in order to highlight the interconnectivity of the activity within the broader local economy. However, this approach was not suitable for this study as the economic agents involved (e.g. suppliers of fishing gear/tackle, boat repairs etc.) do not only support the commercial fishing industry, but also provide services to recreational fishers. Secondly, in the case of specific fisheries or zones, it is hard to get precise data to calculate these multipliers (see Key Term 4 on page 40) and further research showed existing data about the fishing supplier network was limited in France and the UK and not sufficient to focus on a specific zone.

## What will this method help me to do?

- Compare the economic performance of different fishing fleet in different regions or countries.
- Identify the best and worst cases with respect to the use of similar fisheries resources.
- Help to identify the most efficient structure of the fleet.
- Inform policy makers in terms of the design of suitable policy instruments for managing fleet capacity and structure.

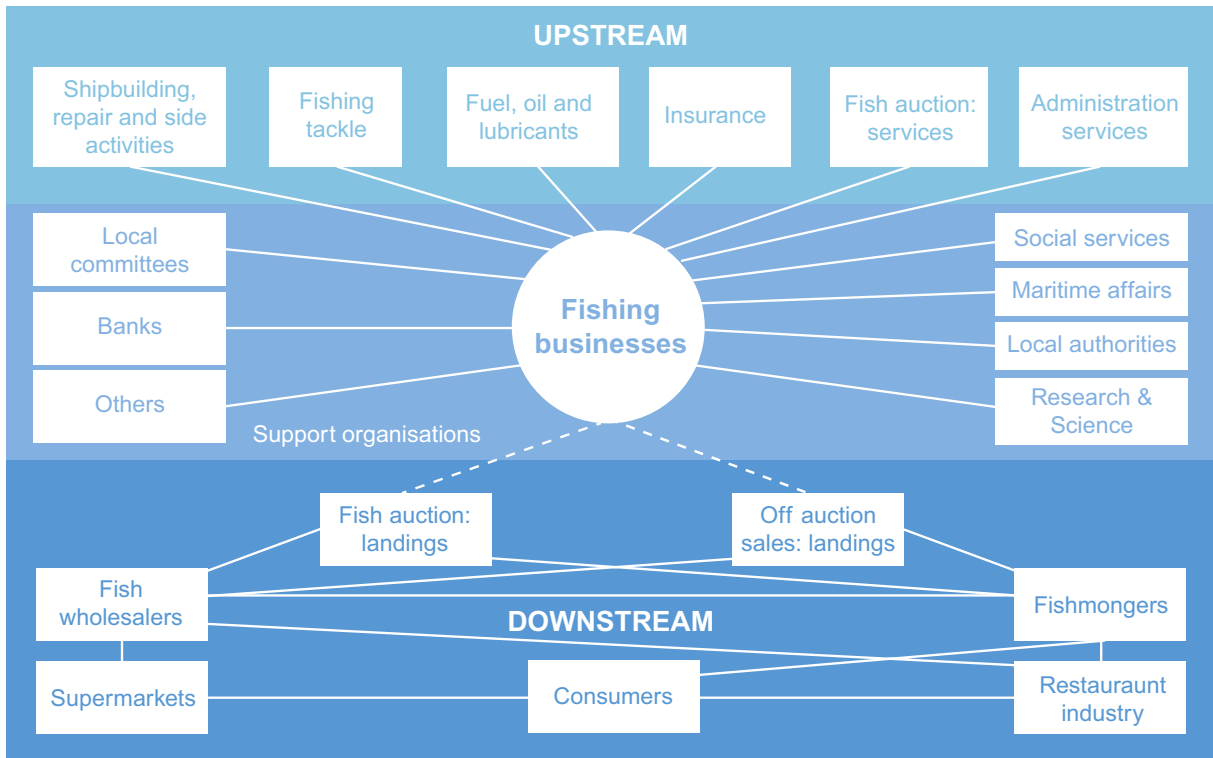
### Box 8: Input-output model

In economics, an input-output model is a technique for assessing the interdependence between different elements in an economy. It shows how sectors of an economy are linked through, for example, the outputs of one business providing the inputs required for another (e.g. the 'output' of a tackle shop may be nets, which when purchased by a fisherman are an 'input' into the fishing business). It can also show how change in one part of the economic system can impact on other parts of the system.

This study focused on a comparison of commercial sea bass fishing in France and England.

#### Step 1: Decide on the study location.

As Brest in Brittany (France) and Weymouth & Portland in Dorset (UK) are prime locations for both commercial and recreational bass fisheries they were selected as case study sites for this analysis (see Figure 12).



**Figure 11:** Upstream and downstream interaction between fishing stakeholders [2].

**Step 2: Identification of suppliers in the economic system.** The first task is to identify the suppliers in the economic system in question. In this study, this involved compiling an inventory of the various companies likely to sell goods and services to commercial bass fishers. This was supplemented by information provided by commercial bass fishers and bass recreational anglers. This inventory included tackle shops, bait and fishing equipment stores, chandlers, fuel retailers and ship building and repairing.

**Step 3: Decide on the type of survey to use.** Data were collected via a survey questionnaire. The survey was organised into four sections with questions focused on:

- the characteristics and history of the company and customer base
- the type and location of the suppliers for various products (fishing gear mainly)
- the commercial strategy



**Figure 12:** Case study locations



**Step 4: Collecting the data.** The supplier survey was deployed face-to-face over a one-month period in the Brest region and one week in Weymouth.

**Step 5: Analysing the data.** The data were analysed by applying marketing-mix theory, a business tool used in marketing, to understand a company's commercial strategy and assess its competitive edge. The marketing mix is associated with the four P's: product, price, promotion, and place (distribution).

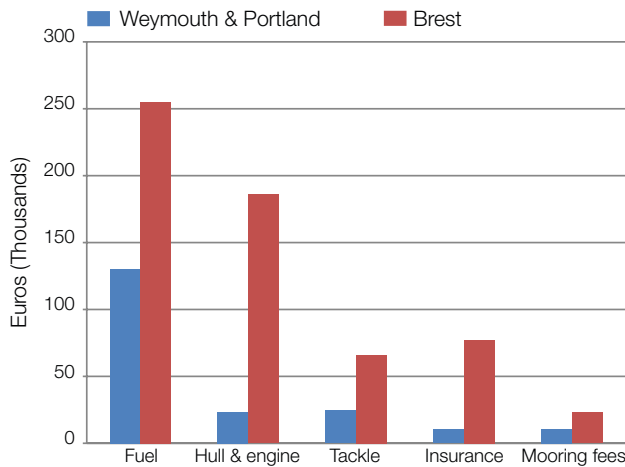
**Results:** One of the characteristics in the Brest region was the diversity of companies involved in supplying bass fishers. There are as many specialised tackle shops (>70% of the turnover is due to fishing tackle) as sports and leisure stores (<10% of the turnover is tackle), a few distributors (ship chandlers mainly) and even a lure designer. However, in Weymouth, tackle shops are all very

specialised in fishing gear only with their product range depending on their targeted customer base (from novice to experienced anglers).

In Brest and Weymouth, the share of most suppliers' turnover attributable to professional fishers was lower than 10%. But there was one exception in France: la cooperative maritime, a national cooperative company held by fishermen with shops all around the French coast. In Brest, for example, commercial fishermen's share in la coop turnover is around 30% (even if it has been decreasing recently). The reason is that the prices are lower for professional customers and so it is the main supplier for most of their needs.

The extrapolated annual average expenditure for the commercial hook and line bass fishery in the two case studies is shown in Figure 13. This gives an idea of the amounts spent by commercial fishermen with their suppliers in each case study (the

differences can be mainly explained by the difference in fleet size and average vessel size in Weymouth and Brest).



**Figure 13:** Extrapolated annual average expenditure for commercial hook and line bass fishery in Brest and Weymouth & Portland.

### Considerations when using this method

It can be difficult to get commercial and competitive strategy information from company managers.

### What will this method help me to do?

- Estimate the direct economic impact of professional fishing by analysing the amount spent with fishers' suppliers and service providers.
- Identify the differences between providers' strategies (e.g. cooperatives in France).
- Assess the sustainability of the economic model developed by the providers (e.g. diversification).

In Brest and Weymouth, most fishing gear (e.g. rods, reels, lures etc.) is sourced from national wholesalers importing from abroad, particular Asia. Thus, apart from a few exceptions (e.g. the lure designing company in Brest), most of the bass fishing equipment is not locally made and does not benefit the local economy at this stage. On both sides of the Channel it seems like bass is still a flagship species for suppliers' sales points targeted at both the novice angler and the experienced one. But according to the surveys, it appears that Brest suppliers feel more dependent on bass than in Weymouth.





In terms of the strategies used by suppliers, the main trend is that most suppliers develop a strategy of diversification for their products and customers to reach a wide market (the tourism market in particular). As an example, in France, the Cooperative, originally dedicated to professional fishers, has diversified its product base (e.g. sea angling tackle, chandlery, clothes, souvenirs, etc.) to attract a wide range of customers. Other competitive strategies used by suppliers include the strategic location of the shop (next to angling prime spots, mooring places or marinas), competitive prices or developing a good image. In addition, in Weymouth tackle shops have partnerships with charter boats whereby customers can book charter boat trips in the tackle shop as well as buying tackle for the fishing trip. This is a good example of a collaborative commercial strategy to create customer loyalty.

The main difference between France and the UK regarding the organisation of the supplying sector is the way it is structured. French fishermen have organised themselves to create a national centralised supplying service to help during times of economic difficulty, whereas this is not the case in Weymouth.

In Brest and Weymouth, bass fishing is mainly benefiting the supplier through recreational fishing. It appears that the recreational sea bass fishing activity allows for a suppliers' network to be maintained, with the knock on effect that professional sea bass fishers may also benefit.

### **METHOD 3: Assessing the economic contribution of fishing to tourism**

The presence of a fishing fleet and its associated activities in a coastal town can provide an attraction for tourists visiting the area. This touristic activity can have an impact on the local economy in two ways:

- the direct monetary exchange between tourists and fishing businesses, such as through buying fish directly from a fisher, going onboard fishing boats or taking a paid tour of the fish auction.
- the free activities created by the presence of an inshore fishing fleet such as walks along the quayside, enjoying the view and atmosphere of fishing boats setting out to sea and landing their catches. In economics this is known as a 'positive externality', where an unintended side effect occurs as the result of an economic activity. 'Externalities' can be either negative (e.g. air pollution from industrial activities) or positive (e.g. people enjoying a view of the fishing).

**If coastal fishing activity disappears in an area, how much would the local economy lose as a result of a decrease in tourism visitors?**



With this in mind, the positive externality of coastal fishing activity can be assessed in terms of its tourism attractiveness. Are tourists coming to a coastal town because of its fishing identity? If yes, what are the **induced effects** (see Key Term 3 on page 40) of inshore fishing activity? Although tourists may come to an area because of its coastal fishing identity, it is likely that during their stay they will spend in the local shops, restaurants and pubs. It can be assumed that these expenditures reveal their interest in the inshore fishing activity. Without this activity, these tourists would not have come and would not have spent money in the town. By assessing the spending of people coming into an area because of its coastal fishing identity, we can answer the question: *“If coastal fishing activity disappears in an area, how much would the local economy lose as a result of a decrease in tourism visitors?”*

In this study, the DGCIS (Direction générale de la compétitivité de l’industrie et des services) methodology [3] was used. This approach was developed for the measurement of the economic effects of large tourist events such as sporting events or music festivals. With some modifications,

it was possible to use this method to assess the economic consequences generated by the presence of a coastal fishing activity in an area.

This method is based on two principles:

- We only take into account expenditures from outside visitors, which minimizes the impact of the inshore fishing sector on the local economy.
- Only exchanges due to the presence of the coastal fishing activity are assessed. Therefore, we have to identify tourists that would not come to the area if the coastal fishing activity ended. We are only interested in the local spending of these tourists.

### **Step 1: Design the questionnaire survey.**

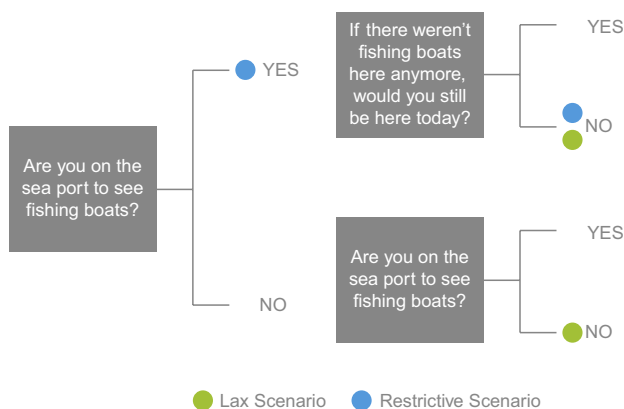
The method adopted utilised a questionnaire survey to gather the required data. The questionnaire was divided into four parts:

- details about the interviewee (e.g. gender, age)
- description of visit
- motivation of visit
- expenditure during visit

The third part, motivation of visit, is crucial as two key questions enable the identification of tourists motivated by the fishing identity of the area:

- Q1: Are you visiting this coastal town to see fishing boats?
- Q2: If there weren't fishing boats here anymore, would you still be here today?

**Step 2: Developing the scenarios.** Through these two questions, two scenarios are developed (see Figure 14): **a lax scenario** taking into account expenditures from all the tourists that would not be in the town without the fishing boats (i.e. all NO responses to question 2) and **a restrictive scenario** focusing only on tourists who say they have come to see the fishing boats (answer YES to question 1) and would not be present without the fishing activity (answer NO to question 2).



**Figure 14:** The two scenarios for assessing tourist expenditure

**Step 3: In this study tourists were surveyed in three case study sites:** Le Conquet and Port-en-Bessin in France and Hastings in England (see Figure 15). In order to ensure a representative sample it is important to try to obtain responses from a range of different tourists. In this case, respondents of different ages were targeted. A total of 1,257 surveys were collected (385 in Le Conquet; 392 in Port-en-Bessin; 480 in Hastings).

	Le Conquet	Port-en-Bessin	Hastings
Lax scenario	71 18.44 %	122 31.12 %	35 7.29 %
Restrictive Restricted scenario	53 13.76 %	85 21.68 %	22 4.58 %

**Table 8:** Number of respondents for each scenario



**Step 4: Answers given during the face-to-face interviews were registered using a spreadsheet.** Before statistical and monetary analysis, an important element is to create three files: one gathering all surveys, a second for the lax scenario and the third for the restrictive scenario. Then, it is possible to compute an average daily individual expenditure for both cases, in order to assess total spending (as presented in Table 9).

**Results:** Table 8 presents the number of tourists for each scenario and the corresponding assessed percentage of tourists motivated by the area's fishing identity (% computed by using the sample size). The percentages may be higher in Le Conquet and Port-en-Bessin because both towns are quite small in



**Figure 15:** English Channel and location of the three case studies.

comparison to Hastings and so the competing tourist activities are limited. The main activities in these two French towns are walking to explore both the town and the beautiful coastal landscape. Hastings is a larger town and provides various opportunities for tourists (heritage sites, museums, cinema, etc). Due to these multiple attractions, it is quite difficult to measure the weight of the town's fishing identity to tourist motivation and may explain the smaller percentages in these locations.

Using the data from the lax and restricted scenarios the total tourist spend attributed to the area's coastal fishing identity can be estimated. Table 9 illustrates how this value is calculated using Le Conquet as an example.

Table 10 presents the estimated total tourism spend associated with fishing identity in each of the case studies. In France, the higher value in Port-en-Bessin is attributed to the higher percentage of tourists visiting because of the presence of a fishing fleet when compared to Le Conquet. In Hastings, the value of economic losses if inshore fishing activity were to disappear from the town is much greater than both French case studies. This is most likely due to the higher visitors number in Hastings (3.5 million of tourists in 2011<sup>2</sup>) when compared to the French examples (approx. 25,000 visitors per year<sup>3</sup>).

Formula	Ex : Le Conquet Restrictive Scenario	Data source
annual number of tourists in the area	25,475	Local data by tourist office
x (% of tourists present because of the area fishing identity)	x (13.76 %)	assessed by the survey
x (average number of staying days for these tourists)	x (2.3)	assessed by the survey
x (daily spending per tourist coming because of the area fishing identity)	x (€25.4)	assessed by the survey
<b>= Total spending</b>	<b>= €204,783</b>	

**Table 9:** Formula for estimating annual tourism spend associated with fishing identity.

<sup>2</sup>TNS for Visit England, Visit Scotland, Visit Wales (2013), "The GB Day Visitor", Statistics 2012, 90 p. & Tourism South East (2011) "The Economic impact of Tourism – Hastings 2011", 9 p.

<sup>3</sup>Local data from French tourist offices.



	Le Conquet	Port-en-Bessin	Hastings
Lax scenario	€258,212	€342,398	€12.9M
Restrictive scenario	€204,783	€214,818	€8.5M

**Table 10:** Total tourism spend associated with fishing identity.

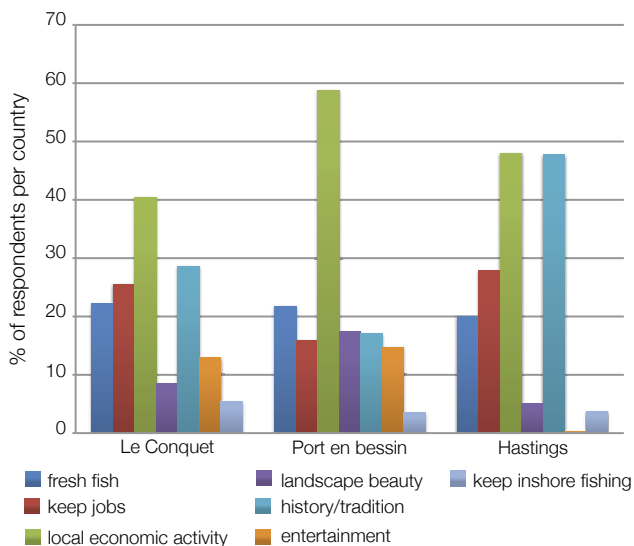
### Considerations when using this method

As these assessments rely on surveys the issue of sample representativeness is important to give reliable values. Where small sample numbers are involved the resulting estimates should be treated with caution.

In addition, almost all interviewees support the presence of the fishing fleet in the long term, not only for direct economic reasons (local economic activity and jobs). This is shown Figure 16. A significant proportion of tourists (28% in Le Conquet, 17% in Port-en-Bessin, 47% in Hastings) think a coastal fishing fleet should be kept since it is a historic activity in the town, so it is part of its cultural heritage.

### What will this method help me to do?

- Asses the contribution of fishing identity to the tourism economy in a coastal town.
- Provide information about
  - Communication strategies ('targets' for improving the tourism attractiveness)
  - New activities that could be developed
- Evaluate how / to which extent the fishing sector could be rewarded for this positive role.



**Figure 16:** Surveys result for reasons for keeping inshore fishing.



Estimates of the economic value of inshore fishing to tourism can inform public policies when allocating financial supports to this sector.

In summary, this study revealed that some tourists visit an area and spend locally due to the presence of an inshore fishing fleet. In other words, a positive externality exists between coastal fishing activity and tourist attractiveness for each coastal town studied. While the scope of these induced economic effects depends on the town's features (e.g. number of visits and competing attractions for tourists in the area) in all case studies inshore fishing activity was shown to generate local expenditures from tourists. Those involved in the fisheries sector do not receive any monetary direct compensation for this unintended by-product, or positive externality, that occurs as a result of their activity.

An additional study has been undertaken in Oostende, Belgium. Full results can be found in the AMURE report ([http://www.umr-amure.fr/pg\\_electro\\_rap.php](http://www.umr-amure.fr/pg_electro_rap.php)).

#### METHOD 4: Assessing the non-market benefits of inshore fishing

As outlined in Method 3, the presence of fishing activity in a coastal town can be an attraction for tourists. Visitors may enjoy watching the fishermen landing their catch, looking at the boats in the harbour or finding out more about the history of fishing in the region. As these activities have no direct market value, in economics they are classified as non-market benefits (see Key Term 5 on page 41). However, assessing these non-market benefits is difficult as there is no market that directly reflects the price of these amenities. The types of approaches that are applicable in this context are outlined in Key Terms 6 and 7 on page 41.

This example sets out how one of these approaches has been applied in the context of inshore fishing. Choice Experiment, a stated preference method (see Key Term 6 on page 41 for further explanation), was used to estimate the non-market value of the contribution of fishing to tourism. Participants were asked to choose between different hypothetical coastal sites that have varying attributes or characteristics. It is crucial to ensure that the most appropriate attributes are included. By analysing the



	Site A	Site B	Neither site
Choice	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Presence of fishing boats	<b>x</b>		
Presence of coastal walks	<b>x</b>		
Possibility to buy locally caught fresh fish/seafood			
Distance between your residence and the site	75 miles	50 miles	
Presence of a beach			
Presence of a marina		<b>x</b>	
Architectural history (harbour, old houses and buildings etc.).	<b>x</b>		

**Figure 17:** Example of a choice set presented to respondents.

trade-offs that individuals make between the different site attributes, it is possible to estimate an economic value for each of these attributes, which is called Willingness to Pay (WTP).

### Step 1: Design the questionnaire survey.

The Choice Experiment method is conducted with the use of questionnaire surveys that, in this instance, were deployed face-to-face. The first step is the careful design of the survey questions.

The attributes reflect characteristics that are representative of coastal sites in the entire study area in order to be meaningful to respondents. In this instance, two attributes directly related to fishing activity were included: the presence of fishing boats and the ability to buy fishing products directly from local fishermen. Besides these fishing-related attributes, other more classical attributes of coastal sites were chosen: coastal walks, beach, marina and historical architectural heritage. These six attributes have two response options in the survey: presence or absence.

**Step 2: Decide on the monetary attribute that will be estimated.** In order to calculate the willingness to pay to benefit from these attributes, a monetary attribute is required. Visitors in the area do not pay to visit coastal sites because the access to recreational natural areas is mostly free. In this study the distance to travel by car to a coastal site was used as a proxy for the cost. Four levels were chosen, each separated by 25 miles (25 miles, 50 miles, 75 miles, 100 miles).

### Step 3: Setting up the choices in the questionnaire survey.

The alternative choices presented in the survey are derived from a combination of the characteristic attributes and the distance travelled. For each choice set, respondents may choose to visit coastal site A or coastal site B; each of these fictitious locations being defined by different combinations of attributes (see Figure 17 for an example). In addition, a third alternative was introduced: the option to not visit any of the proposed sites (this alternative is termed the *status quo*).

**Step 4: Collecting the data.** The survey is deployed through face-to-face interviews in a range of locations, both coastal and inland. In this study, surveys were conducted in the GIFS area in England, France, Belgium and the Netherlands. A sampling plan by age and gender was followed in order to ensure a representative sample of the population in each country. A total of approximately 2,000 complete and usable questionnaires were collected across the study area.

**Step 5: Analysing the data.** The data collected through the surveys was analysed through econometric analysis using random utility models. For more details about the econometric analytical approach see the full report for this study (available on the GIFS website [www.gifsproject.eu](http://www.gifsproject.eu)).

Among the attributes describing the hypothetical coastal sites, two are related to the fishing activity (presence of fishing boats, direct sales of products from local fishing). Analysing the choices of

Individual willingness to pay (€ per round trip)					
	France	Belgium	Netherlands	England	TOTAL (mean)
Fishing boats	4.93	3.81	7.55	4.99	5.32
Coastal walks	4.87	8.15	7.17	5.93	6.53
Direct sales by fishermen	3.79	1.81	2.91	2.84	2.84
Beach	8.30	11.14	6.95	6.83	8.31
Marina	3.27	2.28	2.87	3.07	3.12
Architectural history	5.84	6.17	3.59	4.17	4.94

**Table 11:** Willingness to pay for attributes in coastal locations (the top 3 are shown in red (1), blue (2) and green (3)).

respondents, using econometric models, reveals how these attributes are valued by respondents and Willingness to Pay (WTP) for the presence of each attribute can be calculated for each country in the survey area. The WTP of an attribute is interpreted as the implicit price per individual in order to enjoy the presence of this attribute on a coastal site. It should be remembered, however, that all WTP are positive.

**Results:** The results indicated that all of the characteristic attributes used to describe the sites contribute positively to the experience of the individuals surveyed (Table 11). However, greater importance was attached to the presence of a beach, compared to that of a marina or direct sales. For the distance attribute, the greater the distance to get to a coastal site, the less satisfied respondents were.

Overall, the presence of fishing boats had the third highest WTP value. However, in the Netherlands, the presence of fishing boats had the highest WTP value, whereas in France, England and Belgium the attribute “beach” had the highest WTP value. The WTP for direct fish sales was higher in France than in other countries. In France, freshly landed fish by local fishermen and sold directly to consumers on the port or on stalls in small markets is an attraction for visitors. However, the WTP for these two attributes decreased when interviewed individuals have no link with the fishing sector.

### Considerations when using this method

Depending on the number of attributes and the associated response options, a Choice Experiment can end up with an impractical number of choice sets. In this instance, with six characteristic attributes with two options, and one distance attribute with four options, a full range of alternatives would involve 256 choice sets. After a pilot study and subsequent statistical analysis of the choice set alternatives, a final design consisting of 32 choice sets was established. These 32 choice sets were divided into four different versions of the questionnaire resulting in respondents having to indicate their preferences on just 8 choice sets.

### What will this method help me to do?

- Assess the value of fishing to the tourism economy in coastal sites.
- Estimate a monetary value in terms of willingness to pay for the contribution of the presence of fishing to tourism.

[1] Perman R, Ma Y, McGilvray J, Common M. Natural Resources and Environmental Economics. Harlow, Essex: Pearson Education Ltd; 2003.

[2] Talidec C, Daures F, Leblond E, Lesueur M, Boude JP. Scénarios d'aménagement des activités de pêche dans la bande côtière bretonne. Rapport d'activité de l'année 2003; 2004. 108p.

[3] Maurence E. La mesure de l'impact économique d'un événement touristique. DGCIS: EMC/Ministère de l'Economie, des Finances et de l'Industrie; 2010. p. 158.

# The social and cultural values of inshore fishing communities

# 5

Inshore fisheries do not just provide for our physical needs in terms of food and livelihoods for fishers, but they also contribute to well-being benefits such as cultural identity, recreation, quality of life, heritage and social cohesion.

Inshore fisheries do not just provide for our physical needs in terms of food and livelihoods for fishers, but they also contribute to well-being benefits such as cultural identity, recreation, quality of life, heritage and social cohesion. Within the GIFS project a range of quantitative and qualitative methods have been combined in order to explore and understand some of the social and cultural values that arise through the activity and presence of an inshore fishing fleet in coastal communities. Underpinning a number of these approaches is an ecosystem-based approach (see page 24 in Chapter 2), with a particular focus on the cultural services that are derived from marine ecosystems as a result of inshore fishing. The Millennium Ecosystem Assessment defines cultural ecosystem services as the “non-material benefits obtained from ecosystems through spiritual enrichment, cognitive development, reflection, recreation, and aesthetic experiences” [3].

These include:

- cultural diversity
- spiritual and religious values
- knowledge systems
- educational values
- inspiration
- aesthetic values
- social relations
- sense of place and identity
- cultural heritage
- recreation



Photography: Vince Bevan

Assessing the value of these benefits can be difficult and there is much debate within policy and academic circles over how cultural services should be both defined and valued. Often techniques are drawn from economics (such as economic valuation of non-market benefits as outlined in Chapter 4). This can inform decision-making that involves trade-offs when allocating resources. However, there is increasing recognition that many cultural services are often

not marketable or reflected by economic indicators and that alternative methods are required alongside traditional economic approaches. Within the GIFS project a number of non-economic methods to valuing and understanding the cultural services that arise as a result of inshore fishing have been devised and tested, adopting both qualitative and quantitative approaches (see Table 12).

## Quantitative vs Qualitative Methods

In simple terms, quantitative methods focus on data that can be analysed in terms of numbers, whereas qualitative methods focus on non-numeric data that can be collected in many forms, such as interview transcripts, photographs and textual data. The main differences are summarised below.

	Quantitative	Qualitative
Purpose	To test hypotheses, identify behaviour, look at cause and effect, and make predictions.	To understand and interpret social interactions and meanings.
Philosophical basis	Reality is objective and singular, independent of the researcher and so can be measured.	Reality is subjective and multiple as constructed and seen by the individuals in the research situation.
Sample	Larger and randomly selected.	Smaller and not randomly selected.
Approach	Specific variables studied. Quantities, scales and trends are observed in an experimental setting.	Study of the whole, not variables. Qualities, behaviour and complexities are observed in their natural setting.
Types of questions	How many? What? Cause and effect.	Why? How?
Types of methods	Measurements (lab based or field based), questionnaires.	Document review (content analysis), participant observation, interviews, focus groups, workshops, etc.
Data	Quantitative data based on precise measurements using structured and validated data-collection instruments.	Qualitative data such as interview transcripts, field notes, reflections, observations, focus group transcript, photographs, documents.
Researcher role	Researcher is independent from that being researched.	Researcher interacts with that being researched.
Analysis	Describe, measure, predict. Statistical tables and charts. Mainly deductive reasoning.	Explore, explain, understand. Narrative with mainly inductive reasoning.
Results	Generalisable findings that can be applied to other populations.	Specialised findings which are not generalisable.
Outputs	Statistical report with correlations, comparisons of means & statistical significance of findings.	Narrative report with contextual description and direct quotations from research participants.

**Table 12:** Quantitative and qualitative methods





Quantitative methods focus on data that can be analysed in terms of numbers, whereas qualitative methods focus on non-numeric data which can be in many forms, such as interview transcripts, photographs and textual data.

The first method presented illustrates how deliberative and participatory methods can be used to capture the shared values of communities. Through work undertaken in Hastings, it is shown how such approaches can lead to better and more informed policy and planning decisions based on local knowledge and attitudes.

The second method sets out how 'sense of place' can be a useful tool for understanding the social and cultural values of inshore fishing. Through questionnaire surveys with both residents and tourists the contribution of fishing to sense of place

in case study locations is 'measured' in each of the four countries, allowing a comparison between the nations.

Thirdly, a creative approach through photography was adopted in order to understand, visualise and communicate the cultural values associated with inshore fishing. In this example it is shown how photography can be a powerful tool to reveal the often invisible and intangible meanings that people attach to places.

Fourthly, through an in-depth qualitative study involving interviews, focus groups and participant observation the contribution of women to fishing communities is explored. The aim here is to highlight the often invisible contribution that women make so that this may be better accounted for in decision making.

Finally, through a programme of fishing heritage-led regeneration new pride and economic opportunities are brought to the historic fishing village of Arnemuiden in the Netherlands. In this case



example, the focus is on how fishing heritage can lead to a better future through instilling a sense of identity, pride and community-driven enterprise opportunities.

## PART 1: Deliberative and participatory methods to capture community shared values

This section provides an introduction to an innovative participatory and deliberative methodology developed as part of the GIFS project collaboration with the UK National Ecosystem Assessment follow-on (<http://www.lwec.org.uk/sharedvalues>). The method uses a combination of stakeholder workshop exercises to identify and evaluate shared values associated with the marine environment, particularly inshore fishing (e.g. a shared sense of place and identity). The focus within the Hastings case study was to understand these shared values within wider societal considerations such as economic development, education and employment. Such an approach is particularly relevant given the context of the European Commission focus on a more integrated approach to marine and coastal management, and the development of mechanisms for co-management within inshore fishing and marine conservation that integrate local and wider marine stakeholder/user values.

The purpose of deliberative and participatory methods is to help develop a holistic ecosystems approach to coastal management that takes better account of the complex inter-relationships and necessary trade-offs between social, economic, cultural and environmental objectives. Through this approach it is possible to:

- identify and document deeply held personal cultural values associated with the marine and coastal environment;
- identify shared community values;
- evaluate the relative financial value of co-developed policy goals through a process of group deliberation, negotiation and participation.

The combination of deliberative techniques (e.g. in-depth discussion) and analytical-deliberative techniques (e.g. participatory systems modeling) are particularly successful in eliciting group values and securing shared learning between the beneficiaries. A film discussing the workshop methods is available at: <http://www.lwec.org.uk/sharedvalues>. This workshop approach was applied through working in partnership with fishing community stakeholders (Hastings Fisheries Local Action Group and Hastings Fishermen's Protection Society) and the National Ecosystem Assessment Follow-On (NEAFO) project.

### Box 9: Key terms explained

**Shared values:** Values that people hold collectively for others, for their community and for the society they live in - from a local to global scale - and are often linked to the landscapes people live in or visit; they are distinct from individual values that we hold for ourselves.

**Deliberative methods/techniques:** These methods involve the process of deliberation and identification within the group of information needed, exchange of ideas through debate and dialogue and the evaluation of options. These range from quite simple deliberative techniques that include evidence gathering, exchange of information, evaluation and negotiation (e.g. this can be through in-depth discussion) to more structured analytical-deliberative techniques that involve greater inclusion of analytical tools (e.g. participatory modeling).

**Shared learning:** Social learning can occur through the process of deliberation as different people within society learn from one another through their interactions with each other.

**Multi-Criteria Analysis (MCA):** Techniques that involve groups of stakeholders designing formal criteria against which to judge the non-monetary (and sometimes) monetary costs and benefits of different management options as the basis for making a decision.

**Deliberative Monetary Valuation (DMV):** Techniques that use formal methods of group deliberation to come to a decision on monetary values for environmental change .

### What is the benefit of applying this method?

This approach provides policy-makers and community stakeholders with a series of group deliberation tools that can be used to value inshore fishing and the marine environment. This balance of exercises within the stakeholder workshop environment creates a model for other areas of policy planning where shared learning, consensus making, co-development of policy goals, and capture of intangible benefits is desirable. These exercises are particularly valuable for encouraging greater engagement locally with marine environment issues and eliciting views not often expressed.

**How to use this method:** Given the range of exercises and detailed steps used in this approach please see the UK National Ecosystems Assessment Follow-On (NEAFO) Report [[www.lwec.org/sharedvalues](http://www.lwec.org/sharedvalues)] for a full and detailed account of the Hastings workshops methods. Below is a brief overview of this method and its appropriate use for various scenarios.

**Step 1. Project scoping:** Relevant local themes are identified and participant sampling planning done in collaboration with community partners. By

ensuring a wide variety of participants from different sectors and marine/coastal user groups, with varying levels of interaction with the marine environment, workshop findings are more likely to reflect the diversity of views in the broader local community.

**Step 2. Recruitment of participants:** This involves communication of the research purpose and process to potential participants (time commitment, what they will be asked to do, expenses paid, how they can access the results etc.), and ethical considerations such as data protection and participant anonymity.

**Step 3. Workshop delivery:** In Hastings workshops were conducted over three consecutive half-day sessions and, in this study, all three workshops were attended by the same eleven fisheries and marine landscape related stakeholders (from the fishing industry, tourism sector, education sector, local council, marine regulatory bodies, local residents and recreational sector). Over the course of the three workshops participants worked through ten different exercises, most of which were deliberative and group based (see Figure 18).

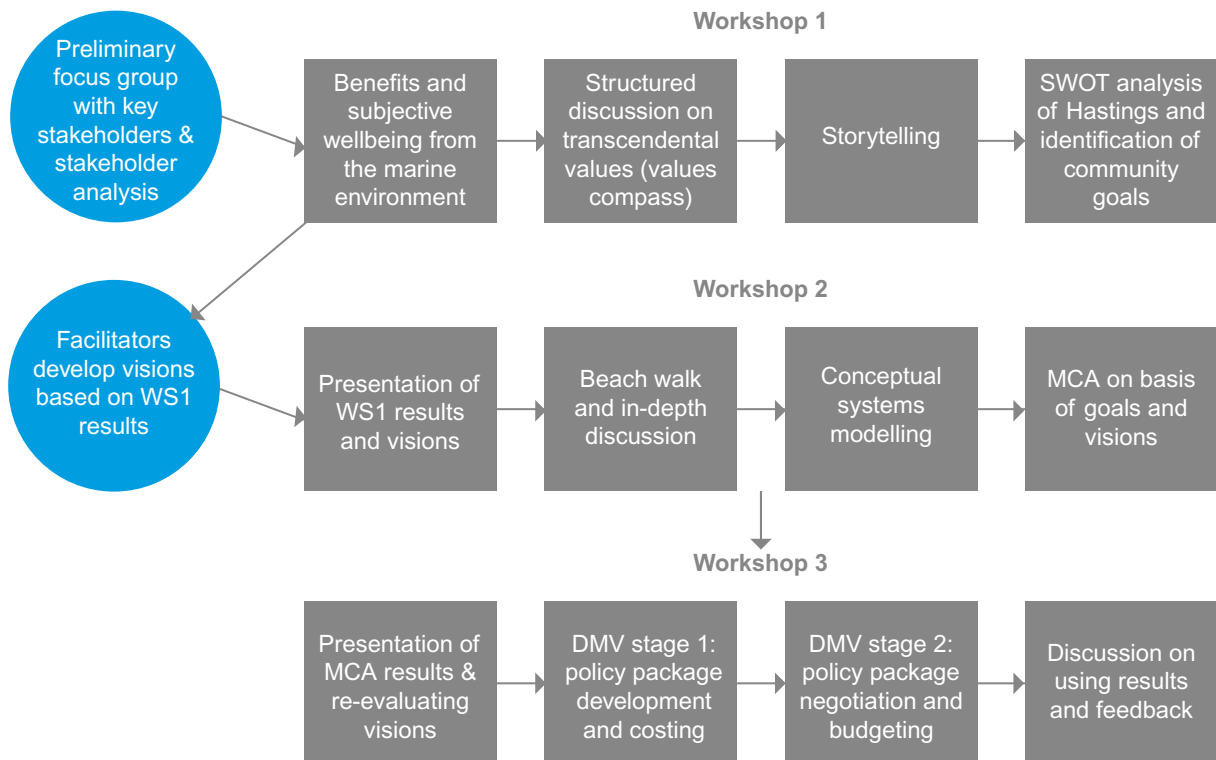


Figure 18: Outline of NEAFO Hastings workshops [8].



Photography: Hastings Fishermen's Protection Society

Exercises included:

- Informal deliberation and structured group discussions
- Shared story-telling and reflection
- Group SWOT (Strengths, Weaknesses, Opportunities & Threats) analysis
- Multi-criteria analysis (MCA)
- Group systems mapping/ participatory modeling
- Informal deliberation during group beach walks
- Deliberative Monetary Valuation (DMV) through participatory budgeting and policy package development

In the first workshop, initial personal and shared values were debated within the context of the different real-life contemporary and future challenges, drivers for change and the strengths, weaknesses, opportunities and threats (SWOT) a coastal community faces. The methods were used to enable participants to rank their values and goals in terms of their importance to the wider Hastings community. The combination of identifying values and the SWOT analysis was used as the foundation for alternative hypothetical visions of Hastings developed by the facilitators for use in the second workshop.

In workshop 2 four hypothetical visions of Hastings in 2030 were considered:

- an economy focused vision
- a culture focused vision
- an environment focused vision
- a business-as-usual vision

This allowed the participants to think about how they might secure and sustain their shared values and objectives in different policy scenarios.

In the final workshop the Deliberative Monetary Valuation costing exercise was completed through group negotiation of a final budget and agreed policy package.

## Considerations when using this method

**Time:** This is a time intensive method that requires the support and input from local stakeholders. This level of support and participation requires detailed scoping and preparation by the research team. Further, the complexity of a number of the exercises can be amplified by the timing available, therefore a less busy timetable would allow for any confusion to be resolved at a more considered pace.

**Facilitation:** The importance of strong facilitation is paramount throughout. For example, the Multi-criteria Analysis method is complex for some participants and requires intensive facilitation. Yet the balance of facilitation and overly directing the method can shape the dynamic of the exercise if not done sensitively. As with any exercise of a participatory and deliberative nature, the bias of strong personalities and existing social ties can inevitably shape the group dynamic along with the valuation process and results. This limitation can be mitigated by experienced facilitation of the groups and mixing up of the groups for different exercises.

**Analytical tip:** The representation of the qualitative values elicited during these exercises by the number of votes or times mentioned in a story must always be accompanied by a narrative to convey the complexity of the qualitative findings.

### Step 4: Analysis and write up of results:

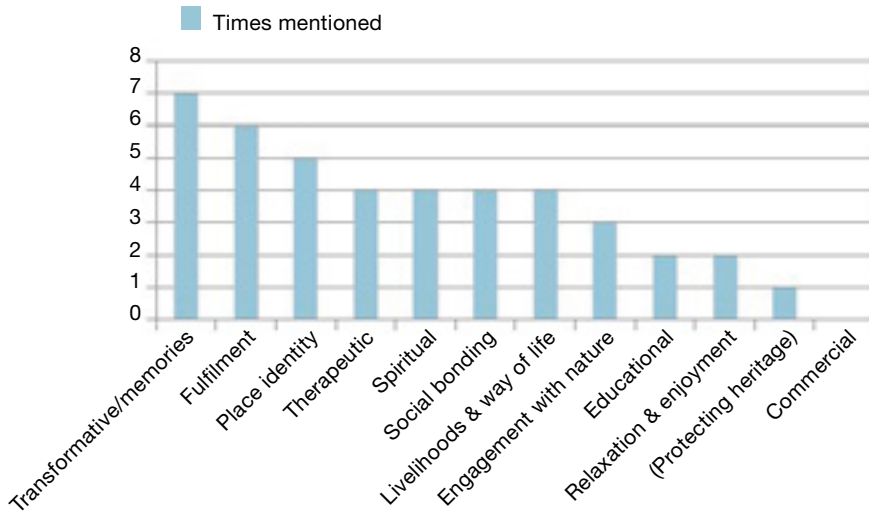
The workshops captured a range of qualitative and quantitative data that were analysed firstly by individual exercise (e.g. see Figures 19 to 21) and then drawn together to identify the overall key themes which fed into the final policy goals.



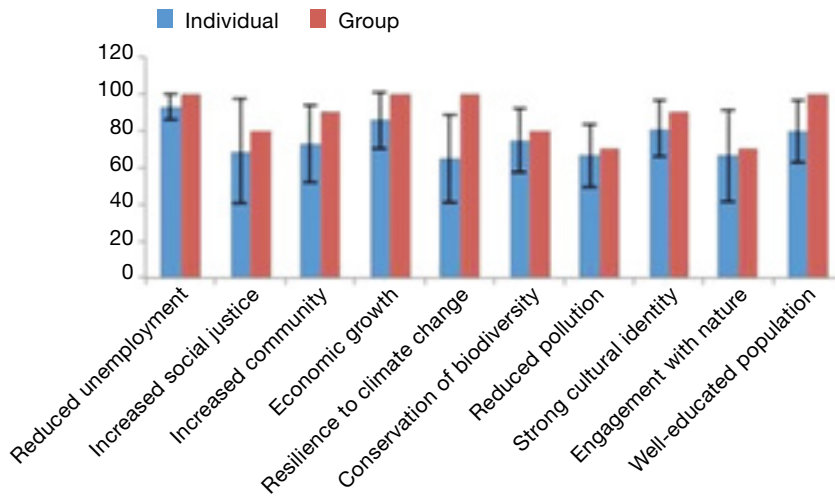
Photography: Vince Bevan

### What will this method help me to do?

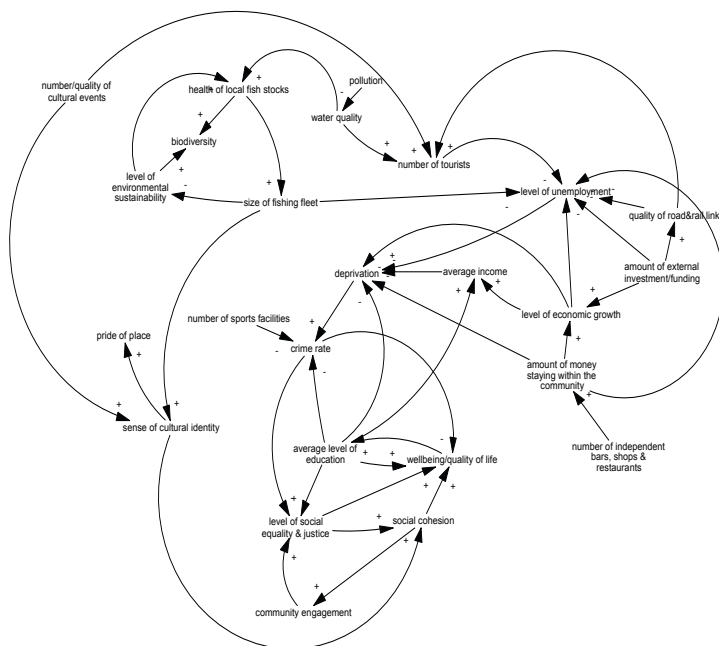
- The methodology introduces a decision-making tool to the participants that has the potential to contribute to an integrated approach to marine and coastal management by including local and wider marine stakeholder/user values.
- This method can be used to capture the shared cultural values (i.e. not individual values) that are held collectively by different users and stakeholders and rarely integrated into the marine planning process.
- The bringing together of participants that would not usually engage in marine planning and fisheries management from a variety of sectors can help identify under-represented policy needs and objectives.
- The methodology is useful for enabling greater consensus in policy development and budgeting as well as providing the opportunity for shared learning amongst participants. This is particularly useful in a policy context like inshore fishing that is fraught with complexity.



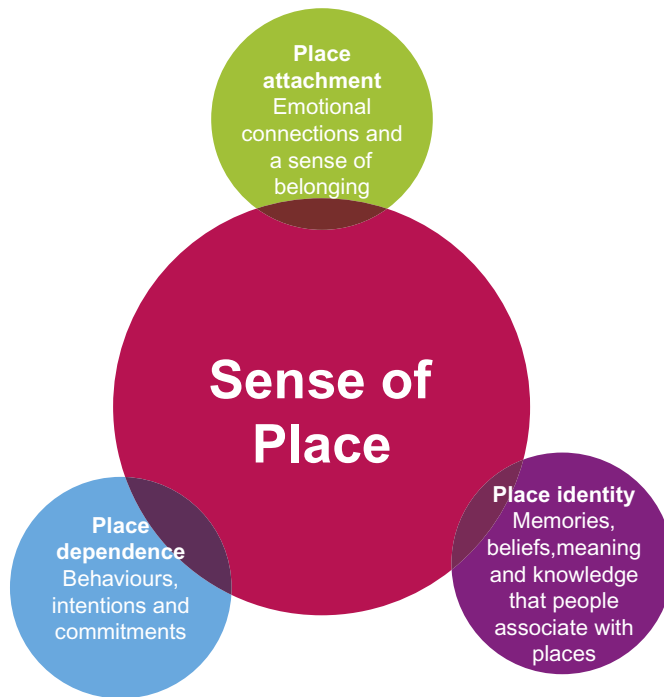
**Figure 19:** The benefits associated with the marine environment drawn from story-telling exercise [8].



**Figure 20:** Identified policy goals for Hastings: Light blue bars (left) show the average scores (0-100) given to the goals by individuals at the beginning of workshop 2. The red bars (right) show the score agreed by the whole group at the end of workshop 2. The black t-bar indicates the range in individual scores [8].



**Figure 21:** Example of a group system map from the participatory modelling exercise [8].



**Figure 22:** The various facets of sense of place.

## PART 2: Understanding the contribution of inshore fishing to residents' and tourists' sense of place

Sense of place is a term that is used in many different ways by different people. However, in essence it is about understanding the complex relationships that people form with the places around them. It is about how places make people feel, the meanings they associate with places and how they influence their behaviour. Sense of place encompasses a wide range of ideas but these can be broken down into three elements (see Figure 22):

- **place attachment** is concerned with the emotional attachments that people form with places and is often referred to as a sense of belonging or rootedness.
- **place identity** is associated with the meanings that people attribute to places and is associated with their experiences, memories and beliefs about a place. It also includes place character, in other words, the distinctive characteristics that are unique to a place.
- **place dependence** relates to behaviour and is associated with how well a place is suited to the needs or activity of an individual group. It is often associated with recreational activities and assessed using measures such as place satisfaction.

In previous work the University of Greenwich research team developed qualitative (non-numeric) approaches to understand the contribution of fisheries to sense of place in coastal towns . However, it became apparent that in addition to this rich 'qualitative' information, there was a need to develop a way of quantifying, or measuring, the socio-cultural value of inshore fishing so that it could be incorporated into policy and inform decision-making. In GIFS, therefore, questionnaire approaches were developed that could be used to generate numeric, statistically significant data that could be used alongside qualitative methods (such as those outlined in this chapter). In this regard, two questionnaires were developed to assess the extent to which fishing contributes to sense of place for both residents and tourists in coastal towns.



## METHOD 1: 'Sensing Fishing Places': Measuring residents' attachments to place

Drawing on work by Jorgensen and Stedman a questionnaire survey called 'Sensing Fishing Places' was developed to examine the role of inshore fishing in influencing how people feel about where they live, their sense of place and their community. The survey was targeted at three groups of people: (i) fishing stakeholders (e.g. fishers, fishing families, fish processors, fishmongers etc.); (ii) non-fishing stakeholders (e.g. tourism providers, heritage providers etc.) and (iii) residents in fishing towns/places.

### Step 1: Design an appropriate survey:

A questionnaire survey was designed to assess respondents' attitudes towards the three sense of place elements of place attachment, place identity and place dependence and the role of fishing. The survey was divided into 9 parts:

- Part 1** - Connection (or not) to fishing (e.g. direct: fisher, fish processor etc.; indirect: tourism, museum etc.).
- Part 2** - Fish and seafood consumption habits.
- Part 3** - Statements asking respondents how they feel about where they live.
- Part 4** - Statements regarding respondents' perceptions of the fishing industry.
- Part 5** - Statements relating to the role of fishing for tourism and questions on tourist activities undertaken.
- Part 6** - Statements relating to the role of fishing for cultural heritage.
- Part 7** - Statements regarding the role of fishing for community cohesion.
- Part 8** - Statements regarding respondents' views about the future of fishing.
- Part 9** - Demographic questions in order to profile respondents

Photography: Vince Bevan

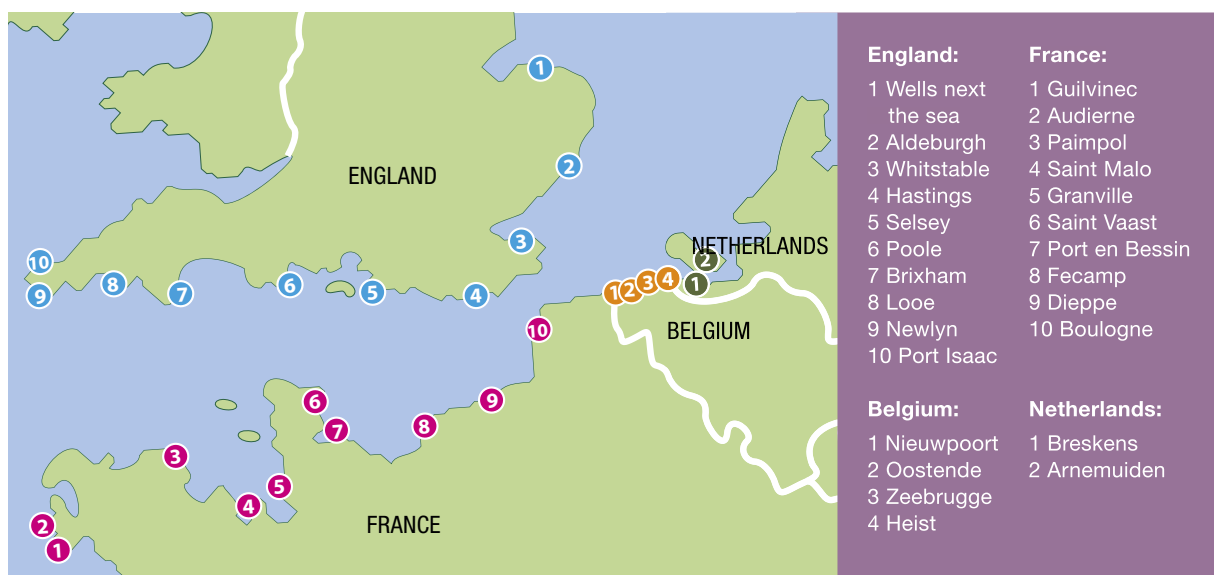


In Parts 3-8, banks of multiple questions were used (Box 10) and participants were asked to indicate the extent to which they agree or disagree with the statements with the option of five responses (strongly agree, agree, no opinion, disagree, strongly disagree). Overall scores were obtained by summing the Likert items for each set of statements.

**Step 2: Administering the survey:** An important consideration when designing and administering surveys is how representative the sample is of the total population under study. Dillman's Tailored Design Method (TDM) [15] provides an approach for maximising response rates and reducing survey error. TDM is based on the principles of social exchange theory regarding why people do or do not respond to surveys. Responding to a survey is a social interaction in which the respondent must perceive that the potential benefits of responding outweigh the costs. When they perceive the costs (time and effort) of responding to a survey outweigh the potential benefits (usefulness of the survey and their involvement) they do not respond. Thus, the survey, the covering letter and subsequent contacts need to clearly indicate what benefits (reward) the respondent will get from participating, what it will cost them (i.e. time) and show how the benefits will outweigh the costs. The TDM also aims to reduce non-response error by undertaking multiple contacts with respondents in order to ensure a satisfactory response rate.

**Step 3: Deploying the survey:** The 'Sensing Fishing Places' survey was deployed using an online survey (hosted by Bristol Online Surveys), face to face surveys and a postal survey in case study locations in England, France, the Netherlands and Belgium (see Figure 23). A random sample of 200 residents was selected for each location. In England, the sample was obtained via the edited electoral register, in France it was via Pages Blanche and in Belgium it was via bpost group, the Belgian postal company. The survey was administered face to face in the Netherlands as it was not possible to obtain a sample of names and addresses for a postal survey. In addition to the initial mailing of the questionnaire survey and cover letter, a follow up postcard reminder was sent two weeks later. The final dataset consisted of 1,702 responses (391 from Belgium, 716 from England, 342 from France and 253 from the Netherlands).

**Step 4: Analysis of the survey:** Statistical analysis was undertaken using SPSS Statistics software (version 21). Some of the results are presented in this Toolkit as an indication of the type of findings that can be achieved using this method. The approach can be applied at a range of spatial scales, from national to regional to local. The national results are presented here to allow for cross-country comparison, but more regional results, along with a detailed description of our approach can be found on the GIFS wiki (<http://www.gifsproject.eu/wiki/>).



**Figure 23:** Case study locations for deployment of survey to residents.





## Box 10: Likert Scale explained

A Likert scale is a psychometric scale used by researchers to elicit people's attitudes or points of view in a questionnaire survey. When participants respond to a single Likert question they are asked to express their views on a scale (rather than yes / no answers). For instance a Likert question might ask a respondent to agree or disagree with a statement:

### The environment is very fragile

- |                   |                          |
|-------------------|--------------------------|
| Strongly Agree    | <input type="checkbox"/> |
| Agree             | <input type="checkbox"/> |
| No opinion        | <input type="checkbox"/> |
| Disagree          | <input type="checkbox"/> |
| Strongly Disagree | <input type="checkbox"/> |

It is quite common for researchers to use multiple questions (known as Likert items) organised as a bank of questions that all explore a similar idea but from different viewpoints. This allows a more sensitive approach to information gathering than using single questions alone. This multiple question approach was used in the survey. The technique is a powerful way to elicit the views of respondents as scales can be created by summing the responses over multiple questions and then used in statistical analyses.

## Considerations when using this method

Questionnaire surveys are an established method for social research. They enable much information to be collected from a large number of people in a short period of time. Surveys can be quantified and statistically analysed, providing objective results which can be used to compare and contrast different geographic areas or groups of people. Surveys can be deployed using a range of methods, including by post, online, telephone or face-to-face (Box 11).

However, questionnaire surveys do have their limitations that need to be recognised. It is difficult to know how truthful respondents are being with their answers or they may interpret questions differently (introducing a level of subjectivity). Further, researchers may not be aware of all the salient issues when designing the survey and so omit important elements. In order to overcome this, pilot or scoping interviews can be helpful, where time and resources allow.



### What will this method help me to do?

- Assess the contribution of fishing to sense of place.
- Compare the contribution of fishing to sense of place in different countries or regions.
- Understand how people living and working in coastal communities feel about their fishing industry.

## Box 11: Survey deployment considerations

Each approach has cost and time considerations that must be factored in when planning a survey.

**Post:** This is often the most expensive option as it entails postal charges, staff time to prepare mailings, survey printing and stationery costs. There may be additional costs if mailing lists need to be purchased. Response rates tend to be lower than with online or telephone surveys but they are very useful when a large-scale randomly selected survey is required.

**Online:** Increasingly popular as inexpensive and time efficient. There may be a cost for the online survey tool, but many are free. Although staff time is required to set up and promote the survey, deployment is automated and data can be downloaded directly avoiding the need for manual data input. However, certain sectors of a population that do not have internet access may be omitted and it can be difficult to undertake random sampling.

**Telephone:** The advantage of telephone surveys is that responses can be gathered fairly quickly in comparison to postal surveys. The researcher can also explain the questions to respondents if necessary. However, surveys must be short (no more than 15 minutes) and avoid the use of complex questions.

**Face to face:** Tend to provide the most representative results [5] as they are flexible and adaptable involving direct personal contact with the respondents. However, costs can be high including survey printing and staff time to travel to survey locations and time to undertake face-to-face surveying. Other issues include interviewee bias and pressure on respondents.

# Case study

## Comparing the contribution of fishing to sense of place in England, France, Belgium and the Netherlands

Respondents from all four countries expressed a strong sense of place with respect to their emotional connections, meanings and behaviours associated with where they live or work (Figure 24). However, there were some significant differences between the countries with respondents from England and Belgium demonstrating the strongest sense of belonging and emotional attachment to the place (place attachment). Respondents from England further demonstrated strong feelings towards the suitability of the place for doing the things they most enjoy (place dependence).

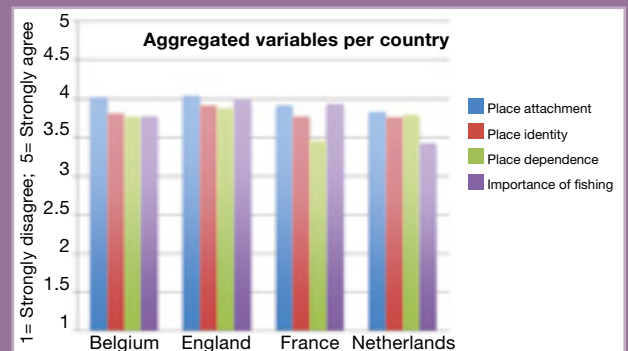
Respondents in all four countries indicated that fishing is important for creating a sense of place. However, there was a significant difference between the countries in terms of the importance of fishing, with respondents in England demonstrating a stronger emotional connection to fisheries and sense of belonging (place attachment) compared to the other countries.

In addition, Likert scales were also included to assess respondents' attitudes towards the importance of fishing specifically for tourism, heritage, community cohesion and the importance of maintaining an active fishing industry in the future (Figure 25). There were some differences between the countries on these attitude scales with respondents who felt that fishing makes an important contribution to tourism more likely to come from England, followed by France. Similarly, respondents from England and Belgium were also more likely to indicate that fishing is an important contributor to cultural heritage and that preserving a future for fishing is important. It is also notable that respondents from the Netherlands did not express as strong positive perceptions of fishing as those from the other three countries.

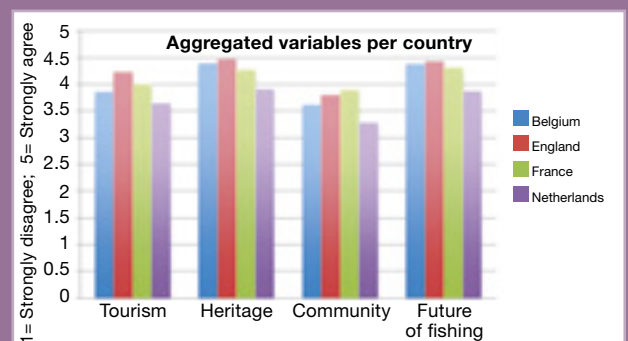
As these summary results from the survey suggest, despite diversity in structure and activity of fishing fleets, residents and stakeholders in fishing communities on both sides of the English Channel and Southern North Sea have a strong sense of place, which is influenced, in part, by the fishing industry. It is clear that, for the majority of respondents, fishing is not just an economic activity

providing fish as food and livelihoods for those working in the industry, it also provides an important social and cultural role by contributing to a sense of place shaped by both contemporary fishing practice and a rich cultural heritage based on fishing activity. This is important both for community cohesion and identity for those who live and work in fishing places, but it also contributes to the tourism offer in these coastal places (which in turn has an economic value).

The full results of the survey can be found in the final report [16], together with a copy of the full questionnaire survey and more detail about how the method was applied.



**Figure 24:** Contribution of fishing to place attachment, identity, dependence and the importance of fishing (summed Likert scale means). Higher scores (i.e. 3.5 and above) can be interpreted as respondents more strongly agreeing with statements.



**Figure 25:** Contribution of fishing to tourism, heritage, community and perceptions about the future of fishing (summed Likert scale means). Higher scores (i.e. 3.5 and above) can be interpreted as respondents more strongly agreeing with statements.



## METHOD 2: Assessing the role of fishing for tourists' sense of place

As well as understanding how fishing contributes to sense of place for those who live and work in fishing communities, it is also important to understand if and how having an active fishing industry impacts on the experience and sense of place of visitors. Chapter 4 of the Toolkit outlines two economic approaches, using stated preferences and Choice Experiment, to assess the contribution of fishing to tourism. Here a face-to-face questionnaire survey is used to specifically assess the relationship that exists between inshore fishing and a location's character or sense of place, and how these relationships affect tourism in the area.

**Step 1: Design of questionnaire:** The questionnaire was designed with primarily 'closed' questions (i.e. the question has a restricted range of possible answers) aimed at exploring people's motivations for visiting a particular site and the contribution that the presence of a fishing fleet made to their tourism experience. In this case, closed questions were preferred to 'open' questions (i.e. when the respondent is asked to describe their response to a question in their own words) in order to allow the data to be statistically analysed. In addition, closed questions are also faster to complete, which is an important consideration for

## Considerations when using this method

- When surveying tourists, the time of year is an important consideration. For example, surveying during the school summer holidays is likely to result in a different sample of tourists than surveying in the autumn.
- It is important to undertake the survey in a range of locations within one case study in order to include tourists that may be present for a range of activities. For instance, if tourists were only surveyed along the fishing quay, there would be a bias towards capturing the responses from tourists who are interested in watching the fishing boats.
- Ensure that the time taken to complete the survey is less than 5 minutes for intercept surveys, otherwise participants will lose interest and may not complete the survey.

face-to-face intercept surveys with the general public. Questions were in the form of Likert scale questions (see Box 10 on page 71), looking at levels of agreement or importance and pre-coded tick boxes for the appropriate answer.

**Step 2: Deployment of survey:** The survey was deployed in six case study areas in England, France and Belgium (see Figure 26). In order to capture a variety of different tourist types and interest, the survey was undertaken in a range of locations such as the harbour, beach and shopping areas. The survey was mainly administered by the interviewer-completion method, which involves the researcher asking the respondent the questions and noting their responses on the questionnaire survey. Although this approach is a more time intensive option than asking the respondents to fill out the survey form

themselves, it has a higher accuracy rate as the possibility of incomplete returns is minimised.

In order to capture a wide range of tourist types, the data collection for this research were conducted from June to September 2013. The resulting dataset consisted of 451 completed questionnaires.

**Step 3: Analysis of survey:** Statistical analysis was undertaken using SPSS software. An example of the findings that can be achieved with this method can be found in the Oostduinkerke case study on page 76.



### What will this method help me to do?

- To assess if and how fishing contributes to tourists' sense of place.
- To compare the contribution of fishing as an attraction for tourism in differing coastal towns.

**Figure 26:** Location of case study sites

Photography: Vince Bevan

# Case study

## Tourism and shrimp fishing on horseback in Oostduinkerke, Belgium



Photography: Vince Bevan

Oostduinkerke is a coastal town in the West Flanders region of Belgium. It is a popular seaside tourist destination, being part of the extensive sandy shoreline of the Flanders coast, but it is also well known for its 'Paardenvissers', the horseback shrimp fishermen. Historically, this fishing method was employed all along the coast from Northern France, through Belgium and into the Netherlands, and also in many parts of England. Nowadays however, Oostduinkerke is the only place in the world where it still takes place and in 2013 it was awarded UNESCO World Heritage status for its unique intangible cultural heritage.

The shrimp fishing is carried out by trained horses who, directed by their riders, pull a small trawl net behind them. Due to the amount of power required to pull the nets through the sand and the water current, as well as the need for a calm character, the horses used are Brabants; a traditional Belgium draft horse which weighs around 1000 kg (1 ton). This subsistence fishing has never been carried out commercially, but its practice is closely woven into the identity of Oostduinkerke and its residents.

The tourism questionnaire survey (see method outline on pages 74-75) was carried out with 105 visitors, asking them about their reasons for choosing Oostduinkerke, their opinions on the town as a tourist destination and their attitudes towards the Paardenvissers and the fishing industries.

The results of the tourist questionnaire indicate that most visitors have an interest in the horseback fishing, with 69% of visitors agreeing with the statement *"I came here to see the Paardenvissers"*. Indeed, the data suggests that for some visitors it

was a major factor in deciding to visit the area, as 12% of visitors would not have visited Oostduinkerke if the shrimp fishermen had not been present. Visitors also had an appreciation of the role the fishing activity plays in the identity and character of the town, with 78% of visitors agreeing with the statement *"When I think of this place I think of the Paardenvissers"* and 91% of visitors agreeing that *"Having the fishing horses, gear and other fishing equipment on the beach really adds to the character of this place"*. There was also acknowledgement of the impact the loss of the Paardenvissers would have on the town, with 87% of visitors agreeing that *"The loss of the Paardenvissers would have a negative effect on the identity of this place"*. The statement that produced the most unanimous response was *"It is important to preserve the horseback shrimp fishing here"*. 93% of respondents agreed with this statement, but it is interesting to note that none of the 105 visitors selected 'Disagree' or 'Strongly disagree'. This provides a strong indication of the high level of support for the Paardenvissers by the visiting public.

### PART 3: Exploring the cultural meanings of inshore fishing through photography

The familiar quote “A picture paints a thousand words”, first coined by Frederick R. Barnard in 1921, might be a cliché, but the sentiment that pictures can often convey a meaning in a way that is sometimes difficult with words is still relevant. Images create a visual representation of intangible meanings that are often difficult to express in words. Photography can be a powerful tool to help explore and disseminate the cultural importance of fishing. Images communicate things in a different way to text or numbers [17]. Used in combination with other approaches, photography can provide a way to help visualise and value the often intangible contribution that inshore fishing can make to places.

Photography can be employed both as a research tool and as a method of dissemination, especially in the context of policy and practice. As a research tool photography is not just providing a visual record of an object, person or place, it can also help to bring particular meanings into view that might otherwise be hidden or difficult to articulate. Photography has a long history in academic disciplines such as visual anthropology [18], visual ethnography [19] and visual sociology [20]. It can be used to help gather facts or record observations during field visits or it can be embedded explicitly into the research design and analysis in order to make visible intangible meanings and perceptions of the world through methodologies such as photo elicitation. In the past photography has been used in social research as a tool that ‘reflects’ rather than ‘interprets’ reality (known as a ‘realist’ approach). Today, however, more emphasis is placed on the meanings attached to pictures that can be explored through various photo elicitation techniques. In addition to being a research tool photographs have an important role in the communication and dissemination of results, issues and meanings associated with research projects.

This section of the Toolkit sets out a combination of approaches that were used in GIFS to demonstrate the role of photography as both a research tool, but also as a way of communication and raising awareness about a particular issue.



## METHOD 1: The 'People, Place and Fish' Photo Project

As part of GIFS, a photo project called 'People, Place and Fish' was run in order to explore the use of three different types of photography:

- researcher photography to visualise the relationship between cultural ecosystem services and inshore fishing in coastal places
- those living and working in fishing communities were asked to take photos that captured what fishing means to them
- a professional photo-journalist was commissioned to create a collection of images that captured the diverse landscapes and activities of fishing across the 2 Seas region

Photography is not just providing a visual record of an object, person or place, it can also help to bring particular meanings into view that might otherwise be hidden or difficult to articulate.

### Researcher and community photography

In order to engage and begin a conversation with local communities, a series of community exhibitions were held across the GIFS study area. These exhibitions were based on photographs taken primarily by two key researchers in a range of different fishing communities. The photographs were used to depict the range of different ways that inshore fishing contributes to place-making in coastal communities. The photographs were organised under themes taken from the Millennium Ecosystem Assessment idea of cultural ecosystem services and includes categories relating to aesthetic values, cultural identity, education and knowledge, heritage values, inspiration, social relations, spiritual and religious values and tourism and recreation. In linking the photographs of inshore fishing with the categories of cultural ecosystem services it was possible to demonstrate how fisheries can exert an impact on towns in ways that sometimes go unnoticed by the general public. For instance, the depiction of fishing through street signs and furniture, or the decoration of buildings that contributes to



place making. The photography exhibition proved to be a powerful way to explore these often hidden or intangible impacts of fishing on places.

However, the researcher photography was being used in a 'realist' way to document the existence of objects, buildings and signs associated with marine fishing. To begin to understand the meanings that people associate with inshore fishing, local communities were asked to contribute photographs to the exhibition together with a short accompanying text to describe the importance of the images to them.

### Professional photography

A professional photo-journalist was commissioned to take photographs in a range of different coastal towns in England, France, Belgium and the Netherlands. The aim was, through the eyes of a





Photography: Vince Bevan

**Figure 27:** Exhibition in Oostende, Belgium.

professional photographer, to capture the diversity of landscapes and environments in which fishing activity takes place in order to raise awareness of the rich cultural value associated with fishing, but also to create a 'snapshot in time' of fishing activity in the English Channel and Southern North Sea in the early 21<sup>st</sup> century. The power of visual representation should not be underestimated and the intention was to create a visual archive of images that would be arresting and cause people to reflect on the issues that were being depicted. In this case photographs were not being used to categorise impacts or convey particular messages from community members, rather a creative approach was taken where the main

### What will this method help me to do?

- Photography can be used to help people understand interconnections and relationships that might otherwise remain hidden.
- Photography can be used to explore the meanings people associate with places (e.g. photo elicitation techniques).
- Photography can be used to create stunning, visually arresting images that cause people to take notice and reflect on the issues being considered.



Photography: Vince Bevan

**Figure 28:** Exhibition at the National Maritime Museum, Falmouth.

criteria for judgment was the creation of a stunning image that would capture people's attention. In adopting this approach there was much discussion about not presenting an overly 'romantic' depiction of a dangerous and life threatening industry.

Final exhibitions of the professional images were held to raise awareness of the diverse and varied landscapes of fishing that exists around the English Channel and Southern North Sea. The images are available online at <http://gallery.gifsproject.eu/en>.

### Considerations when using this method

These approaches illustrate how people see the world differently through the camera lens. Photographs can bring into view a range of objects and issues that can perhaps easily go unnoticed in the hectic blur of everyday life. Capturing an image stores a moment in time that can be contemplated and reflected on by a range of different people. Indeed, the process of photography is shaping the world being viewed (both for the photographer and people viewing the photographs). Photography is both revealing a world but at the same time is bringing a world into being. This is important in policy and decision-making as people will only value what they consider important.



## METHOD 2: Exploring the cultural values of inshore fishing through photo elicitation

Photo-elicitation is an approach that can be used to understand the relationships that people form with places. In this study, a recognised form of photo-elicitation known as Photo Elicitation Interview (PEI) was used to explore the role of inshore fishing in shaping those relationships. This method is based on a semi-structured face-to-face interview with the participant, where photographs are used to facilitate discussion. This can take many forms, such as asking participants for their initial reactions on seeing the photographs, using the photographs as a prompt for a particular research area, or obtaining views on how the subject has been represented within the photograph. It is important to note that the photographs are used as a way of enhancing the interview process; the photographs in themselves are not the sole method of data collection. However, they can evoke deeper reflections or meaning than spoken words alone may achieve.

In the GIFS project, the 'researcher-photographer' model of photo-elicitation was adopted, whereby

### Considerations when using this method

Considerations when using this method This type of method is quite time intensive as it involves spending periods of time in the case study sites both collecting the photographs to be used during the interviews, and conducting the interviews themselves. Transcribing interview data can also take a considerable amount of time (depending on the quality of the recording and the typing speed of the researcher, it can take 4 to 5 hours to transcribe 1 hour of recorded interview). There are options to only complete a partial transcription of the data in order to speed the process up, however, this does result in data loss that may or may not be significant depending on the nature of the study.

the researcher takes photographs they anticipate will capture the issues surrounding their research questions. Being in control of the photographs

used during the interviews allows the researcher to guide the participant and concentrate on discussions relevant to the research. Researcher-taken photographs may also capture aspects that the participant may not have considered, e.g. a view they have grown up with which may be 'taken-for-granted' [21].

### **Step 1: Case study location and participant selection:**

The first step is to select the case study locations and participants to take part in the study. In this case, six sites were selected, four in England, one in France and one in Belgium (see Figure 26 on page 75). A target of ten participants per case study location was considered a suitable number, as in qualitative studies the results provide an in-depth understanding of a small number of participants that is illustrative, rather than representative, of a broader population. The number of individual participants varied according to location, availability and willingness to participate. Interviewees ranged from active fishers to local residents with no fishing links at all. Also interviewed were members of the coastguard, local and parish councils, tourism activity providers, fish wholesalers, RNLI (Royal National Lifeboat Institution), maritime retail industries, tourist accommodation providers, inshore fishing enforcement and support organisations, restaurant owners, members of community groups and also independent residents. A total of 66 people contributed to these discussions, which were well received within the communities studied.

**Step 2: Taking the photographs:** Once the case study sites have been identified, the researcher must take the required photographs to be used during the interview process. In this case, the photographs were based around the six themes identified in the Millennium Ecosystem Assessment [3] as 'cultural services':

- Cultural identity: the current cultural linkage between humans and their environment.
- Heritage values: 'memories' in the landscape from past cultural ties.
- Spiritual services: sacred, religious, or other forms of spiritual inspiration derived from ecosystems.
- Inspiration: the use of natural motives or artefacts in arts, folklore, and so on.
- Aesthetic appreciation: of natural and cultivated landscapes.
- Recreation and tourism: the use of natural and cultivated landscapes for pleasure.

In order to be relevant and engaging for the participant, a unique set of photographs was taken for each of the case study locations, but each set captured in some way the themes listed above.

### **Step 3: Developing the interview guide:**

Prior to conducting the semi-structured interviews, an interview 'guide' should be developed. The guide outlines the main themes or topics that the researcher wishes to cover in the interview rather than consisting of a set of specific questions. This enables the interviewer the freedom to change some elements in different interviews, such as the wording of the questions or the order in which the photographs are presented. As semi-structured interviews often feel more 'conversational' than structured interviews, they also offer opportunities to explore relevant topics that the researcher may not have thought of, but which come up in the discussion. All the interviews were recorded (with the participants' permission).

**Step 4: Analysis of interviews:** Once the interview recordings have been transcribed they are analysed thematically (see Box 6 on thematic analysis on page 34). In this case, the qualitative analysis software program, NVivo, was used to aid the organisation of the data during the process of thematic coding.

An example of the type of results that can be achieved with this method can be found within the Oostduinkerke case study on pages 82-83.

### **What will this method help me to do?**

- To assess the cultural services that people gain from the presence of fishing activity.
- To use photographs as a tool for engaging people in a discussion about how they feel about where they live and work.

# Case study

## Exploring cultural values in Oostduinkerke, Belgium

Through a photo elicitation approach in Oostduinkerke (see page 76 for a description of the case study site) the cultural values of residents were explored. The results indicated that inshore fishing activity is recognised by all the participants as having a key role in the cultural identity of Oostduinkerke and its residents; as well as making valuable contributions to heritage, spiritual services, inspiration, aesthetics, recreation and tourism. Residents often spoke with great pride about a deep, emotional attachment to the sea and the Paardenvissers (horseback shrimp fishermen), illustrating how important the fishing activity is to the town and the community. A snapshot of some of the findings that this sort of method can produce is given below.

### Cultural identity

The importance of the Paardenvissers for the cultural identity of the town and its residents was clear from all the participants. They spoke of personal and communal pride in the fishing activity: "I'm very proud of the shrimp fishermen.... the whole community is very proud of their fishermen. The community was built by fishermen" and how the Paardenvissers are almost like celebrities within the community "...a lot of people know the names of the horseback fishermen even though they don't know them personally". Two participants picked up on the representational links between the place name and the activity and how the fishing has almost become a brand for the town: "When we ask people: 'Do you know Oostduinkerke?' they say, 'Yes, because of the Horse Shrimp Fishermen'" and "Whenever you mention the name Oostduinkerke you inevitably end



Photography: Vince Bevan

up talking about the horseback shrimp fishermen". Many participants also conveyed a deep emotional bond to the activity and described it as a living, organic part of the town: "It's something that is important that I want to cherish and safeguard... it's the beating heart of Oostduinkerke" and "...it lives among the people".

### Heritage values

All the participants indicated that they felt the heritage and the history of the horseback fishing was very important to the town, with many citing the role of heritage as being a way to influence the future: "In order to have a future for the fishermen we have to look at the past, and learn from it". Others noted the heritage as a way to "...remember where we come from", whilst one participant discussed the need to maintain tradition because of the uniqueness of the Paardenvissers' work: "This way of fishing is a big tradition."

## Spiritual services

The participants showed a deep connection to the Paardenvissers, and this was reflected in the many comments that related to the spiritual services obtained from the fishing activity. On the subject of the Paardenvissers themselves, many spoke of escapism and the relaxing effects of being on and around the working horses: "The big horse... is easier and more comfortable to sit on, but somebody who's not used to dealing with horses wouldn't be able to do it, though. For me it's very relaxing - the most beautiful thing to do" and "I am in my own world in the water - I love it!" Some spoke of the enthusiasm that surrounds the activity and how the passion of the fishermen is transferred into the community: "These are people that spend their entire time at the beach - they feel very connected to the sea and the fishing on horseback is a passion of theirs. They want to be connected to the sea on a daily basis. They are people who cannot live without the sea."

## Inspiration

The Paardenvissers have a long history of inspiring artistic representations and one resident spoke at length on the varied range of art, statues, photographs and paintings of the horseback

fishermen. They explained with great pride and passion how the Belgian coast was 'discovered' by landscape painters in the early 20th century, who came to Oostduinkerke specifically to paint the Paardenvissers at work. Many paid for their food and board with sketches and paintings, and several works by well-known artists are still in the protective possession of Oostduinkerke families.

## Recreation and tourism

The influence and importance of the Paardenvissers to the town's tourism economy was acknowledged and well understood by all the residents involved in this study. Some commented on the basic relationship between the two: "This shrimp fishing is also 'touristically' and economically very important, since a lot of people come to watch them", while others reflected on how they have perceived the balance switching over the years: "The fishing used to be more important than tourism, but now tourism has become more important than the fishermen". One resident explained that the tourist economy is so reliant on the Paardenvissers that the local council subsidises the fishermen in order to keep the visitor numbers up: "...from May till October there are no shrimps to be caught, and yet the Horse Shrimp Fishermen go into the water to fish - solely for the benefit of the tourists."

## PART 4: Assessing women's contribution to social cohesion in inshore fishing communities

Social cohesion has become an important theme in social policy. The United Nations believes that social cohesion is the glue that holds society together. In fisheries, women play a wide range of roles, making significant contributions to the fishing industry and the fishing community. However, the existing knowledge about women in today's European fisheries is inadequate and this has implications for policy and practice. In the European Union, it is a shared view that the role of women in fisheries has remained largely unrecognised or under-recognised [22].

Therefore, the GIFS project aimed to gain insights into women's role and contribution in European fisheries by trying to answer two fundamental questions:

- What are the roles played by women in fisheries in Europe today?
- How do these roles contribute to the cohesion of the fishing communities in this region?

Findings from the research indicate that women's participation in fisheries is strong and their activities as individuals and/or in groups contribute significantly to social cohesion, essentially the 'gluing' of the families and communities together in the coastal towns and villages. The method outlined sets out an approach for revealing the role of women in fishing communities, and could be adapted for a range of scales, from a local community to a wider national study.

**Step 1: Literature review:** The study started with an extensive literature review. This review covered a wide range of publications focusing on two main subject areas: women in fisheries and social cohesion. This process informed the research team of the existing knowledge on these two key

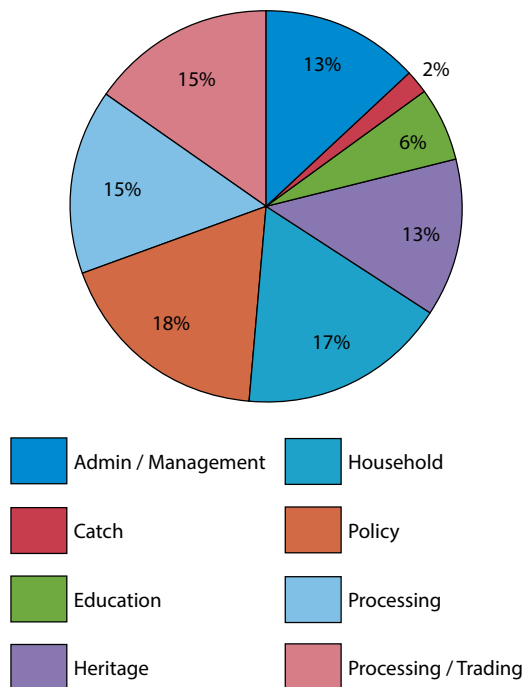
aspects and helped develop the general research questions (as noted above) and the approach to fieldwork

**Step 2: Deciding the approach:** A qualitative approach was adopted for gathering primary data and semi-structured interviews were employed as the main method for learning about the feelings and experiences of women associated with their roles and contributions in fisheries. In addition, focus groups and participant observation were also used in data collection in the towns and villages visited.

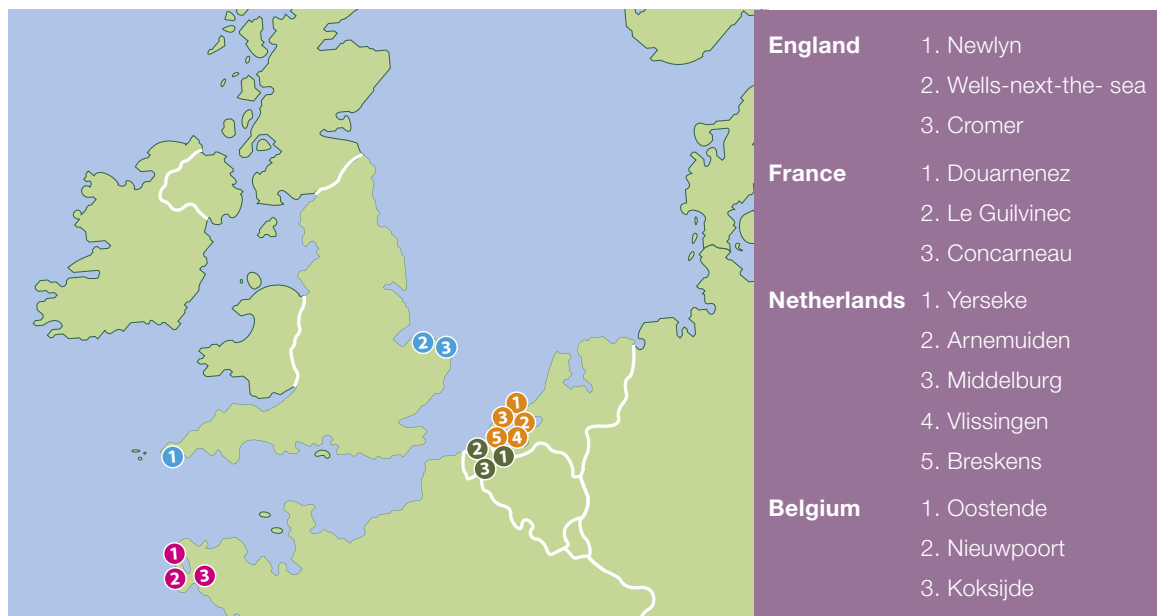
**Step 3: Selection of site locations and participants:** Fieldwork was conducted in fourteen coastal towns across England, France, Belgium and the Netherlands (see Figure 29). These sites were selected because of their historical and contemporary links with the fishing industry but also because of practical considerations, especially the availability of key resources such as local knowledge, contacts, language and accessibility.

A total of 105 interviews were carried out in the four countries (England: 29; France: 29; Belgium: 14; Netherlands: 33) in 2012 and 2013. Most (78%) of the interviewees were women but a number of men also participated in the study as partners, co-workers or managers of women. Women who were interviewed were from various sectors of the fishing industry such as catch, trade, processing, administration/management etc., as shown in Figure 30.

Activities of Women Interviewed (total number = 105)



**Figure 30:** Distribution of women interviewed for the research by activities.



**Figure 29:** Case study sites for women in fisheries fieldwork.



**Figure 31:** A case where an individual interview ended as a group interview, Arnemuiden, 2013.

**Step 4: Gathering primary data – interviews and focus groups:**

The majority of the interviews were semi-structured. The research team found this method was particularly effective to “view the events and the social world through the eyes of the people being studied” (pg. 399) [23]. In line with the open nature of this form of interview, the research team did not prepare specific questions but used an interview ‘guide’ (see Box 5 on page 34). This allowed for some flexibility in both the interview topics but also the format of the interview. For example, during the interview with a fisherman’s wife at her home in a fishing village in Arnemuiden (Netherlands), this woman’s husband returned home and then their daughter arrived (Figure 31) so in this case the individual interview ended up as a group interview.

In addition to interviews, the research team also used focus groups. Focus groups are able to capture how individuals in a group setting respond to each other’s views and build up a shared view out of the interactions that take place within the group. For example, in Arnemuiden, the research team conducted a focus group with the Women’s Think Tank with the help of local GIFS partners (see details about the Women’s Think Tank on page 90 in Part 5). This method helped the team gain knowledge about the organisation and operation of this women’s network at the grassroots level and an insight as to how women helped ‘glue’ the family and the community together as a result of their activities in the village.

**Step 5: Gathering additional information – participant observation:** In order to supplement the interviews, ‘participant observation’ or ‘micro-



**Figure 32:** Interview with a fishing family in Arnemuiden, 2012.

ethnography’ was also used as a research method during the research team’s study of a group of fishermen’s wives in England.

Ethnographic research usually entails a long period of time in the field in an organisation, as part of the community, or in the company of a group. Nevertheless, it may be possible to carry out a form of micro-ethnography. This involves focusing on a particular aspect of a topic and a short period of time can be spent in the organisation or group involved [24].

In this study, the research team managed to gain access to the Fishwives Choir primarily by winning the trust of the leading woman, who was the gatekeeper. Initially, two researchers spent two

### Fishwives Choir

This group of women was formed following the tragic loss of a woman’s fisherman husband at sea in 2008. This woman received practical and emotional support from the Fishermen’s Mission when her family was suffering from hardship, despair and tragedy.

In order to ‘repay the Mission’s kindness’ she set up an organisation called the Fishwives Choir. Using the social networking sites, Facebook and Twitter, she set about spreading the word of the choir and was soon in touch with women all over the UK who were related to fishermen, working in the commercial fishing industry or from fishing families [2].



Photography: Minghua Zhao & Esther Copete Murillo

**Figure 33:** Researchers participating in choir rehearsal with a group of fishermen's wives, Hastings, April 2013.

days 'hanging around' with the group when the women gathered in Hastings rehearsing for the BBC. The researchers 'immersed' themselves in this group, singing with them in the choir, talking to them in small regional groups, interviewing them as individuals, drinking and dining with them in pubs and restaurants and staying with them in the same hotel. The intention was to understand and gain an insight into the organisation, operation and

development of this women's network at the grass-root level in coastal fishing communities.

The research team was in an overt role in a closed setting as partially participating observers. This means that the identity of the researchers was known in the group and that the observation was not necessarily the main source of data. Interviews were also conducted with women in the group and these interviews have become a significant source of data for the study.

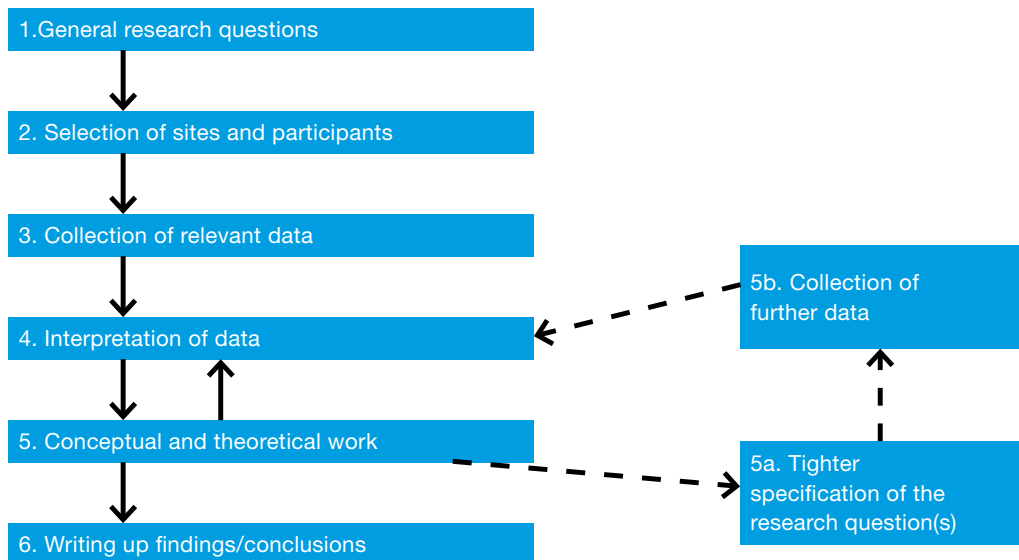
What has been discussed above outlines the main steps concerning the research design and the primary data gathering. While these research activities were conducted essentially by following Steps 1-5 as shown in Figure 35, the real process was more complicated in practice, especially between Step 4 and Step 5 when intensive interactions between 'interpretation of data', 'conceptualisation of the work' and 'collection of further data' took place. Writing up findings and conclusions (Step 6) inevitably demands constant revisiting and interpretation of the data gathered as a result of the previous steps.

The following is a brief summary of some of the findings that highlight the significance of the



**Figure 34:** GIFS researcher (in the middle of the last row) 'immersing' in a group of fishermen's wives, Hastings, April 2013. (Source: Fishermen's Mission, available at <http://www.fishermensmission.org.uk/the-deep.html>, accessed on 31 May 2014.)





**Figure 35:** An outline of the main research process (adapted from [23], pg. 384).

### Considerations when using this method

Conducting in-depth face-to-face interviews is expensive, time consuming and demands other resources such as support in local knowledge, contacts, language and even transport. The strong support from the GIFS partners in the four countries and local key contacts was important for the research team to overcome these difficulties but it is an important consideration when designing such a methodological approach.

formation and development of women's networks in fishing towns and villages.

Women in fishing communities on both sides of the English Channel are found actively involved in a wide range of sectors in fisheries. They work as crew members on board fishing boats; they support fishermen in the households as ship-cleaners, cooks, accountants and book keepers; they sort, cut and package fish in processing factories and workshops; they buy and sell fish at market as traders, and much more. While many of these roles have traditionally been fulfilled by women and without adequate recognition and reward, we have also found women holding high profile jobs charged with important responsibilities as skippers, entrepreneurs, heads of maritime museums, directors of departments of

culture and heritage in fishing towns and so on. The restructuring of the coastal economy has provided new employment opportunities for women. Tourism, for example, has attracted a large number of women as demonstrators, tourist guides, administrators and managers in coastal cities, towns and villages. One of the key findings of this project is the enthusiasm to establish groups and networks. The Women's Think Tank in Arnemuiden and the Fishwives Choir in England provide pertinent examples. These networks not only bring women together but also help bring their families and communities together. This, in turn, can lead to empowerment, solidarity and an enhanced sense of place and community in the coastal areas in the region.

The full findings and conclusions for this study can be found on the GIFS wiki (<http://www.gifsproject.eu/wiki/>).

### What will this method help me to do?

The methods presented here provide an approach for exploring the roles and contributions of women in fishing communities and could be replicated or adapted for a range of scales, from local community to a wider national or international study.

## PART 5: Place branding and place making: Fishing heritage in Arnemuiden, Netherlands

By Gerard van Keken

As part of the GIFS project a programme of place branding, place making and regeneration was undertaken in the historic village of Arnemuiden in the Netherlands. Research involved focusing on identity, sense of place and the brand of Arnemuiden. There was also investment in a programme of street refurbishment, street art and support of the local community as they set about identifying and developing new economic initiatives

based on Arnemuiden's fishing heritage. This case study demonstrates how research on identity, culture, branding, place making and sensitive regeneration that is driven by partnership working with local communities can help make better places for people to live, work and visit.

### Arnemuiden and its fishing history

The city of Arnemuiden in the province of Zeeland in the south west Netherlands is a small village of 5,000 residents with a long history. In early 1200, when Arnemuiden was founded, the village was situated at the edge of the Walcheren island, close to the sea (Figure 37). Over time Arnemuiden became an important trading city with a harbour where lots of

### Box 12: Strategies of place branding and place making

How can a place be branded? The aim of place branding is to create a specific and distinct identity and a unique sense of place in order to create a good image and a positive reputation of the place. Culture within (regional) identity is an important starting point, because cultural differences differentiate places from one another. According to Anholt [1], culture is a unique selling point (USP) and a direct reflection of the place's uniqueness.

Hofstede's operationalisation of the notion 'culture' [4] is very useful to describe a place's culture [6]. He distinguishes four elements in a culture:

- symbols, the more superficial elements of a culture;
- heroes, models of behaviour;
- rituals, codes of behaviour, ways in which we deal with every day or annual events, to celebrate something or to express our mourning and values, which are the collective inclination to choose one course over the other;
- values, feelings with a direction.

Keeping and developing the identity, distinctiveness and the feel of a place is called 'place making' and is strongly related to place branding. Place making involves product, or service, development and can be understood by considering efforts and investments in 'orgware', 'hardware', 'software' [7] and 'virtual ware'. 'Orgware' has to do with how things are organised, 'hardware' refers to material issues, 'software' to the immaterial and 'virtual ware' refers to everything in the virtual world.

The role of people, especially residents, should not be forgotten when discussing identities and place branding. They are one of the key elements in both identities and brands. Sustainable place branding and place making should be rooted in how local residents want to represent themselves and what their aspirations and capabilities are. In this way, the uniqueness of places can be enhanced, making them better places to live in and visit.

Two other structural dimensions that have an important influence on place's identities are location and history. Especially history as this is an indispensable and never-ending source of knowledge for the identity of places.

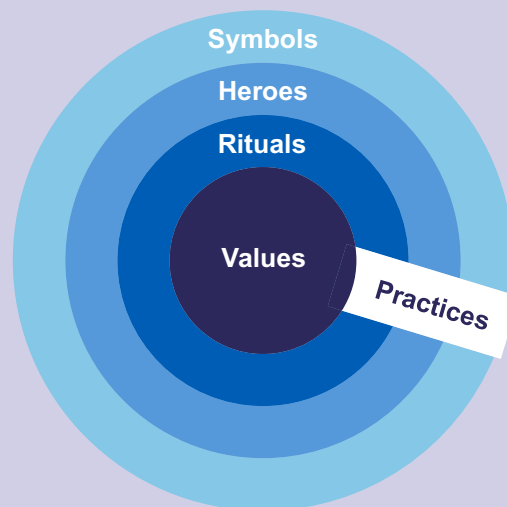


Figure 36: Hofstede's onion diagram of culture



**Figure 38:** Fishing culture and history of Arnhemuiden.

trading vessels landed until the 16th century. The neighbouring city Middelburg (15,000 residents) dug a channel in 1532 from Middelburg to the open sea. As a result the harbour of Arnhemuiden silted up and was destroyed in the eighty-year war with the Spanish in 1572. The flourishing and wealthy period of Arnhemuiden was over and, throughout Holland's Golden Age of the 17th century, Arnhemuiden was eclipsed by Middelburg.

Photography: F.W. van Loon



One of the industries that helped Arnhemuiden to escape poverty and regain its pride in the 19th century was the fishing industry. From the mid-18th century Arnhemuiden had a wharf where hundreds of fishing vessels were built and fishing and catching shrimps became so important that in 1870 two thirds of the 1,675 inhabitants of Arnhemuiden earned their living in the fishing industry. However, a railway connecting the island Walcheren with the mainland in 1872 and then the construction of a dam, part of the Dutch Deltaworks, in 1961 meant the end of fishing facilities in Arnhemuiden and the presence of a vessel fleet in the harbour. Arnhemuiden lost its direct link to the sea. Most of the Arnhemuiden fishing fleet is now located in Veere and Vlissingen and there are not many reminders of Arnhemuiden's fishing history.

### Approaches used in Arnhemuiden

**Community decision-making:** The first step in the process was to work with the community of Arnhemuiden, to enthuse and inspire them, and to think about the future of their town and what image of Arnhemuiden they wanted to portray. This involved helping them to reconnect with, and visualise, their fishing history and to ensure that any developments were designed by and supported by them. It was important to ground any activities or initiatives on the traditional core qualities and values of the fishing community, and make maximum use of the available social, cultural and economic capital within the community.

Fifteen residents exchanged thoughts and ideas about the possible future of Arnhemuiden. Remarkably, the majority of the people present were women. The women were from all different backgrounds, but all with a strong sense of



**Figure 37:** Arnhemuiden, with its busy harbour in the 16th century (left) and Arnhemuiden (1) and Middelburg (2) (right)



**Figure 39:** The Women's Think Tank in Arnemuiden.

connection to Arnemuiden and a will to participate in making plans and developing their ideas. Together the women founded the 'Women's Think Tank'. The Women's Think Tank is symbolised by women dressed in traditional folkloristic costume. Arnemuiden is one of the very few cities in the province of Zeeland and the Netherlands where a few women still dress up every day in their folkloristic costume. The symbolic value of this traditional dress and, therefore, the Women's Think Tank is very high and they form the base of community decision-making.

The women started thinking about their future by looking back into the history of Arnemuiden. They created plans to strengthen the economic position of Arnemuiden and devised new economic activities with added value that created an increased sense of pride. For more than three years in numerous sessions they developed together with other participants like entrepreneurs, the museum, the wharf, clubs and, last but not least, the residents of Arnemuiden, a range of ideas to give Arnemuiden a sense of place that reminded the residents

and future visitors of the town's rich history. Their cultural heritage was an important source of inspiration for the design of items such as fashion/clothing, household objects, the style and design of architecture, art and culture. But above all, they wanted to enrich the town with plans, ideas and activities that were fish-related. Fish was at the heart of the community, and they wanted to strengthen this through fish-inspired street refurbishment, fishing-related events, fish related art, developing a fishy image for Arnemuiden and promotion of the town's fishing past. In essence, these people of Arnemuiden were involved in the process of place branding and place making.

**Identifying distinctiveness:** Crucial in an identity and place branding approach is to assess what is distinct and special about the culture of Arnemuiden. Hofstede's figure on culture is very helpful in this analysis. The shrimp, the street sellers in traditional costumes and their baskets, the vessel 'Hoogaars' and the bells of Arnemuiden are important symbols of the town. The fishermen and their sons, whose stories of their fishing trips



**Figure 40:** A new look for Arnemuiden based on old core qualities.



**Figure 41:** Street art inspired by Arнемuiden's traditional dress.

Photography: Louis Drent & Aart van Belzen

are known in the town are the local heroes. Fishing, all its related activities and their traditions tell a lot about the local customs and are more or less rituals. The core values of Arnemuiden's culture are fish, being and feeling a fishing community, the working ethics, the trading mentality, strong social cohesion, religiousness and authenticity. Although no longer geographically located by the sea, Arnemuiden is still very much a fishing community.

### **Implementation and outcomes**

The outcomes can be divided in four main groups:

1. Capacity building (Orgware)
2. Street refurbishment (Hardware)
3. Fishing-inspired products (Software)
4. Website development (Virtual ware)

**Capacity building (Orgware):** One of the most important outcomes was the creation of the Women's Think Tank, which is the foundation of the community-led regeneration of Arnemuiden. Women are often the driving forces behind (economic) transformations, especially in rural regions. Besides the Women's Think Tank, it was also crucial to involve local entrepreneurs/companies and volunteers, from corporations, foundations, (potential) attractions and the church that plays an important role in the town and in the implementation of the plans.

**Street refurbishment (Hardware):** One of the plans was focused on endowing the village centre with fish-related art, elements/follies and sculptures in order to enhance the sense of place of Arnemuiden as a former fishing village looking to its future. Symbolic elements of Arnemuiden's history such as the street sellers, the men and women in folkloristic costumes and fish boxes were used by a graphic designer and artist to make street art figures. The strong involvement and participation of the residents is crucial for the support of the community and the continuation of the project. Residents modelled for several street art figures.

In the early days streets in Arnemuiden were ornamented with small fences between neighbouring houses. These were brought back into the streets to create more atmosphere (Figure 42). Sometimes these fences or doors were enriched with maritime or fishy designs. The main street has been refurbished with street patterns which are related to items of fish.

The fishing history and identity of Arnemuiden was emphasised and enhanced by using old photographs of fishermen and women in traditional costumes which were enlarged and hung up on houses and in streets.

At the entrance of the city, the city's name sign was illustrated with important symbols of Arnemuiden: the bells of Arnemuiden, the fishwoman and the hoogaars vessel.





**Fishing-inspired products (Software):** An important source of inspiration in the project was the traditional fishermen's sweater, a cultural heritage remnant. In the early days every fishing village had its own distinctive knitted pattern in the sweaters. Entrepreneurial women created a new fashion line of new knitted sweaters, in contemporary colours. A separate photo shoot and a fashion show on the Meerman wharf was organised to show the first knitted sweaters to the national and regional press and the local community (Figure 44). The sweaters have helped to raise awareness of the fishing heritage of Arnhemuiden and have created a sense of pride with the residents. In addition, it creates economic opportunities for several entrepreneurs. Marketing and distribution were organised in a professional way: knitted sweaters and patterns were offered for sale.

A glossy magazine, supported and distributed by the local entrepreneurs, was issued to tell both the residents and visitors about the interesting history of Arnhemuiden, stories of the fishermen, traditional folkloristic costumes, the fishermen's sweaters, the wharf and also, of course, attractions of today, the museum and shops of Arnhemuiden.

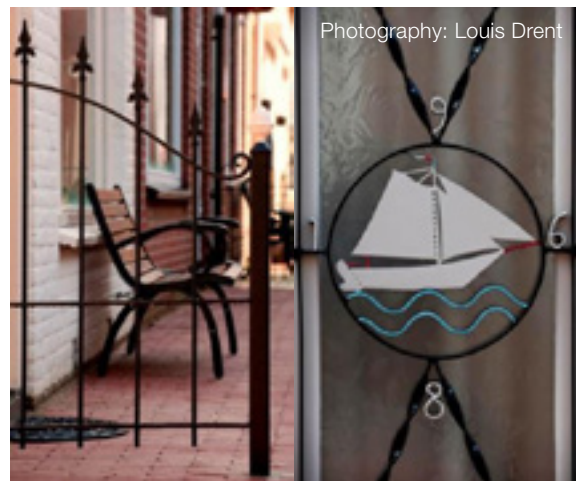
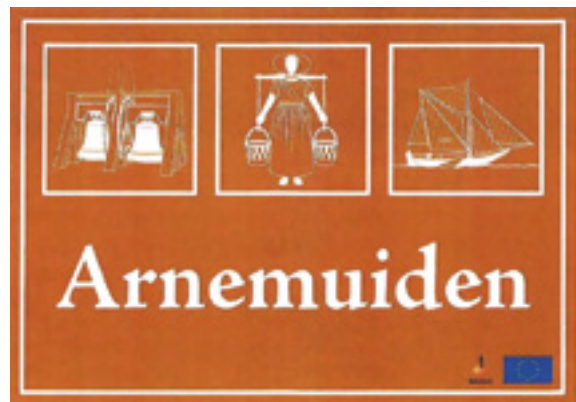


Figure 42: Bringing back small fences and maritime designs.







Photography: Aart van Belzen

**Figure 43:** Old photographs displayed on Arнемuiden houses.



**Figure 44:** Fishermen's sweaters in contemporary colours on the catwalk.

Photography: Louis Drent

**Website development (Virtual ware):** Virtual ware is important in the way that it can support other initiatives. One important contribution to the fashion project was the development of a website and webshop to support the sale of the sweaters and other related products (see <http://tikkeltjezeews.nl/>). A range of products will be developed and produced in order to promote the cultural heritage of Arnemuiden. A webportal based on the culture of Arnemuiden has been developed in cooperation with many stakeholders. Local entrepreneurs have also initiated a blog which gives an insight into the daily life of Arnemuiden.

Another contemporary product that was created by the re-opening of the main street of Arnemuiden was a lip dub film. The lip dub was the co-production of local entrepreneurs, the museum, firemen, the municipality and a lot of residents from Arnemuiden (see <http://www.youtube.com/watch?v=nJgmDDwCNjY#t=155>).

### What will this approach help me to do?

- This approach can help places to analyse their identity, culture and distinctiveness
- The results of this analysis are the foundations of a place brand
- The approach gives residents a key role
- Place making develops and enhances identity, distinctiveness and the sense of place by product or service development by efforts and investments in orgware, hardware, software and virtual ware.

### Considerations when using this method

This approach requires an intensive process with the residents/entrepreneurs and takes time to see results. A three to five year period or even longer is no exception. Support, embeddedness, liveability and economic prospects are keywords in this approach. Anchored and rootedness in a place's identity, culture, location and history are essential.





Photography: Origin Media

Figure 45: The lip dub film of Arnhemuiden.

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# Knowledge production and knowledge exchange

# 6

Through three very different approaches, this chapter outlines methods that can be used to improve understanding on the social and economic importance of inshore fishing.

Firstly, a model for designing and developing educational tools informed and led by fishers (and the wider fishing community) is outlined, drawing on the experiences of the fishing community in Hastings.

Secondly, an innovative approach to capturing fishers' local ecological knowledge is described through the use of video filming of seabed habitats from fishing boats in Hastings. Finally, an approach to reconstructing historical time series of fisheries landings, value and direct employment is presented, focusing specifically on the inshore sector and its relative importance in the total fisheries activity. Compilation of historical inshore fisheries data can help policy and decision makers understand the importance of a particular fleet or species in the past, and inform decisions for the future.

These methods may be useful in a variety of contexts. The educational model is most likely to be relevant on a local scale, developed and applied by local communities, involving both educationalists and fishers. The fishers' local ecological knowledge model will be relevant to marine planners who wish to integrate fishers' knowledge into their decision making process. Finally, reconstructing fisheries activity over time provides useful information for national or regional fisheries/marine and coastal policy makers and planners.



Photography: Vince Bevan



## PART 1: The development and creation of educational materials for fisheries based and fisher-led whole community learning

Led by the University of Brighton, the GIFS education project has developed a fisheries related and fisher-led model of Alternative Education Provision (AEP). This approach has been co-developed with the Hastings Fishermen's Protection Society (HFPS) in the Classroom on the Coast, Hastings (South East England), but it has also been enriched by a knowledge exchange partnership with the Municipality of Middelburg, Netherlands. This chapter outlines the approach used in developing this model of AEP so that other fishing communities might use the principles to develop their own successful education offer to help secure the socio-economic and environmental benefits to the community.

### Fisher-led education can contribute to socio-economic regeneration and responsible tourism in coastal communities.

This form of AEP can contribute to socio-economic regeneration and responsible tourism, as evidenced in this example from the fishing quarter in Hastings and in the town of Arnemuiden, Netherlands.

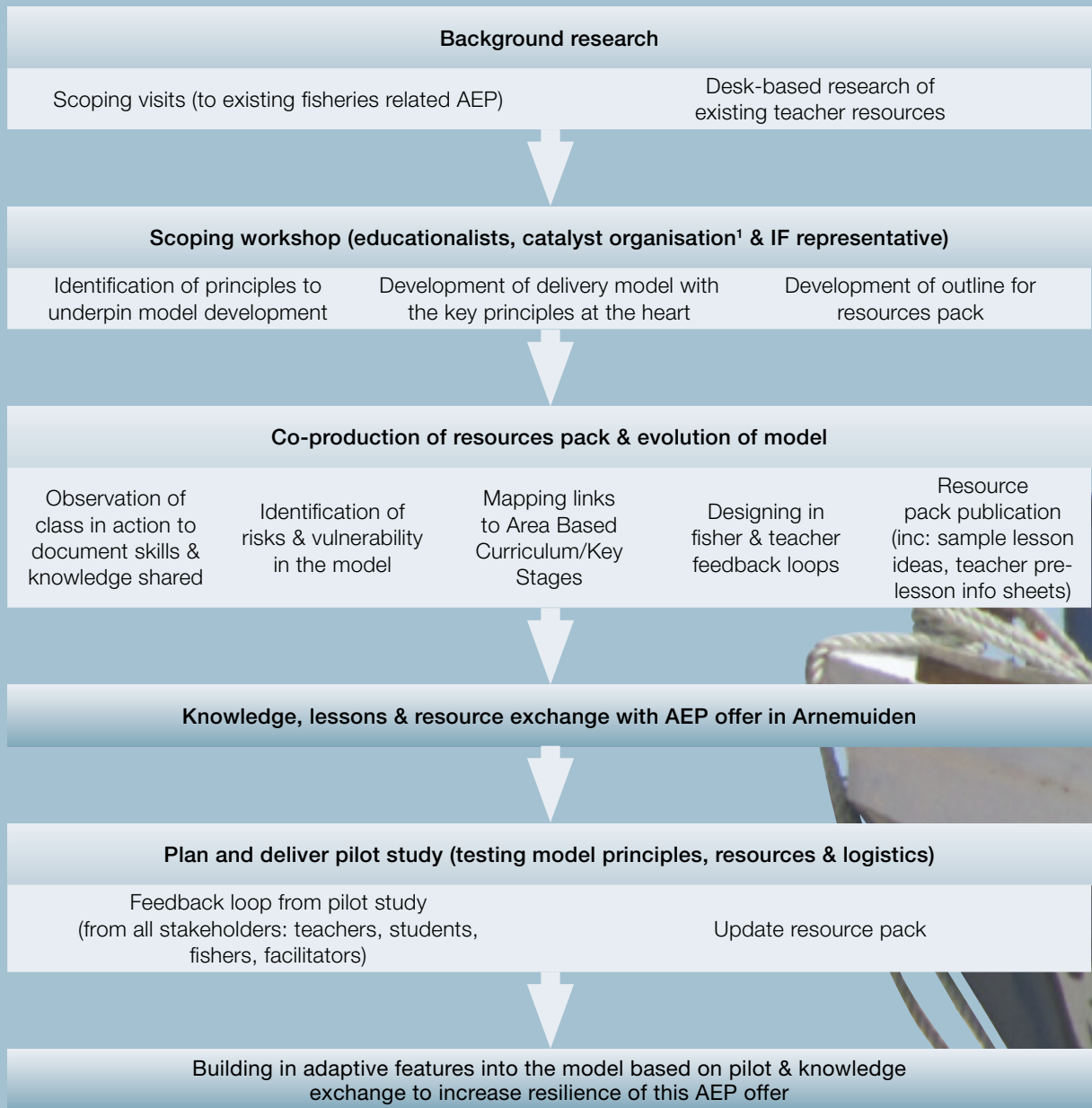
The wider benefits of the model of AEP outlined below indicate the integral role education can play in securing a sustainable future for our fishing communities.

1. AEP enables fishers to share with their wider local community and visitors their cultural traditions, skills and values. This helps strengthen community identity, and increases understanding and knowledge of their cultural heritage.
2. The experiential approach to learning creates an authentic and local responsible tourism offer that aims to safeguard existing fisher and fishing community income streams (by reinforcing local sustainable supply chains).

3. Through educating people about the nature of a fisher's life and sustainable fishing they can connect food with the people and environment that produces it and so enhance a sense of place (see Chapter 5, page 68, for an explanation of 'sense of place'). In this way the AEP contributes to sustainable food based regional branding and sustainably sourced local produce.
4. Education around sustainably caught fish / fishing methods and the communities that provide them encourages a culturally sensitive understanding of ecosystem services and environmental conservation.
5. Taking into account the equity of fisher knowledge and expertise built into the AEP principles can help to inform local governance, co-management and wider coastal development planning as well as facilitating community empowerment.
6. The 'whole community learning' focus (i.e. all ages, sectors and education backgrounds) embeds a positive social benefit for both the learners (e.g. school children or tourists) and those sharing their knowledge.
7. It may be that this very practical and experience based approach to education about fisheries encourages new entrants to the industry, which is valuable for an industry with an ageing demographic.

### How to use this approach

The steps to develop your own AEP are shown in Figure 46. It is important to note that while this figure highlights specific actions that are needed to support the education offer when used for schoolchildren (e.g. teacher feedback), it is a flexible model that can be adapted to create a responsible tourism experience. The lessons remain the same for both audiences, but the responsible tourism version doesn't require the liaison with and support of teaching staff. Instead the lesson is offered as part of a suite of classes and demonstrations that can be sold to visitors. This can be part of a stand-alone tourism offer or as part of a wider responsible tourism experience linked to other activities in the locality such as local food and fishing festivals.



**Figure 46:** Education model and materials development process.

<sup>1</sup> A catalyst organisation refers to an enabling body that might bring all the relevant parties together to help facilitate and develop the model for example; this might be a local FLAG, local university or local authority.



## Box 13: Key Principles

The principles below were born out of the process of developing the AEP and are central in terms of the on-going evolution of the model and the resources developed and delivered. This is an iterative process given we are working with a dynamic industry and a changing education policy context.

### Three principles developed in the scoping process

**Equity of fisher knowledge:** The development of the model must come from an equal partnership between the fleet and educationalists. The equal value of the fisher contribution and recognition of their skills and expertise is central to enshrining the equity of fisher knowledge within this AEP model. Further, this approach helps formalise (and thus secure) the transfer to new audiences of local ecological knowledge (LEK).

*Practical points: 1. LEK can include knowledge from all elements of the industry (fisher, hawkker, fishmonger, chef, fisher's wives, retired fishers etc). This enriches the different 'knowledges' shared. 2. Fisher (or other) payment must be built into this model to reinforce equity of different knowledge cultures.*

**Fisher ownership and leadership:** The AEP should be predominantly fisher-led with the delivery of the core lessons mostly by the fishers and wider industry members. This is central to the uniqueness of this AEP offer and key to successfully protecting the fishing community's cultural identity and heritage. By ensuring the fleet ownership of and investment in the project this model seeks to avoid a 'done-to' regeneration approach and instead creates an enhancement of community empowerment and the contribution to sense of place.

*Practical point: By including knowledge from all elements of the industry you can increase the flexibility in the resource pool of educators and overcome vulnerability caused by variations in seasonal work and term time educational models.*

**Focus on contemporary inshore fishing industry and marine issues:** It was important in the Hastings example that the model centred around contemporary marine planning and conservation issues. This approach ensures that contemporary inshore fishing and marine planning are better understood by a wider audience, that fishers are able, through their own actions, to raise the awareness of the sustainability features of this fleet and others like it.

*Practical point: While it is useful to distinguish this AEP model from the heritage focused offer in these case studies, a live dialogue between the active and the recent history is important in order to convey to learners the fishing community's ongoing contribution to sense of place and identity.*

### Two additional principles emerged through the model development process:

**'Doing what you know;** doing what you love; love sharing that knowledge' as part of an enriched whole community education offer: This principle places the reality of the day-to-day fisher life and work at the centre of the AEP experience and shifts the emphasis to a story-telling and an experience based approach to learning that is a unique feature of this education and responsible tourism offer. Further it expands the scope of possible learners to new target audiences and helps build 'connected communities' by creating authentic emotional links to the fleet and fishing community.

*Practical point: This involves establishing long-term links with a wider group of learners e.g. local schools, higher education, elderly care, corporates and tourists.*

**Locality:** Recognise the importance and specificity of place in your education offer. For example, in Hastings the shared fisher knowledge has been formally linked to the area-based curriculum used in local schools (i.e. curriculum subjects illustrated through and by local industry, community, and environment). For school pupils to understand where a product is sourced and why/how the fishing industry interacts with that environment raises questions of food provenance, seasonality and sustainability in the 'boat to plate' journey as well as making explicit the contribution of the fishers/fishing industry to the local place-based identity.

## What will this method help me to do?

- Developing this model of AEP can provide an alternative income stream for fishers and the wider fishing community
- Fisheries led/related AEP informs the wider public (including schoolchildren) in a meaningful way about the health and environmental benefits of buying and consuming sustainable fish. The hope is that this education will inform shifts in the scale and value of local markets for sustainable fish which in turn would help secure the livelihoods of local fishers.
- Fisheries led/related AEP helps highlight to local policy makers the importance of fisher local ecological knowledge as a cultural ecosystem service that needs to inform tourism, education and local economic regeneration planning in coastal communities.

## Testing the AEP model and building in adaptive features

It is important to recognise that developing your own AEP is an ongoing process and as such steps need to be taken to help improve its flexibility, relevance, and resilience at all stages. For example, recognise the constraints of seasonality and take into account the time of day of fishing activities when arranging fisher-led learning activities. Building in testing mechanisms and adaptive elements improves the model flexibility and mitigates vulnerabilities. For example you might want to consider including:

1. Fisher feedback sessions following their early teaching experiences through this model to help inform the creation of new tools to support the development of their teaching skills. These sessions are key to fisher empowerment in terms of building their confidence in their capacity as educators.
2. Creating the opportunity for dialogue and learning amongst the AEP providers about the links between their role as educators AND long-term solutions to the socio-economic and environmental challenges of the fishing industry. These linkages are not accepted wisdom in many communities and thus need facilitation.

Hastings Fishermen's Protection Society



## Considerations when using this method

1. This model includes the role of an enabling body (in this case the University of Brighton) to help formalise and document the process, as well as acting as a catalyst to bring the different stakeholders together.
  2. Allow for the time and resources needed to facilitate the scale and depth of partnership work involved in this process that enables the essential knowledge exchange and co-production (for example, in this case study between Hastings Fishermen's Protection Society, University of Brighton, independent local educationalists, the Municipality of Middelburg and Horizon Educatief).
  3. The model relies on the involvement of professional educationalists in supporting the development of this AEP process. Their role as translator between the two worlds (formal education and fishing) is key.
  4. Plan for different fleets to engage in this process from different starting points with implications for the pace of progress made in model development. For example, the rapid social and cultural added value of the Hastings AEP is underpinned by the forward-thinking approach of the fleet to education as being part of their contribution to their community and a direct link to the sustainability of their livelihoods.
3. Including an observation step in the development process. This involves an educationalist making the links from the fishers "sharing what they do, what they know and what they love" back to the appropriate stages in the curriculum. Importantly, this linkage must move from fisher to education system and not the other way round.
  4. Building fisher and teacher learning tools around health and safety, for example by making clear the different roles people will occupy, setting expectations, clarifying responsibilities and highlighting risks in order to reduce the likelihood of accidents or negative experiences for all parties.
  5. Developing resources for teachers (such as guidance notes and background reading) that will indicate how teachers can prepare the students to get the most out of the lesson and build on the experience based learning done during the lesson.



## PART 2: A participatory approach to capture fishers' local ecological knowledge

In this example, an approach to capturing fishers' local ecological knowledge via the use of underwater seabed filming from fishing boats is outlined. This method is particularly relevant within the context of European Commission calls for an ecosystems approach to marine and coastal management, and the development of mechanisms for co-management within inshore fishing and marine conservation that integrate local ecological knowledge and wider marine stakeholder/user values.

The video filming from fishing boats was used to map the seabed and, along with follow up interviews, was used to examine the role fishers can play in producing more reliable and extensive data of the seabed environment and habitats that support fish stocks. This work was conducted in association with the local Sussex Inshore Fisheries and Conservation Authority (IFCA).

This method illustrates the importance of working closely with local stakeholders to develop and participate in innovative methodologies that can be used by communities, decision-makers and managers to better understand the multi-faceted way in which inshore fisheries contribute to a coastal community.

### What are the benefits of applying these methods?

By using video filming of the seabed and follow-up interviews fishers were involved in the collection and analysis of data relating to seabed habitats. This process can engage fishers more fully with marine conservation management and planning. The methods used seek to understand fishers' existing knowledge and to involve them in the creation of new knowledge. In this way it is possible to show that fishers can contribute important insights and ideas about how to improve the management of seabed habitats that support fish stocks and to contribute to marine conservation more generally. The interviews reveal the processes by which fishers acquire knowledge. By working with local fishers and the Sussex Inshore Fisheries and Conservation Authority on the video filming of the sea bed it has been possible to improve the quality of data used to classify seabed habitats and to enhance the specification of predictive models used to predict

habitats in locations where data is lacking. The involvement of fishers in data collection is cost effective since they are at sea regularly and using their local knowledge are able to efficiently locate key habitats for analysis. The method links up fishers and scientists from the conservation authority in a 'citizen science' project (i.e. scientific research conducted, in whole or in part, by members of the public) that raises the quality of data collection and analysis relating to marine environments.

Involving fishers in seabed mapping can improve the accuracy of data and aid more informed marine planning and decision making.

### How to use this method

**Step 1: Engaging with fishers:** A series of workshops and meetings were held to explain to fishers the purpose of the proposed project and to scope out their views on marine conservation and the role of fisher knowledge.

**Step 2: Video filming to map the seabed:** The video filming was used to ground truth the habitat map. Once the habitat maps were predicted (using existing CEFAS marine science data of

### What will this method help me to do?

- This method enables fishers to engage in and inform marine conservation planning through sharing their knowledge.
- Through this method fishers acquire basic research data collection skills.
- This method improves the quality of seabed data available to ensure relevant planning decision-making.
- In the long term this approach to marine science will help build upon the positive relations and co-working that exists between the fishing and scientific community that could help facilitate greater fisher involvement in fisheries management and higher levels of compliance.

## Considerations when using this method

**Partnership:** This project relied on a partnership between fishers, the Sussex Inshore Fisheries and Conservation Authority and the University of Brighton. Building partnerships is time consuming but essential to this type of work where fishers have knowledge and others can provide scientific expertise and equipment. The fishers' expertise and trips to sea provided efficient data capture. The project showed that the verification provided by fishers was more reliable than existing conservation data. Conservation organisations do not have the resources for verification through video data collection. Only by working with fishers was it possible to ensure data accuracy and improve mapping.

**Equipment:** Undersea video cameras can be expensive but the Sussex Inshore Fisheries and Conservation Authority working in conjunction with fishers were able to develop a cost efficient camera that could be suspended off a fishing boat.

the area, modelling techniques and GIS based classification) the videos and stills (with GPS locations) were used to confirm what habitat was actually there. The video filming was done with an underwater camera dragged behind the boats and the films provided valuable data for ground truthing around the following: actual seabed habitat type, notable species and changes in habitat type. Fishers undertook 30 camera drops to film the seabed off Hastings to develop a habitat classification that was then verified by fishers and compared to existing scientific data. A seabed habitat map of the area to the east of Beachy Head was developed using multibeam acoustic data (a sonar technique for mapping the seabed) and image-

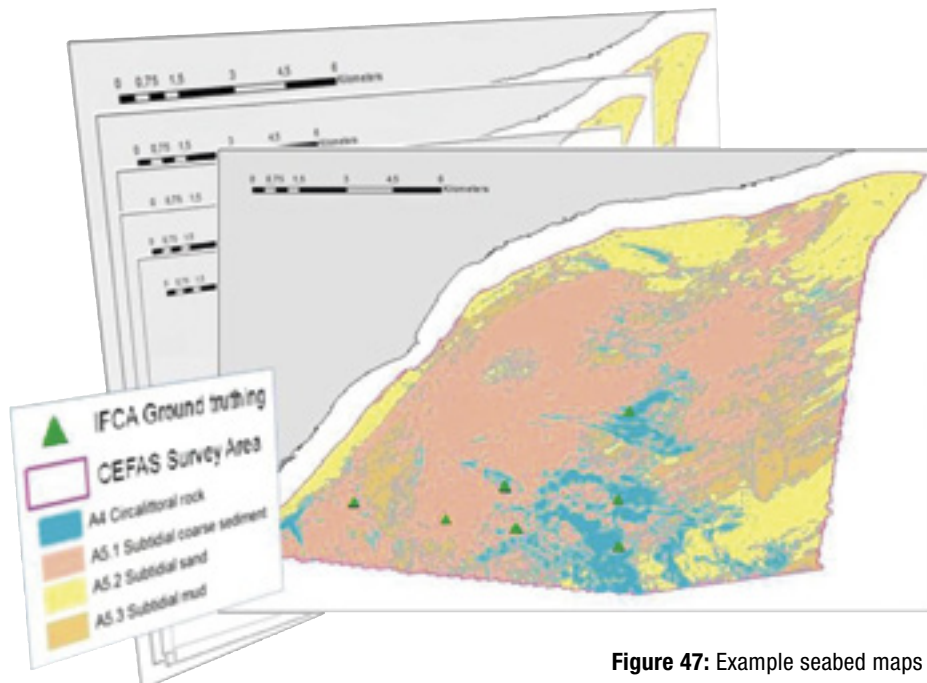
based classification techniques.

### **Step 3: Model and mapping validation:**

Models were checked to assess the accuracy by comparing the model outputs against existing data.

### **Step 4: Follow up interviews:**

Individual face-to-face interviews with fishers were conducted to gain a deeper understanding about how fishers acquire knowledge of the seabed and how this can contribute to marine conservation. These interviews highlighted how fishers are willing to engage in developing marine conservation planning through sharing knowledge with scientists.



**Figure 47:** Example seabed maps off Beachy Head [1]

### **PART 3: Inshore fishing activity past and present: a methodological approach**

Coastal or inshore waters play a major role for vital processes in the life cycle of fishing resources: many hatcheries, nurseries, spawning areas of fish species are located in coastal zones and estuaries. In this regard, the European Commission has repeatedly expressed its concerns for the protection of the coastal or inshore fisheries within the 12 nautical miles (nm) zone. The coastal zones of all fishing nations have played an historical role as a stable and continuous provider of food, resources and employment. In times of war and crisis, the coastal waters were the main source of fishing resources. As an example, commercial fisheries in the small strip of Belgium's inshore waters have provided >20% of all landings over the last century, and up to 50% of all pelagic (species that live in the open water column) species and >60% of all molluscs and crustaceans. The historical role and importance of inshore waters and inshore fisheries in the livelihoods and socio-cultural development of our coastal communities is undeniable. Recent studies in the EU show that small-scale vessels (under 12m length) constitute more than 70% of the total fleet in most member states. However, the small-scale fleet represents just 10% of the total gross tonnage of the EU fishing fleet and about 35% of its engine power. A definition of inshore fishing criteria in the GIFS area can be found in Chapter 2, page 16.

In spite of the acknowledged importance, quantitative data on inshore fisheries past and present, are scarce, unavailable, and in some cases totally absent in the public domain.

The reform of the Common Fisheries Policy called for a differentiated management regime that distinguishes between small scale and large scale fisheries, with a focus on social objectives for the small scale fleet. With this in mind, there is a need to document the social, economic and environmental importance of inshore/coastal fisheries in order to be able to define those social objectives. This involves collating data on the characteristics of inshore fisheries today in terms of employment, food resource and economic value compared to overall fisheries, but also to assess what their role and importance was in the past in order to determine their potential for the future.

Historical fisheries datasets are of key importance for studies on long-term changes in fisheries activities, fish stocks, and fisher communities. An historical perspective sheds light on fisheries-related changes over time and provides the reference(s) for setting baselines and goals for sustainable management today and in the future.

The purpose of this approach is to provide a long-term perspective on the importance of inshore fisheries to coastal communities and its future potential as a source of local and fresh food,



employment and as an economic resource. The approach aims to construct a common view of inshore fisheries and their relative importance in the sector as a whole (all fishing activities including offshore and large-scale fisheries). Through an inventory of data sources and subsequent digitisation, quality control, standardisation and integration of historical data, this approach aimed to answer:

- How has employment in inshore fisheries changed over time?
- How have economic value, volume and composition of landings of inshore fisheries changed over time?
- How do the trends and issues above relate to those in the fisheries sector as a whole?
- What information sources are available to document the historical relevance of inshore fisheries in the study area?

Currently there is a lack of quantitative data on inshore fisheries past and present and studies [2, 3] have demonstrated the scarcity or unavailability of high-resolution historical time-series on fisheries in the public domain. This study, therefore, demonstrates the potential to reconstruct high-resolution (by species, gear, month, port, etc.) historical time-series for fisheries in 'inshore waters'. Such datasets for the inshore waters were previously unavailable, unknown or inaccessible.

By using a similar approach in different regions along the Southern North Sea and English Channel it was possible to incorporate local diversity and illustrate how inshore fisheries may have been affected over time, and in what way, within the region.

## How to use this method

### Step 1: Compiling an inventory of data sources.

It is useful to start by looking at well-structured and large databases that allow advanced searching on the basis of specific search terms. These databases can be screened for publications, data and documents including 'grey' literature (informally published written material – such as reports – that may be difficult to trace because it is not published commercially or is not widely accessible). Search terms may include terms such as 'fisheries', 'landings', 'catches', 'fleet', etc. Where search options allow, wildcards can be used (e.g. 'fish\*'). Such databases include:

### a) Specialised libraries and databases with digitally accessible collections (on-line index/query possibilities):

- The Food and Agricultural Organization of the United Nations (FAO)
- International Council for the Exploration of the Sea (ICES)
- Fishbase ([www.fishbase.org/](http://www.fishbase.org/))
- Sea Around Us Project ([www.seaaroundus.org/](http://www.seaaroundus.org/)).
- National Institutes of Statistics: e.g. UK national statistics: <http://www.statistics.gov.uk>

### b) Specialised libraries and archives at national level (paper copies):

- National marine institutes and fisheries research organisations: e.g. Archive institutionnelle de l'Ifremer (Archimer): <http://archimer.ifremer.fr>
- National sea fisheries services and administrations (e.g. the Inshore Fisheries and Conservation Authorities (IFCA) in England)
- State, provincial and city archives
- Libraries of fisheries museums, local and national

### c) Catalogues, literature databases and internet 'harvesters':

- JSTOR, Web of Knowledge, Aquatic Sciences and Fisheries Abstracts, Google Scholar, Avano, Antilope and CCB (for completing reference titles).

The method applied for screening and searching depends on the type and nature of the document or the series. As a general approach, it can be helpful to contact the archivist to assist in the search.

## Step 2: Digitisation process and quality control.

As a general observation, most of the data contained in the sources identified in the previous step will need manual digitisation and transcription to spreadsheets in order to allow for subsequent steps. Integrating data from different sources into one database is a stepwise process, involving basic aspects of data management such as standardisation and quality control. Quality control, in all its dimensions, is an essential aspect in the recovery and integration of (historical) data. The different steps involved in converting and controlling the quality of the converting process as well as the data are explained in Box 14.

## Box 14: Preparing and quality control of data

### Conversion of scanned data tables (scans of original paper copies) to spreadsheets

Where quality of the scans permit, the data from scanned sources can be extracted by means of image/pdf reading software (open source, free of charge) and converted to spreadsheets. The table(s) can then be copied and pasted in spreadsheets. Anomalies (dots, spots, etc. in the printing and/or artifacts due to paper quality, storage and handling of the documents over the years) and misinterpretations of numbers or separators need a first control during the conversion process. The resulting files can be stored as 'original files'.

### Quality control of the data contained in the created spreadsheets

A second quality control focuses on the quality of the data. The annual data tables are generally matrices that list values under specific rows (e.g. species) and columns (e.g. landings by fleet x). Row subtotals should therefore represent a manipulation (sum, average, etc.) of a value in the different column headers or vice versa. Row and column (sub)totals should be calculated independently as a formula in the spreadsheets, and crosschecked with the reported (published)(sub)totals in the original document. Typically, errors occur when numbers were mistakenly copied or calculated in the original source. These errors should be documented and the amended files stored as 'corrected files'.

### Standardisation: taxonomy, geography, units of measurement

One of the main difficulties in integrating and comparing different datasets from various data providers is the standardisation of the data.

Standardising is a prerequisite for functional databases. Therefore an analysis must be conducted of the different parameters included in the reported data sources. Single spreadsheets (product from previous steps) should be integrated into one table per feature according to the defined database structure, in order to perform standardisation. Standardisation should be performed for relevant features or parameters, typically being: (1) taxonomy (species names), (2) geography and spatial units (ports, fishing areas etc.), (3) sampling methodology/ fishing gears and (4) reporting units (kW, tonnes etc.).

### Graphical analysis

After quality control and standardisation, annual tables can be integrated as pivot tables. Pivot tables are dynamic spreadsheet tables that can easily convert data for different visualisation and analytical purposes, and allow simple statistical functions. They are a standard function in spreadsheet software (e.g. MS Excel). Pivot tables are therefore based on the joining and integrating of all 'corrected files', after standardisation of e.g. species names, ports and fishing grounds etc. (see above). Visual inspection of these graphs allows a second quality control of errors or anomalies in the data. Special attention in the graphical analysis must be given to anomalies or sudden abrupt changes in observed trends. These errors are typically not detected in the first phase of quality control of numerical values, because they are generally not generated by simple calculation or copy errors. A number of problems and errors are evidenced by this visual control, but it can also help as an early-detection of unusual natural or socio-economic phenomena, that require bringing in other (historical, legal, social) expertise and literature study.

## Considerations when using this method

- In spite of the growing scientific and public interest to make historical data accessible in electronic format, the challenges to achieve this do not only refer to the digitisation process. Often time-series have data gaps, limitations in temporal-spatial coverage, changes in measurement units, and the analysis and interpretation are fraught with difficulties.
- Acknowledging these issues calls for a tighter collaboration between 'classic' fishery scientists, historians, social researchers and ecologists into a true multidisciplinary approach. The motivation is to gain better insight into the effects and drivers of changes in fisheries. Data used for this purpose can refer to tax records, commercial catch statistics, catch per unit of effort (CPUE), research survey information, length and/or age compositions, biodiversity and other diverse sources (e.g. menu cards from restaurants) that can throw light on marine organisms and the dynamics of the fleet(s) exploiting them since early years.



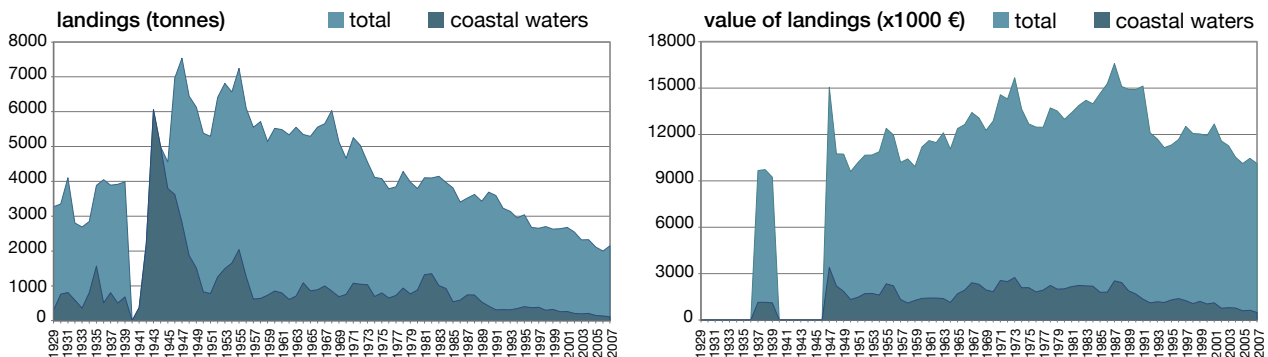
**Step 3: Reliability of reconstructed time-series.** Reliability of fisheries data is a complex issue that starts the moment the nets are hauled in. For data on catches and landings, for example, it is the combination of the selectivity of fishing gears, management regulations and socio-economic conditions that affect the proportion of mortality that actually results in 'catch' and the proportion of 'catch' that is effectively reported as 'landings'. The remaining proportion of the 'catch' is then considered either illegal, unreported, unregulated (IUU), or a combination of the previous, and may be either discarded or retained as by-catch. For an overview of terminology and estimates of these factors, see Alverson et al. [4], Gray et al. [5], and Zeller et al. [6]. Unreported catches may also include forms of subsistence fisheries, or commercial catches that are not landed at auction points. Illegal unreported catches include those that are landed in ports but are transferred for direct sale and consumption without passing the mandatory reporting procedures at the fish auctions. Similar concepts apply for economic value and employment.

Reconstructing time series on inshore fisheries gives this sector the much-needed visibility and confirms their important role in coastal communities and ecosystems today and in the future.

**Step 4: Expected results.** The approach, applied in a methodical, consistent and exhaustive manner, can result in:

- A digitised inventory and annotated bibliography of sources, by which all data and literature sources related to inshore fisheries are digitised, linked to context (inshore fisheries) and made available in the public domain. In a next step these sources can be queried through an Information System. This may help avoid duplication of time-consuming effort in searching and collecting data and information.
- An integrated database, integrating single spreadsheets corresponding to single reports from sources containing data, that were standardised and quality controlled. This database can be stored in a central location according to professional data management standards and made available for further research purposes.
- Using the database to visualise the historical trends of inshore fisheries in the form of graphs.

Reconstructing time series (a sequence of data points, measured at successive points in time spaced at uniform time intervals) on inshore fisheries and their value in the present and past gives this sector the much-needed visibility and confirms their important role in coastal communities and ecosystems today.

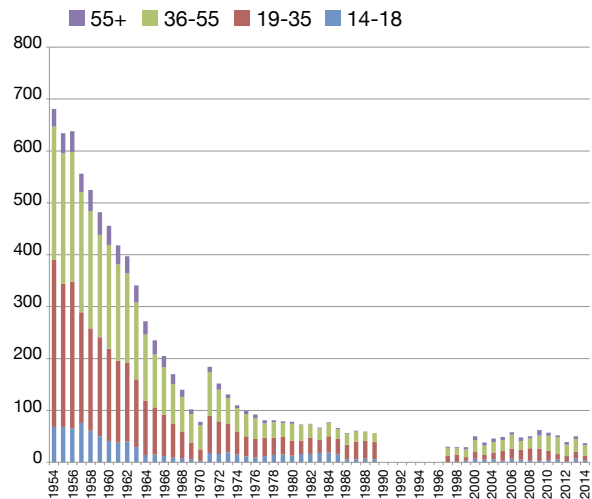
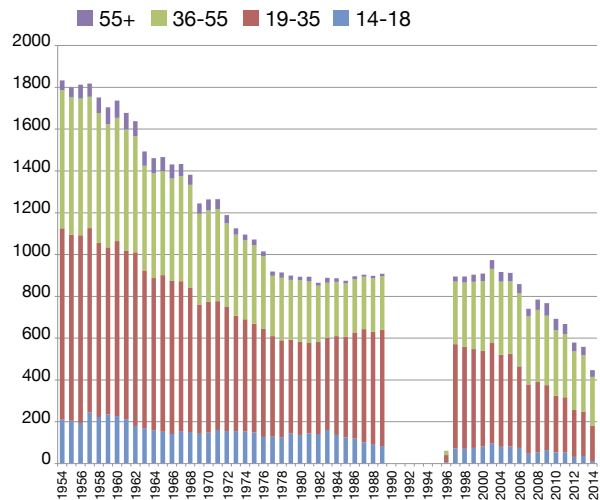


**Figure 48:** Landings (a) and value of landings (b) of inshore fisheries in Belgian inshore waters compared to offshore fisheries from 1900 to present.

## What will this method help me to do?

This method allows documentation of the changes in the social-economic and environmental importance of inshore fisheries, by collating data on employment, landings and economic value of inshore fisheries over time. A comparison with offshore fishing allows quantifying their role and importance in the past and present, and assessing their potential in the future. Such data can inform policy and decision-making.

Applying this method to the case of Belgian inshore sea fisheries, allows assessing the trends in relative importance of landings and value of landings of inshore fisheries over nearly one century (Figure 48) and its importance in terms of direct employment (Figure 49). It also allows underlining the relative importance of and the trends in Belgian inshore fisheries compared to fisheries that take place outside of the coastal zone of Belgium (Figures 48 and 49).



**Figure 49:** Age distribution of Belgian fishers for all fishers (a) and inshore fishers (b) from 1954 to present.

- [1] Downie A, Curtis M, Diesing M, Stephens D. Beachy Head East rMcZ Post-survey Site Report. Coordination of the Defra MCZ data collection programme 2011/2012. London: Department for Environment, Food and Rural Affairs (DEFRA); 2012.
- [2] Engelhard GH. Catalogue of Defra historical catch and effort charts: six decades of detailed spatial statistics for British fisheries. Science Series Technical Report. Lowestoft: CEFAS; 2005. p.42.
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- [4] Alverson DL, Freeberg MH, Murawski SA, Pope J. A global assessment of fisheries by catch and discards. FAO Fisheries Technical Paper No 339. Rome: FAO; 1994.
- [5] Gray K, Legg F, Andrews-Chouicha E. Fish piracy: combating illegal, unreported and unregulated fishing. Paris, France: Organisation for Economic Co-operation and Development; 2004. p. 406.
- [6] Zeller D, Booth S, Davis G, Pauly D. Re-estimation of small-scale fisheries catches for U.S. flag island areas in the Western Pacific: the last 50 years. *Fisheries Bulletin*. 2007;105:266–77.

# The GIFS Project: Concluding Summary

# 7

The Geography of Inshore Fishing and Sustainability (GIFS) project is a cross-border collaboration between six academic, research and local authority institutions across England, France, Belgium and the Netherlands.

The partnership came together with the shared goal of understanding and raising awareness of the social, economic and cultural values of inshore fishing communities. Inshore fishing is increasingly recognised as having important social and cultural benefits, as well as economic, for coastal communities, as acknowledged in the recently reformed Common Fisheries Policy. These benefits include contributing to community and place identity, cultural heritage, social cohesion and providing an attraction for tourism. The aim of GIFS was to develop a range of approaches for valuing these multiple benefits that arise from our inshore fishing fleets so that they can be fully accounted for and considered in policy making and marine planning and be properly valued by local communities.

The range of activities within GIFS highlight the positive role that inshore fishing plays in some coastal communities, whether it is through the important role of women as the 'glue' that binds a community together or a strong identity grounded in fishing. In addition, through economic analyses and other social science approaches, GIFS has demonstrated the economic contribution that inshore fishing makes to local economies, including its contribution to tourism.



Photography: Vince Bevan

## The range of activities within GIFS highlights the positive role that inshore fishing plays in some coastal communities.

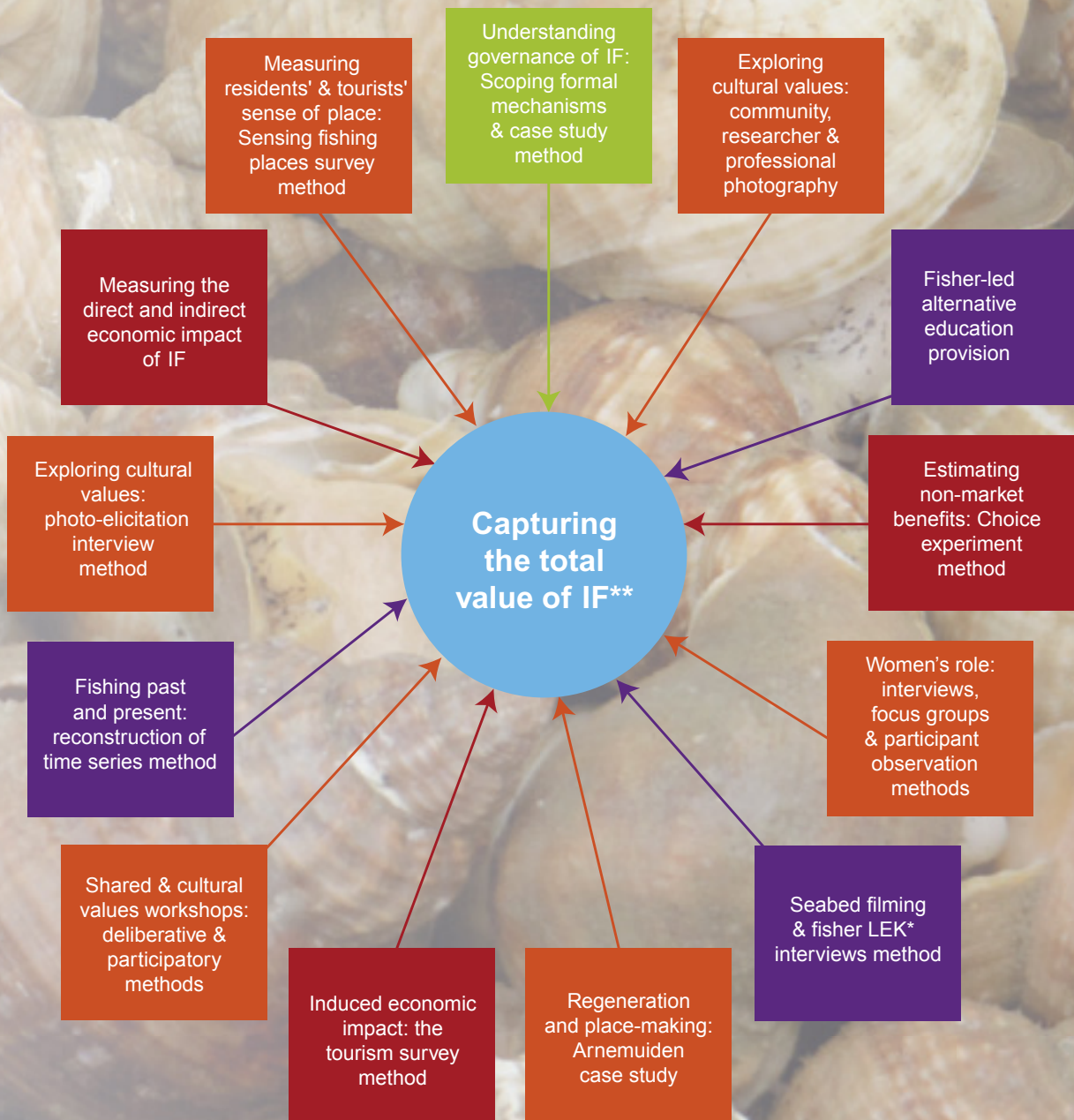
Throughout the GIFS project the partnership was repeatedly told by decision makers that there is a lack of social and cultural evidence on inshore fishing. Communities also expressed a need for tools to help them to value their diminishing inshore fleets and whilst they implicitly understand the importance of maintaining inshore fishing activities, they found it difficult to explicitly demonstrate this. With the outcomes of the GIFS project including a range of methods and approaches for valuing the economic, social and cultural value of inshore fishing it was clear that these should be brought together in a Toolkit to aid both decision makers and fishing communities. Therefore, the methods, along with associated case studies, are presented in this Toolkit in order to illustrate the range of tools that can help policy makers ground their decisions in a robust evidence base and provide communities with approaches that will help them understand the broad value of their inshore fleet and identify potential economic opportunities to secure a sustainable future.

Some of the key findings from the GIFS project that demonstrate the broad social, cultural and economic value of marine fishing are:

- The Gross Value Added of the fishing sector in the GIFS study area (see map on page 7) accounts for around €350 million (10% of the EU fisheries sector).
- The tourism spend associated with the fishing identity has been estimated at €204,783 in Le Conquet (France), €214,818 in Port-en-Bessin (France) and €8.5 million in Hastings (England).
- The Willingness to Pay for the presence of fishing boats has been estimated as €4.93 in France, €3.81 in Belgium, €7.55 in the Netherlands and €4.99 in England (per trip to a coastal location).
- Over 70% of coastal residents surveyed indicated that fishing was an important contributor to sense of place.
- The role of fishing activity in cultural identity can be understood through photo elicitation techniques.
- Fishers' local ecological knowledge can improve the reliability of ecological scientific data.

The range of methods used in the GIFS project (Figure 50) was developed and applied in cross-border collaboration between GIFS partners and local community stakeholders. For more detail on how to apply each method see Chapters 3-6 in the Toolkit. The importance of community participation in the support, co-design and/or delivery of these methods is paramount to the success of their use in addressing the real issues that face coastal communities. The findings help inform a holistic approach to fisheries management that takes better account of social and cultural values, as well as ensuring inshore fishing is better integrated into coastal and marine planning and wider economic development strategies. The objective is to provide a robust set of findings for decision makers and stakeholders that reflect the total value and different ways in which inshore fishing contributes to sustainable coastal communities.

One of the case studies in the GIFS project, Hastings (UK), illustrates how the multiple methods developed in the project have been applied in one town and how this is informing planning, policy and regeneration. Box 15 highlights example benefits of applying the GIFS methods and their resulting findings to the Hastings fleet and the wider town. However, it is important to note the impact of the findings indicated do not cover the long-term value of the GIFS engagement with the fleet (such as the now established knowledge exchange partnership with the Municipality of Middelburg), but rather provide a snap-shot of the benefits to date and early application of findings.



**Figure 50:** The multiple methods applied in the GIFS project to identify and better understand the different ways - social, economic, cultural and environmental - that inshore fisheries contribute to the sustainability of coastal towns and communities.

\*LEK - Local Ecological Knowledge

\*\*IF - Inshore Fisheries

## Box 15: The Hastings case study provides a useful insight into how the GIFS methods can be applied in practice to valuing the multiple benefits that arise from our inshore fishing fleets

Working collaboratively between GIFS partners and the local community in Hastings has helped highlight the value and role of local fishing community knowledge in identifying research needs. This is an approach the Hastings fleet has always advocated in its work with academics, industry scientists, conservation bodies and management authorities. Involving local fishers in research supports a more inclusive data collection approach and a more locally informed data set, as well as enabling a positive knowledge exchange between the different parties to improve future monitoring and marine/coastal planning.

### **In particular the GIFS partnership has helped to facilitate the following in Hastings:**

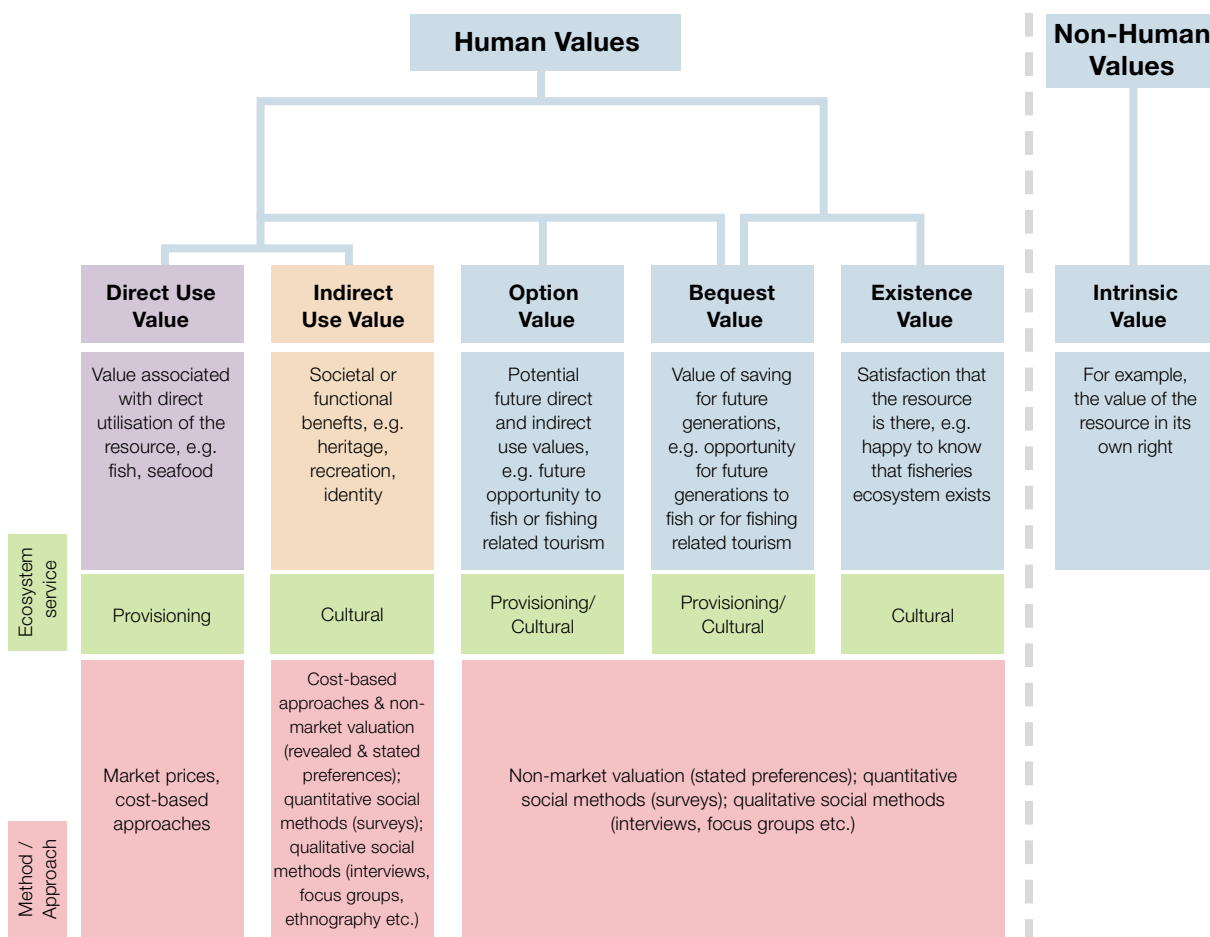
- Building of new cross-border partnerships and establishment of knowledge exchange networks, for example with the Municipality of Middelburg and Horizon Educatief, Oostende, with regard to fisheries related education. The cross-border sharing of ideas, resources and solutions to challenges in building sustainable communities is central to helping both communities achieve their sustainability goals.
  - The development of professional education pack resources in Hastings via the GIFS education model method has enabled a more strategic link to an area-based curriculum and the sharing of education resources with Middelburg.
  - The results of the TEV (Total Economic Value) tourism survey led by the University of Brest have resulted in a Memorandum of Understanding being established between the local FLAG (Fisheries Local Action Group), University of Brighton and University of Brest to continue to develop a longitudinal study of the link between the fisheries and the broader Hastings tourism offer. The work carried out as a result of this partnership is particularly valuable as the town considers its potential as a responsible tourism destination.
  - Hastings was the pilot site for the governance case study method and the resulting guidance on good practice in collaborative fisheries/local community governance has helped shape FLAG strategic planning.
- The participatory methods work through the National Ecosystem Assessment Follow On workshops demonstrated to a wide range of local stakeholders how it is possible to capture a diverse spectrum of values regarding social and cultural ecosystem services (in an inshore fisheries context) that can be used to better inform marine and coastal planning and secure consensus around sustainable community policy objectives and budgets. To access the full workshop report and view a film of the NEAFO work please go to: <http://www.lwec.org.uk/sharedvalues>.
  - Through the Sensing Fishing Places survey an understanding of how fishing contributes to sense of place in Hastings.
  - Working with the Sussex IFCA (Inshore Fisheries and Conservation Authority), the local fleet has been part of a project to involve fishers in capturing more accurate seabed data using underwater cameras suspended from fishing boats. Involving the fishers in this way contributes to mutual partner learning and more effective inclusion of fishers in the fisheries science and conservation process, helping establish the equity of local ecological knowledge in this traditionally natural science driven process.

The value of the combination of methods applied in Hastings can be seen in the use of data to inform multiple policy areas locally and in other cross border regions. For example, the data from the education method is informing the evolution of tourism surveys and vice versa. The Hastings GIFS case study demonstrates that different methodological approaches should be used in combination to achieve a broader picture of the many different direct and indirect ways inshore fishing contributes to the community, environmental conservation and a sustainable coastal economy.

## Final remarks

In conclusion, it is hoped that this Toolkit provides some useful approaches for valuing and understanding the social, economic and cultural impacts of inshore fishing. Some of the situations where these methods may be used include:

- For decision makers:
  - \* To understand the relative economic importance of inshore fishing in different regions/towns
  - \* To make more informed decisions that take account of social and cultural values
  - \* Demonstrating the importance of local ecological knowledge and community engagement in the decision making process
  - \* To identify best practice in fisheries governance at national, regional and local levels
- For fishing community stakeholders:
  - \* For local authorities, to understand how sensitive fishing related townscape and public space improvements can enhance the importance of the heritage of fishing in a place
  - \* Engaging local fishers in developing alternative education programmes
  - \* Enabling dialogue between fishing stakeholders, local authorities and decision makers
  - \* To identify areas of best practice in local fisheries governance
  - \* To assess the economic value of their fishing identity to the local tourism industry
  - \* To assess the contribution of fishing to the local economy by assessing how much fishers spend on suppliers and services



**Figure 51:** Valuing the ecosystem services of marine fisheries through the TEV framework in GIFS.

- \* To measure and value the contribution that inshore fishing makes to sense of place in coastal towns
- \* To value the important role that women play in fishing communities
- \* To use visual and creative media as a way of raising awareness about the social and cultural values of inshore fishing

The intention of this Toolkit and the GIFS project is to highlight the range of social, cultural and economic values that inshore fishing brings to coastal communities. Two ideas were presented at the start of this Toolkit, cultural ecosystem services and Total Economic Value. Taking an ecosystems approach reveals how the importance of inshore fishing extends beyond providing food (provisioning service) into a wide range of cultural services. To provide a framework to help summarise the approaches used in GIFS the relationship between TEV, ecosystem services and inshore fisheries is presented in Figure 51. This diagram illustrates the multiple human values that can be associated with inshore fishing activity. The methods used in the GIFS project are mapped onto the ecosystem services and Total Economic Value framework (Figure 51) indicating the types of approaches that can be used to value different ecosystem services (e.g. provisioning, cultural) relating to fisheries. By applying both quantitative and qualitative approaches it is possible to understand how inshore fisheries are important across the whole range of human values.

Through the various methods and case examples this Toolkit has provided approaches, ideas and inspiration for valuing our inshore fishing fleets. The Toolkit is only a starting point for thinking about the value of inshore fisheries. As the methods get used in different situations they will inevitably be modified and adapted. This is consistent with the spirit in which this Toolkit has been developed with the recognition of the diversity of different fishing towns and communities located around the English Channel and the Southern North Sea.

Although there are many different types of inshore fishing, with communities separated by the sea, there is also a sense of a shared heritage and shared problems. The application of the tools and methods in the approaches adopted through the GIFS project has demonstrated practical methods for valuing the importance of inshore fishing across the whole of the GIFS area and hopefully beyond. In this way the vital role of inshore fishing for delivering a sustainable future for many coastal communities can be properly recognised.







