# Chapter 3
# From Boom and Bust to Local Stewardship: A Governance Benchmark for Celtic Sea Fisheries Management

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## 3.1 Introduction

In 2004 six fishing vessels participated in the Celtic Sea herring fishery and the spawning stock biomass (SSB) was estimated to be 29.000 t. This was very close to the lowest SSB on record, when the stock had previously collapsed and was closed for five years from 1977 to 1982. The stock in 2004 was predominantly composed of 1 and 2-year-old fish and the overall feeling within the management advisory forum was that another complete closure of the fishery was a strong possibility. The total first sale value of the fishery was approximately € 250,000. This was a serious decline for a fishery which in earlier years was targeted by over 100 vessels and seasonally employed over 1500 people in processing factories alone (Molloy 2006).

Fast-forwarding to 2012, we find that the stock has made an excellent recovery back to historically high levels. The total allowable catch (TAC) has increased by over 300 % in four years but is constrained by highly precautionary fishing mortality rules prescribed under the recovery plan jointly developed and agreed by scientists and industry through the management advisory forum. Approximately 72 Irish vessels ranging in size from 10 to 45 m currently participate in the fishery. Over this period the local management forum has persisted and matured and attitudinal changes with regard to long-term decisions and trade-offs between markets and sustainable management are apparent.

This successful stock recovery presents an obvious contrast with the majority of European fisheries over the same period. This chapter, while focusing on the Celtic Sea herring fishery, utilises a governance benchmarking exercise to compare three Irish fisheries with differing success levels in stock recovery and varying governance profiles. First, the following section presents a general introduction to the Celtic

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Sea herring fishery and its management history. This is followed by a governance benchmarking assessment of the fishery and two others for comparative purposes. Next is an analysis of how the local management forum, the Celtic Sea Herring Management Advisory Committee, has impacted on governance and the outlook for implementation of an ecosystem approach; and finally there are some conclusions on what can be learned from the successes and problems encountered in the governance of this fishery and the usefulness of the governance benchmarking approach.

## 3.2 The Fishery and its Management

The Celtic Sea herring fishery is a single species pelagic fishery predominantly targeted by Irish fishing vessels off the South coast of Ireland in International Council for the Exploration of the Sea (ICES) areas VIIj, VIIg and the southern part of VIIa (Fig. 3.1). The fishery is predominantly an inshore one and is conducted by a diverse fleet of vessels ranging from under 10 m multi-purpose inshore vessels up to modern 50 m pelagic vessels equipped with refrigerated seawater tanks. It has traditionally been a very important fishery for both the fleet and processing sectors in the south of Ireland although landings in the last 10 years have been well below their previous peaks and the length of the fishing season has also significantly decreased.

The fishery has in recent years been exploited almost entirely by Ireland with small reported catches by other nations. The only other significant players involved in the fishery are Dutch vessels and Dutch owned vessels registered in France and Germany. It is essentially a single species fishery.

The history of the fishery over the past 50 years has been one of an alternating boom and bust cycle (see Fig. 3.2). The TAC in 2010 was increased by 70% over the 2009 figure and in 2011 increased by a further 30%. In 2011 the rebuilding plan achieved its aim of maintaining SSB above the precautionary biomass level, $B_{pa}$ for the third consecutive year, and the parameters of a long term management plan have been agreed and await ratification by the European Commission. Discussions have focused on the optimal balance between fishing mortality (F), stock biomass (SSB), total catch (TAC) and constraints on annual TAC fluctuations all of which are aimed at minimising the risk of stock collapse. Under the current management regime the fishing mortality rate is at its lowest estimated level in the past 50 years.

### *3.2.1 Current Management Institutions and Approaches*

In 2001 the ICES advice for the Celtic Sea herring stock recommended a cut from the previous year's TAC of 20,000 t to a precautionary level of 6,000 t for 2002. This was mainly based on a poor age profile for the stock which showed an over dependence on juvenile fish. Although eventually the scientific advice for the stock was amended and the TAC was set at 13,000 t, stakeholders in the fishery were concerned enough to establish a Celtic Sea Herring Management Advisory Committee (CSHMAC) in 2001.


**Fig. 3.1** ICES areas in Irish waters and Celtic Sea and Aran fishing grounds

The committee consists of representatives of fishermen, processors, scientists and control authorities. The Committee was established with the overarching goal of sustaining annual catches of 20,000 t and to rebuild the stock if necessary to achieve this. Another strong objective was to improve the partnership between industry and scientists.

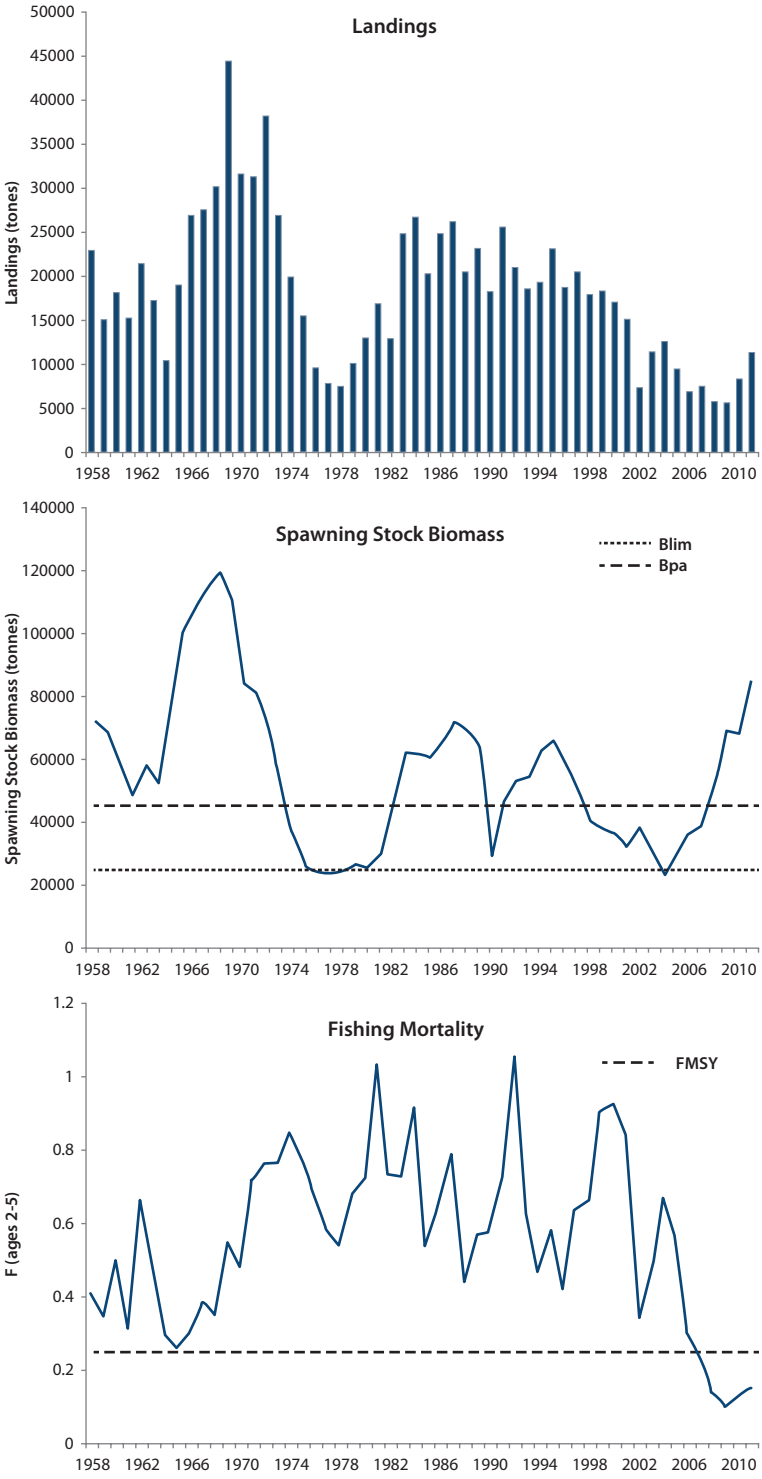


**Fig. 3.2** Landings, spawning stock biomass and fishing mortality in the Celtic Sea herring fishery since 1958. (Source: Marine Institute Stock Book 2011)

In 2005 the Committee was officially recognised as an advisory committee by the Irish fisheries minister and tasked with providing advice to the minister and managers from the fisheries department. Although officially only advisory, following ministerial recognition the committee has found that more of its advice has been accepted and the partnership between industry and science has strengthened. In this sense the management of the fishery could be considered to represent an informal version of co-management.

One of the most significant measures taken was the closure for several years between 2002 and 2006 of a large area off Dunmore East known as the Dunmore Box (Fig. 3.1) where herring spawning took place and where fishing effort had previously been concentrated. This was aimed at reducing catches of small first time spawning herring. However, despite this initiative the TAC continued to decline so in 2007 a rebuilding plan was developed by the CSHMAC in conjunction with scientists from the Marine Institute. The rebuilding plan set a very low fishing mortality level, allowed for a small-scale fishery with a guaranteed quota allocation and strengthened the annual closure of the spawning area. In 2011 the stock was deemed to have recovered and from 2012 a long term management plan (LTMP) will replace it. The LTMP also sets a very low fishing mortality level (well below the fishing mortality estimated to achieve maximum sustainable yield, $F_{MSY}$) and retains the closure of the spawning area.

Another significant development in the fishery within the past decade has been the strengthening of control and enforcement in both legislative and operational terms. These changes have been driven mainly by the introduction of the pelagic weighing regulations and the establishment of an independent fisheries control agency. These factors have increased confidence in the precision of the scientific assessment and the Marine Institute in their most recently published advice state that "under the current management regime the quality of the catch data has improved" (Marine Institute 2011).

## 3.3 Governance Benchmarking

Grafton et al. (2007) describe "ineffective and inappropriate governance" as the number one cause of negative marine ecosystem outcomes. This is certainly echoed in the top five failings of the CFP identified in the European Commissions Green Paper (2009) which were all governance related. Grafton et al. suggest that a governance benchmarking exercise can identify underlying causes of unsustainable fishing and steps towards implementing an ecosystem approach. The idea and process is similar to governance profiling described in Juda and Hennessey (2001) and the governance baseline approach outlined by Olsen et al. (2009). The governance benchmarking assessment evaluates how current governance arrangements may impact on the implementation of an ecosystem approach in the Celtic Sea herring and uses two other fisheries, Aran Ground *Nephrops* and Celtic Sea mixed demersal fisheries, for comparative purposes.

The *Nephrops* fishery on the Aran Grounds in Area VIIb is a well-established fishery that has been exploited since the mid-1970s but has been exclusively an Irish

fishery since around 1988. Currently there are 12 large whitefish vessels (>15 m) and another 8 smaller, weather dependent vessels in the fleet. The majority of these vessels fish from the port of Rossaveal on the west coast of Ireland. Landings of *Nephrops* from the Aran Grounds in recent years have been around 700–900 t. Currently a single TAC is applied to the overall Area VII *Nephrops* fishery, which includes stocks in the Irish Sea, Porcupine Bank, SW Ireland and the Celtic Sea in addition to the Aran Grounds. Despite the use of a variety of technical measures the gear used is still largely unselective for the target species, *Nephrops*, as well as the most common by-catch species such as haddock and hake. There is a single target species for the fishery; it operates in a well-defined inshore area and the participating vessels predominantly land into one port and through one co-operative. The major problem in the fishery is discarding of fish and small *Nephrops*, which have been observed as being high.

The mixed demersal fishery in the Celtic Sea area (centred on ICES Areas VIIg and VIIj) is a highly diverse fishery targeting mainly cod, haddock and whiting, involving a large number of vessels from Ireland, France, the UK and Belgium, ranging in size from 10 to 40 m and fishing with a variety of gears including otter trawls, beam trawls, gillnets and Scottish seines. Currently, the fishery is managed by TACs and quotas. In addition there is a seasonal closure during cod spawning of three ICES statistical rectangles in Areas VIIg and VIIf that has been in place since 2005 as well as a range of gear-based technical measures. Discarding is believed to be considerable for all species driven *inter alia* by restrictive TACs and poor gear selectivity. The current scientific advice for the major whitefish stocks in this area is uncertain. In comparison to the Celtic Sea herring and Aran *Nephrops* fisheries, this is much more problematic with governance arrangements complicated by the mix of target species, fleets, gears and national management structures. There are emerging positive examples of co-operation across fleets in the fishery. The seasonal closure currently in place is the result of a transnational industry initiative and there are active discussions between industry and scientists, facilitated through the North Western Waters Regional Advisory Council (NWWRAC) in developing a long term management plan for whitefish in the area.

The criteria used for governance benchmarking are derived from a number of sources. The primary source is the five key governance principles identified from the literature by Grafton et al. (2007): accountability, authority and responsibility; transparency; incentives; risk assessment and management; and adaptability. These are supplemented with the principles of the Ecosystem Approach to Fisheries Management (EAFM) and marine management summarised from a number of the most commonly cited and relevant policy documents and journal papers (see Table 3.1). The criteria are also inclusive of the principles used in a European Commission White Paper on Good Governance including: participation, openness, accountability, coherence and effectiveness (EC 2001). These five principles are also contained in Art. 2 of the current CFP regulation (EC 2371/2002) and the European Commission Green Paper on CFP Reform (2009). Juda's (1999) interpretation of integration included integration between natural and social sciences as a desirable step towards including multi-disciplinary perspectives and this facet is incorporated in the benchmarking criteria. Table 3.2 lists the criteria used and summarises the benchmarking scores for each of the three fisheries.

**Table 3.1** Principles of the ecosystem approach summarized from literature

| Principle | FAO[1] | UNGA[2] | CBD[3] | MSFD[4] | CCAMLR[5] | Australian EBM[6] | ICES[7] | WWF[8] | Costanza *et al*[9] | Juda[10] |
|---|---|---|---|---|---|---|---|---|---|---|
| Maintain ecosystem integrity & function | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ |
| Broad stakeholder participation | √ | √ | √ | √ | | √ | √ | √ | √ | √ |
| Apply the precautionary principle | √ | √ | √ | √ | √ | | √ | | √ | √ |
| Use adaptive management | | | √ | √ | | √ | √ | √ | √ | √ |
| Ensure spatial & management compatibility | √ | √ | √ | | | | √ | | √ | |
| Use a sectorally integrated approach | √ | √ | √ | | | | √ | | | √ |
| Use a social-ecological systems approach | √ | √ | | | | √ | | √ | | |
| Utilise broad knowledge base | | √ | √ | | | √ | | | | |
| Use incentives | √ | | | | | | | | √ | √ |
| Devolve management to lowest appropriate level | | | √ | √ | | | | | | |

[1] FAO 2003, [2] UNGA 2006, [3] Convention on Biological Diversity 1998, [4] EC 2008, [5] CCAMLR 1982, [6] Scandol et al. 2005, [7] ICES 2005, [8] Ward et al. 2002, [9] Costanza et al. 1998, [10] Juda 1999

**Table 3.2** Results of the governance benchmarking assessment

| Category | Criteria | Benchmark Score* | | |
|---|---|---|---|---|
| | | Celtic Sea Herring | Aran-Nephrops | Celtic Sea De-mersal |
| Objectives | Are there clear strategic objectives? | 1 | 1 | 1 |
| | Are there clear operational objectives? | 2 | 1 | 1 |
| | Has a long-term management plan been agreed and implemented? | 3 | 0 | 1 |
| Responsibility | Is there accountability for decisions and outcomes? | 2 | 2 | 2 |
| | Are there clearly defined roles and responsibilities? | 2 | 1 | 1 |
| | Are independent management assessments used? | 2 | 2 | 2 |
| | Are social performance indicators used? | 0 | 0 | 0 |
| | Are economic performance indicators used? | 1 | 1 | 1 |
| | Are ecosystem performance indicators used? | 1 | 1 | 1 |
| Transparency | Is the decision-making process transparent to non-participants? | 0 | 0 | 0 |
| | Is the research process collaborative? | 3 | 2 | 3 |
| Participation | Is there a formal or informal co-management process? | 3 | 1 | 1 |
| | Are a broad spectrum of stakeholders involved in management? | 2 | 1 | 1 |
| Incentives | Are there incentives to avoid by catch & habitat damage? | 2 | 0 | 1 |
| | Is a rights-based-management system used? | 0 | 0 | 0 |
| | Is there strong enforcement of the rules? | 4 | 3 | 3 |
| Adaptive Management | Is in-season adjustment to management possible? | 1 | 0 | 0 |
| | Is there a real-time closure option | 2 | 1 | 1 |
| | Is fishers tacit knowledge utilized? | 2 | 2 | 2 |
| Integration | Is there an integrated institutional framework? | 1 | 1 | 1 |
| | Is there integration between natural and social sciences? | 2 | 1 | 1 |

*Benchmark scores: *4*-Governance element fully in place; *3*-Governance element mostly satisfied, but not yet fully operationalized; *2*-Governance element partially satisfied, but further development is required; *1*-Governance element is not satisfied, but steps towards its development are in place; *0*-Governance element missing in the fishery

For the purpose of summarising and communicating the results of the governance benchmarking exercise a five-point grading system used by Grafton et al (2007) is employed as it provides a simple visual indication of the degree to which the criteria have been operationalised. In order to facilitate score comparison across the case study fisheries a numeric notation is used to indicate performance rather than the alphabetic one used by Grafton et al.

The governance benchmarking results are based on 20 interviews with a range of participants in the management of the assessed fisheries. The interviewees included two inshore fishermen, four fishermen operating traditional "dry-hold"[1] vessels, three skippers of larger refrigerated sea water vessels, two representatives of fishermen's organisations, two scientists responsible for the assessment of the stocks, two managers of fish processing plants, two salesmen for fisheries cooperatives, a fisheries protection officer, a director of a responsible fishing certification scheme and a director of a marine environmental NGO. The benchmarking is also based on observations made while attending approximately 60 meetings of CSHMAC and on my own experiences of working within Irish fisheries governance as both an employee of a fishermen's representative organisation and afterwards as an observer.

## *3.3.1 Discussion of Benchmarking Results by Category*

### 3.3.1.1 Objectives

Clear and prioritised management objectives are essential to developing and measuring the success of management plans (Pascoe et al. 2009). The current CFP objectives are cursory and extremely high level (Symes 2009) and accordingly offer very little to guide strategic planning at the fishery level. Although the CFP specifies that it should satisfy environmental, social and economic objectives the European Commission itself criticises the lack of priority setting between objectives and the fact that "There are no clear indicators and yardsticks that could provide more concrete guidance or to help measure policy achievements" (EC 2009).

It is obviously difficult to see how operational objectives can be set in the absence of higher level strategic ones and accordingly this criteria scores poorly. In the Celtic Sea herring fishery there has been an indigenous attempt to set long-term objectives firstly through the recovery plan and now through the agreed long term management plan (LTMP). However these objectives are narrowly focused on biological or stock targets and the long term plan does not have any formal status as it has not at the time of writing been assessed by STECF. The fact that the CSHMAC is advisory rather than a statutory management forum with limited ability to make some significant decisions also makes it difficult to give a higher grade to this criterion.

The drafting of long-term management plans has been incentivised by a ruling from the European Commission (EC 2011), which prescribes a highly precautionary TAC setting in the absence of an LTMP. The use of LTMPs should have an additional benefit of reducing the level of political horse trading at December council meetings. Of the three fisheries assessed here only Celtic Sea herring has a locally agreed LTMP. The NWWRAC is currently developing a LTMP for Celtic Sea demersal

[1] "Dry-hold" vessels store their herring catches in the traditional way, mixed with ice in lockers or compartments in the fish hold. Their numbers have decreased rapidly over the past 10 years due to increasing completion from vessels which can store their fish for longer in refrigerated sea water (RSW) tanks.

fisheries but it is still a draft and has not yet been subjected to any scientific assessment. To date there have been no attempts to develop a management plan for the Aran *Nephrops* fishery. The Irish Marine Institute Stock Book for 2011 makes the following recommendation: "There are no explicit management objectives or a management plan for Nephrops stocks in VII. FSS recommends that management objectives be established and that management plans be developed with stakeholders and implemented for fisheries catching Nephrops" (Marine Institute 2011).

The difficulty with not having clear policy objectives is illustrated in a recent review of management arrangements for Irish herring fisheries, instigated in 2011 by the Irish fisheries minister at the request of some industry representatives unhappy with existing arrangements. Written submissions from all interested parties were sought and a Ministerial proposal was produced in response. Due, in particular to objections to the proposed restriction on future access to the fishery, a public meeting to discuss the issues was organised in January 2012. In terms of consultation the process was fair, all interested parties were given two opportunities to make written submissions and one to air their views at a public meeting. However, the problem remains that the Minister's criteria on which to base his decision are essentially arbitrary. There is no national policy on allocation of fisheries quotas in general nor on pelagic fisheries specifically. However, there is an *ad hoc* process of limiting access to pelagic fisheries underway. To date restricted access regimes for mackerel, horse mackerel, blue whiting, boarfish and herring have been established but in each case the allocation criteria has varied. Concerns about the basis for the Minister's decision are evident in the fact that at least one fishermen's organisation submitted a request to the Minister asking that he include, with his final decision, an explanation for the criteria used.

#### 3.3.1.2 Responsibility

Interviews with participants in the governance system indicate that they generally feel that their roles are reasonably well defined but that accountability is very poorly structured which results in the 'blame game' being regularly played out between various governance parties. This is symptomatic of a poorly structured governance system, which is mirrored at national and European level. The creation of advisory bodies such as CSHMAC and the RACs at both levels does little to improve accountability as an advisory group can easily disown negative outcomes by provision of examples of their advice being ignored and their ignorance of the criteria used to make the final decision. Furthermore, an advisory committee usually has influence only on certain aspects of the management process. In terms of Schlager and Ostrom's (1992) hierarchy of decision-making, advisory committees operate mainly at the operational level, partly at the collective choice level but critically not at the constitutional level where the most fundamental decisions are taken.

On independent management assessment the fisheries score more highly. ICES evaluate scientific aspects of management, particularly with respect to precaution and periodically ICES Working Groups will nominate a problematic stock for a full audit. STECF also assess technical and economic aspects of management decisions

and plans. However, there is no mandatory requirement, such as exists in the US under the Magnusson-Stevens Act, for a full management strategy evaluation.

The use of indicators with which to monitor the success of management plans is a definite problem area. At present biological or stock indicators are used comprehensively but from a governance perspective broader reference points and indicators are essential elements. However, this relates to the issue of clear objectives: without explicit social, economic and ecosystem objectives the use of indicators is rather pointless, except perhaps to produce a data set to act as a baseline to inform the assessment of success relative to some future objective. The use of ecosystem performance indicators should increase rapidly as a range of ecological data is now required under the Data Collection Framework, the Marine Strategy Framework Directive, the Habitats Directive and the Water Framework Directive.

The absence of social indicators reflects the fact that social objectives have been dealt with in an equivocal fashion in European fisheries governance (Symes and Phillipson 2009). Repeated references to issues such as "providing a fair standard of living for those who depend on fishing activities" in the basic CFP regulation (Council of European Ministers 2002) are not backed up with any explicit objectives or operational targets. This problem originated in early CFP negotiations where France and Italy had tried in 1960 and again in 1992 to have social objectives included in the CFP, specifically to have funding allocated to alleviate unemployment arising from shrinking fishing fleets but these attempts were unsuccessful due to concerns about increasing the Community budget (Holden and Garrod 1996).

#### 3.3.1.3 Transparency

There is a highly opaque decision-making process in each of these three fisheries. A member of the general public would have extreme difficulty in getting information on how operational or strategic decisions were made. Whether management meetings are occurring at local, national or European level, very few of the negotiations are subject to public scrutiny. CSHMAC has recently developed an action plan to address this issue as it was raised during the assessment process for Marine Stewardship Council (MSC) certification.

The collaborative research process scores are better as there is a long-standing relationship between scientists and CSHMAC and improving levels of collaborative scientific initiatives in relation to Celtic Sea demersal fisheries. Some conflict with industry has set back attempts to build a science-industry partnership in the Aran *Nephrops* fishery but there has been a project attempting to utilise the knowledge of fishers participating in the fishery.

#### 3.3.1.4 Participation

Participation of stakeholders in management is a key principle of the ecosystem approach, second only to the maintenance of ecosystem structure and function in terms of citation frequency in the EAFM literature. The 2001 EU White Paper on gover-

nance (EC 2001) lists participation as one of its five key components and states that "The quality, relevance and effectiveness of EU policies depend on ensuring wide participation throughout the policy chain—from conception to implementation."

Dubbink and van Vliet (1996) describe three governance levels, the macro-level of state and inter-state bureaucracy, the meso-level of civil and private organisations and the micro-level of individuals. The co-management and interactive governance perspectives emphasise that good governance requires a greater input from the meso- and micro- levels. Grafton et al., in their paper on governance benchmarking, also alludes to the same issue when describing the challenge of connecting higher-level ecological goals with day-to-day management decisions as the missing link in fisheries governance (Grafton et al. 2007).

Typologies of both participation (Arnstein 1969; Pretty 1995) and co-management (Sen and Raakjaer Nielsen 1996; Carlsson and Berkes 2005) have been developed, all of which loosely range from hierarchical, manipulative or non-participatory modes at one end through various degrees of consultation through to full delegation of power or self-mobilisation at the other end. If we accept the definition of co-management as "the sharing of power and responsibility between the government and local resource users" (Berkes et al. 1991) then none of the three fisheries exhibit what would strictly be classified as a formal co-management structure. However, in all but name, which denotes an advisory role, CSHMAC can be considered as an informal co-management process as the majority of its recommendations are implemented across many aspects of management.

Aran *Nephrops* and Celtic Sea demersal fisheries are more typical of the general Irish fisheries management framework in that they do not have a dedicated management forum and are centrally managed at a departmental level and as part of the NWWRAC sub-committee structures. As these fora are advisory or consultative the degree of sharing of rights and responsibilities is quite low and thus cannot be classed according to Berkes et al.'s definition as co-management.

In terms of breadth of stakeholder participation Irish fisheries management is quite restrictive being limited largely to representatives of state institutions (department officials, scientists and the state fisheries development board) and the fisheries organisations. The NWWRAC stakeholder profile is more inclusive with one third of membership being open to interested parties from outside the fishing industry. This division of power within the RAC structures has been criticised as creating an imbalance of power particularly for minority interests with less resources than well-funded fisheries organisations (Lutchman et al. 2009; Long 2010). The counter position to this has been described as the participation paradox: "the greater the number of actors, the smaller the role each plays, and the lesser the importance of traditional sectors" (Suarez de Vivero et al. 2008).

CSHMAC has recently increased the diversity of stakeholders with the invitation of an environmental NGO, representatives of the fisheries control agency and social scientists to attend meetings on a regular basis. The MSC certification process has incentivised, through recommendations on governance of the fishery, the formalisation of these expanded stakeholder arrangements.

#### 3.3.1.5 Incentives

Economists have emphasised the importance of understanding the role incentives play in fisheries management for many years (Clark and Munro 1975; Hatcher 1997; Hatcher and Gordon 2005). In the past 20 years that emphasis has been expanded to accommodate complex systems theory and in particular the need to embed incentives within an ecosystem approach (Hanna 1998; Hilborn et al. 2005; Grafton et al. 2006; Charles 2006). Rights-based management has been identified as a key enabling factor for positive economic outcomes in common pool resource management contexts (Ostrom 1990; Grimur Valdimarsson and Metzner 2005; Bromley 2008; Costello et al. 2008).

However, the emphasis on incentives and rights-based mechanisms has not significantly penetrated the governance regime of the three Irish fisheries assessed here with the exception of the control regime. Unsurprisingly this produces a feeling among industry that the governance regime is all stick and no carrot. In all three fisheries there are significant disincentives for conservation actions due to the fact that all three fisheries are in either full or partial open access regimes.

In relation to avoiding bycatch and habitat damage the incentives again are all top-down which fishermen often perceive as a negative. The designation of Special Areas of Conservation under the Habitats Directive, in contrast to the closure of spawning boxes for herring and cod in the Celtic Sea, have not received much fishing industry support. This may be due to their permanent nature, dissatisfaction with the designation process or simply because they do not have a perceived benefit for their target species.

A recent announcement by the Fisheries Minister whereby additional quota will be given to fishermen using nets with an approved escape device for young fish in the Celtic Sea demersal fishery indicates a change in attitude towards the use of incentives to avoid bycatch.

It remains to be seen whether environmental certification can act as a strong driver of change in terms of incentives to avoid environmental damage. CSHMAC has asked, as part of the certification process, to develop an environmental impact plan by the MSC process auditors and this plan will address issues such as cetacean bycatch, the use of observers, protection of gravel spawning beds and other environmental impacts from the fishery.

#### 3.3.1.6 Adaptive Management

Examples of ‘active’ adaptive management are few due, at least in part, to practical difficulties in designing management measures as experiments and also in attributing outcomes to measures adopted (Defeo et al. 2007; Walters 2007). Nevertheless, it is widely cited as being a crucial element of an ecosystem approach (Walters 1997; Olsson 2006; Armitage et al. 2009). ‘Passive’ adaptive management, which places a different emphasis on the learning aspect of the manage-

ment process and does not require multiple simultaneous management strategy experiments, is probably a more pragmatic option. It incorporates the idea of addressing uncertainty through learning by doing, and is explicitly iterative. It is sometimes disparagingly described as *ad hoc* management but in fact adaptive management follows a planned and deliberate sequence of monitoring, assessment and design.

Aspects of adaptive management are being implemented in these fisheries: there is a trend towards increased use of real-time measures and fishermen's knowledge. However, there are some serious challenges to the application of adaptive management in the three fisheries. These include a persistent desire for stability, predictability and certainty by all stakeholders. Additionally, the explicit use of alternative management strategies, evaluation of their consequences and scenarios aimed at addressing uncertainty will require a change of mind-set and additional flexibility which does not necessarily fit with the current development of LTMPs. Such a planned and experimental approach more than likely requires an institutional maturity, which would have to be preceded by a period of co-management capacity building.

#### 3.3.1.7 Integration

Poor scores on integration within the institutional framework are unsurprising given the disintegrated marine governance structures existing at Irish and European level currently. Despite the fact that there is now an Integrated Maritime Policy (EC 2007) and a Marine Strategy Framework Directive (European Council and Parliament 2008) both of which cover multiple industrial sectors the degree to which fisheries policy will be integrated particularly within the IMP framework is debatable (Juda 2007; van Hoof and van Tatenhove 2009; Rätz et al. 2010; Wakefield 2010).

At an Irish level the degree of disintegration is a concern. There is an interdepartmental co-ordination committee comprising the assistant secretaries of at least five different departments with marine responsibilities. There is some evidence of a move to improve this as a consultation that aims to develop an integrated Irish marine policy.

Juda (1999) states that "social scientists also have an essential role to play in the governance process since ecosystem-based governance addresses human behavior". In comparison, particularly with Nordic countries such as Norway and Denmark, Irish fisheries research and governance have not until recently included any significant role for social science or economics so integration between natural and social sciences has been almost non-existent. Moves to redress this are being made and current Irish research programmes include investigations of governance aspects of the ecosystem approach, the economics and socio-economics of Irish fisheries, and the collation and use of fishermen's tacit knowledge.

## 3.4 The Role of the Local Management Forum & EAFM Implementation

Three basic modes of fisheries governance have been described (Gray 2005; Symes 2006): top-down or hierarchical governance; self-governance which involves devolution of responsibility to the individual level; and co-governance involving a partnership between the state and user groups.

Few world fisheries systems correspond exactly with these ideal alternatives but instead contain elements of each to a greater or lesser degree. The governance benchmarking exercise has shown that overall Irish fisheries governance can be classified as a hierarchical or top-down system but one that shows a slight trend towards increasing incorporation of co-governance elements. Although the Minister and civil servants consult on the majority of issues with the fishing industry and the number of fora where such consultations take place has been increasing, stakeholder representatives are limited to an advisory role. Executive authority in all cases still rests exclusively with the Minister and his department officials.

A hierarchical system if it functions well is not necessarily negative. However, in the case of Irish fisheries the effectiveness of the hierarchical structure is compromised both by weak national policy making capacity and by serious legitimacy problems with the CFP. The first issue, that of weak national policy-making capacity, is well illustrated by the lack of a management framework for Irish inshore shellfish fisheries. Given that 73% of vessels on the Irish fleet register are under 12 m, it is evident that good governance arrangements for the sector should be a priority. The most tangible fisheries recommendation in a recent Irish Department of Agriculture policy statement, Harvest 2020, is that "the implementation of a specific Inshore Fisheries Management framework should proceed as speedily as possible" (Department of Agriculture 2010). The fact that 40 years after Ireland entered a common European fisheries system it still lacks a management framework for the main fisheries sector within its exclusive competence is more of an indictment of its past governance regime than a laudable objective for the future.

The second issue with the hierarchical governance regime, that of the legitimacy of the CFP, is summarised in the report on a comprehensive Irish fisheries strategy review conducted in 2006, which concluded that the principal cause of conflict in Irish fisheries was the fact that "the EU Common Fisheries Policy, which the State is required to implement, is universally unpopular with the fishing industry" (Cawley et al. 2006). This legitimacy problem creates significant challenges for centralised policymaking and governability (Jentoft 2000; Chuenpagdee and Jentoft 2009), which strengthen the case for some further devolution or regionalisation.

Specifically in relation to the ecosystem approach the lack of policy direction at national level is compounded by shortcomings in the CFP. Under Art. 2.1 of the 2002 CFP (EC 2371/2002) there is a commitment made to the "progressive implementation of an ecosystem based approach to fisheries management". However, the lack of any definition of strategy, goals or indicators for implementation of an

EAFM within the 2002 CFP has been widely criticised (Sissenwine and Symes 2007; Lutchman et al. 2009; Symes 2009). The Commission itself has criticised its own progress on the ecosystem approach in the CFP Green Paper (EC 2009) where they find that "while direct references are made to adopting a precautionary and an ecosystem approach …. there are no clear indicators and yardsticks that could provide more concrete guidance or to help measure policy achievements". Simply put, there are no extant European or Irish fisheries policy drivers towards implementation of the ecosystem approach. This is a definite barrier to the implementation of an ecosystem approach as it constrains the capacity for change at lower levels.

The governance benchmarking exercise examines how these policy issues are manifested in three Irish fisheries. In general the fisheries do not score particularly highly but Celtic Sea herring does perform better overall. In terms of an average grade across all the criteria examined, the Celtic Sea herring fishery scores 2, indicating that governance elements are partially satisfied but further development is required. The other two fisheries, Aran *Nephrops* and Celtic Sea mixed demersal, do less well with an average score of 1, which indicates that governance elements are not satisfied, but steps towards their development are in place. The most significant differences between the fisheries were in relation to the existence of a long-term management plan and also the degree of management participation. In the case of Celtic Sea herring these two factors are intrinsically linked, as the presence of a dedicated management forum over a number of years created a platform for a strong industry-science partnership, which in turn facilitated the development of a long-term management plan.

In total, on 10 out of 21 criteria Celtic Sea herring scored better than either of the other two fisheries. Not all of these improved scores can be attributed to the presence of a co-management process; for instance, a higher score for control and enforcement reflects the fact that regulations governing pelagic fisheries are better defined and more prescriptive than for demersal fisheries. However, in the categories of operational objectives, accountability, broad stakeholder involvement, incentives to avoid bycatch and habitat damage, adaptive management and integration, much of the drive to improve these aspects has come through CSHMAC. It is a strongly held belief among those interviewed that both governance performance and biological stock status for Celtic Sea herring would be closer to those for the other two fisheries in the absence of a longstanding management forum.

## 3.5 Conclusions

Chuenpagdee and Jentoft, and others within the interactive governance school of thought, caution against approaching governance as a set of idealised performance indicators which are attainable within any system (Kooiman 2005; Chuenpagdee and Jentoft 2007). They advocate an examination of governability, which involves a detailed assessment of the interactions between the governing system and the system to be governed. This gives a more realistic measure of the capacity of a

**Table 3.3** Building blocks and obstacles in moving towards an ecosystem approach in Irish fisheries

| |
|---|
| *Building opportunities* |
| Collaborative research initiatives |
| Increasingly effective control and enforcement |
| Example of some co-management success with Celtic Sea Herring |
| Top-down drivers towards development of Long Term Management Plans |
| Changing incentives and greater industry assumption of responsibility under MSC or other certification schemes |
| Increasing use of ecosystem indicators required under EU legislation |
| *Obstacles* |
| Opaque management process and decision-making criteria |
| Lack of clear strategic and operational objectives |
| Underuse particularly of social and also economic indicators |
| Participation is purely consultative for most fisheries and stakeholder field is narrow |
| Underuse of 'positive' incentives such as rights based management and incentives to minimise environmental impacts |
| Absence of an integrated framework |
| Adaptive management would require both a general mind-set and institutional change |

given social-ecological system to attain good, but reachable, rather than ideal, but unattainable, governance goals. The governability approach recognises that many natural resource management processes are inherently political, are influenced by variable human and financial resource availability and that many governance performance indicators are contestable. This is evidenced in the on-going debate about the benefits of participation in resource management and whether a greatly expanded pool of participants enhances or inhibits the management process (Dubbink and van Vliet 1996; Mikalsen and Jentoft 2003; Suarez de Vivero et al. 2008). The reality is that the right level of participation, devolution, transparency etc., depends on the individual case and detailed contextual understanding is required to ensure good governance outcomes.

However, a governance benchmarking exercise is very useful as an intermediate or scene-setting stage for more detailed analysis (Adrianto et al. 2005). In this chapter an attempt has been made to put the crude mechanistic benchmarking scores into context with the history of the fishery and its management. To summarise the findings from this assessment Table 3.3 lists the significant building blocks and obstacles towards the implementation of fisheries ecosystem plans in the context of the fisheries assessed.

These opportunities and obstacles highlight the need for stronger policies which both facilitate and incentivise local management actions and which ensure that wider societal concerns are addressed within local management fora. CSHMAC has shown that local management initiatives can autonomously improve governance structures and, in the process, promote stock recovery and ameliorate conflict. However, when left to their own devices, and without strong policy direction, issues which may not rank highly on the priority list of the fishing and processing industries (for example, non-commercial food-web elements or the necessity for

transparency and inclusiveness in decision-making) will inevitably not be reflected in management actions. Additionally, despite the informal co-management status that advisory committees may attain, their ability to address higher level decisions is limited. Accordingly, issues such as the setting of high-level objectives, the use of social and economic indicators, institutional integration and resolution of property rights issues lie outside their control and depend on policy makers at both the European and national levels to improve their performance.

This has implications for management of coastal fisheries in the wider European context. Coastal fisheries do not exist in a governance and biological vacuum; actions taken and stock levels are influenced by a complex web of interactions across varying ecological and institutional scales. Ideally, a form of multi-level governance is required. Multi-level governance has been defined as "the sharing of policy-making competencies in a system of negotiation between nested governments at several tiers (supranational, national, regional and local) on the one hand and private actors (e.g. NGOs, producers, consumers and citizens) on the other" (van Hoof et al. 2012). This multi-level governance would be informed by strategic policy directives aimed at ensuring that high-level sustainability objectives are achieved. At the local fishery level tailored and collaborative decision-making aimed at the long-term would be possible through a local management forum. Crucially, there should be one or more intermediate levels, such as the Regional Advisory Councils (RACs), where issues such as interactions between fleets from different member states and the possibility of scaling up responses to locally successful management initiatives would be discussed. While such a governance system would not be a panacea for all fisheries management problems, it would certainly address some of the prominent obstacles to implementation of an ecosystem approach.

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