

Chapter 2

Finding Solutions: Resilience Theory and Europe's Small-scale Fisheries

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Keywords Small-scale fisheries • Resilience • Co-governance • European Union

2.1 Introduction

The failings of conventional fisheries management are by now all too familiar, yet the search for real solutions appears to be making relatively little headway. In the case of the European Union's Common Fisheries Policy (CFP), for all the promises of fundamental change that launched the 2012 reform process, the outcomes are but pale shadows of the ambitions highlighted in the Green Paper (EC 2009). Why? The underlying reasons are becoming increasingly clear: institutional inertia that owes much to the rigid legal framework of the EU constraining the scope for reform of the decision making system; a lack of political will for fundamental institutional change, with some member states seemingly unwilling to risk the wider European project over an issue as insignificant as sustainable fisheries; and a lack of credible alternatives to the current approach. All of this points to a real difficulty in breaking away from a path dependent course of action that had characterised earlier attempts at reforming the CFP (Gezelius and Raakjaer 2008). There may also be a more basic issue, namely that those who control the destiny of the CFP have failed to grasp the true nature of the problems that beset fisheries and marine environmental policy and the dangers implicit in continuing to follow the well-trodden path.

Against the background of this somewhat fatalistic and perhaps simplistic analysis, significant progress has been made in the conceptualisation of sustainable fisheries management. Over the past decade the social sciences have been active in the quest for alternatives to the often dysfunctional systems of management that have characterised modern industrial fisheries. Their research has taken a number of different directions offering, for example, a more developed understanding of the nature of fisheries/marine environmental issues that render them difficult to contain within a simple notion of 'management'; alternative models of decision making; or a bold new paradigm for the stewardship of natural resources. As a result several

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new concepts have entered the discourse on fisheries policy where ‘governance’ is now often preferred to ‘management’ and where ‘participatory decision making’ is regarded as the norm and ‘regionalisation’ is becoming part of the received wisdom of sustainable fisheries. To a degree, however, such developments may be cosmetic—part of a ‘progressive’ jargon that attempts to mask a largely unreconstructed view of how fisheries should be handled.

The aim of this chapter is to test the waters of the CFP to gauge how far alternative solutions to managing the complex issues of small-scale fisheries might be feasible. First three complementary developments in the conceptualisation of fisheries and their management are examined, focusing on the design of the governing system. Then the current governing systems at EU and member state levels are dissected to assess how far they are capable of accommodating the alternative approach. The analysis suggests that the existing management frameworks are becoming increasingly inhospitable to fundamental change, and the conclusion briefly considers the implications both for the future of small-scale fisheries and for the viability of alternative solutions in general.

2.2 Key Developments in Theory and Practice of Fisheries Policy

2.2.1 Reformulating the Nature of Problem Solving in Fisheries

Fisheries—especially when considered in the context of marine ecosystem sustainability—are commonly faced with problems which are difficult to define and separate from other wider issues and, therefore, difficult to effect permanent solutions. The term ‘wicked problem’ used to describe such situations was first coined nearly 40 years ago by Rittel and Webber (1973) in relation to planning theory and practice. As Jentoft and Chuenpagdee (2009) have argued, this is particularly relevant to fisheries where coastal ecosystems are typically diverse, complex and dynamic and where it is not always clear from a fisheries perspective what the problems are, what their underlying causes might be and how far the outcomes of management solutions may be unexpected and potentially perverse.

At a time when the major issues relating to fisheries management were considered to be essentially biological and concerned largely with population dynamics, it may have appeared possible to get away with linear projections and technical fixes (TACs and quota; mesh size regulations etc). These, however, tended to unravel as a consequence of uncertainties in the science of stock assessment relating to the measurement, processing and modelling of the data. Bio-economic modelling may have further compounded the problem by ascribing an unrealistic measure of certainty to human behaviour. As most social scientists will appreciate, many of the problems relating to fisheries and their management are unique in time and space and their

solutions, involving judgement and choice, are likely to be contested. Defining the issues to be tackled is itself a wicked problem. Problem definition, goal formulation and solution finding are all likely to be challenged and the conflicts that arise both within and outwith the governing system may never be fully resolved. Stakeholders, often with widely differing perceptions of the problems and their solutions, form part not only of the system to be governed but also, through participative governance, the governing system itself. Though constant consultation, negotiation and reframing of the issues may help to reconcile some of the differences, most policy decisions will ultimately be based on political choice rather than scientific reasoning.

The lessons that follow from this analysis are that little progress will be made towards the goal of sustainable fisheries while we continue to adopt a simple, reductionist and instrumental approach, applying expert knowledge in the form of technical fixes delivered in a top-down, command and control system of decision making. Addressing wicked problems requires greater subtlety mediated through a broad governance approach rather than recourse to the much narrower managerial toolbox. Governing functions must be developed; local knowledge and experience (both ecological and socio-cultural) should be blended with formal evidence from both the natural and social sciences; and stakeholders need to be fully engaged in the governing process through communicative action. Some of these lessons may have already been learned, but so far the only evidence is to be found in the rhetoric of policy proposals rather than in practical solutions.

2.2.2 *Improving the Governance of Fisheries*

The seeds of interactive governance were being sown in the 1980s with the shift from state control to neoliberal and more inclusive systems of governance following the realisation that the state was unable to cope with increasingly complex societal problems (Rhodes 1996; Chuenpagdee 2011). Jentoft and Chuenpagdee (2009) acknowledge the important contribution of Kooiman et al. (2005) in developing the theme of governance and, in particular, elaborating the notion of interactive governance as a core component in tackling the wicked problems of fisheries and coastal governance. Kooiman et al.'s *Fish for Life: Interactive Governance for Fisheries* was the culmination of several years' involvement in articulating the concept of governance and, more specifically, a major collaborative social science project initiated in 2001.

Governance is viewed as a task shared by public and private actors alike, with the boundaries between the public and private domains becoming increasingly blurred. At the heart of interactive governance is the recognition of three distinct 'orders of governance': first order tasks involve the identification of everyday problems and are, therefore, closely akin to what we recognise as management; second order responsibilities are largely concerned with institutional arrangements; and third order or meta-governance functions involve elaborating the values, principles and criteria

that guide policy making. According to Kooiman et al. (2005) too much attention has in the past been paid to the end stages of decision making and the means of delivering fisheries policy (first and second order functions) and too little was given to refining the values and principles on which rational decision making should be based.

Kooiman et al. (2005) started from the assumption that existing forms of policy making are too reliant on narrowly defined, static policy communities with limited knowledge applied to simple world models that are no longer fit for the purpose of governing diverse, complex and dynamic ecological and social systems. They argue for a broadening of the policy community and an open, interactive decision-making process capable of integrating a wide range of views. Built on ideas of inclusivity of representation, interactive learning and partnership building, interactive governance remains rooted in the principles of rationality, efficiency and performance (in terms of effectiveness, legitimacy and moral responsibility) which must be consistently applied often in the face of hard choices.

Scale is an important consideration both in terms of the efficacy of the governing system and also the complementarity of interactions between different levels of governance (supranational, national, regional and local). Interactive governance is expected to be most effective at the local level when dealing with smaller, less complex systems-to-be-governed, compared to the larger regional or national scales where not only are the issues more complex but the range and number of actors is also much greater. However, where decision making is too narrowly structured in terms of the definition of the problem and the range of stakeholders involved, the solutions are less likely to favour resilience of the overall system (Chuenpagdee 2011).

What is missing from Kooiman et al.'s thesis is a detailed route map for the implementation of interactive governance, although a much slimmer companion volume (Bavinck et al. 2005) does offer a practitioner's guide for use in small-scale, Third World fisheries. So far, the application of interactive governance has been mainly confined to providing an 'analytical lens' for judging the efficacy of governance arrangements for small-scale MPAs in developing countries (Chuenpagdee 2011). It would appear, however, that the EU's Green Paper (2009) has at least internalised one important lesson in its insistence that in a reformed CFP the Commission's own role should focus on meta-governance functions rather than the micro-management of EU fisheries.

2.2.3 A New Paradigm for Natural Resource Management

Whereas Jentoft and Chuenpagdee (2009) and Kooiman et al. (2005) were looking to effect changes within the institutional set up for modern fisheries governance—albeit radical changes to the ways in which we formulate fisheries problems and reach decisions concerning their solutions—Berkes (2010a) is in essence seeking to replace the existing management approach with a new paradigm for the stewardship of natural resources. There are close parallels between Berkes' most recent

exposition of resilience theory and notions of wicked problems and interactive governance discussed above, notably in the underlying critique of fisheries management and the need to forge robust partnerships between stakeholders and those responsible for governing the use of natural resources.

Resilience theory is certainly not a new idea. Its origins can be traced back to Holling's (1973) definition of resilience as the capacity of an ecological system to absorb disturbance and reorganise while undergoing change. During the 1970s and 80s there was a major shift from a 'balance of nature' to a 'dynamic ecosystem' paradigm based on increased understanding of their diversity, complexity and uncertainty. In coastal fisheries uncertainty is endemic to the ecological and social systems involved. The integration of ecosystem and social system perspectives on resilience owes much to Berkes and Folke (1998), Adger (2000) and Berkes et al. (2003). The value of the most recent intervention (Berkes 2010a) lies in the advocacy of resilience as the basis for a fundamental reconceptualisation of resource management that can provide a good fit for recent thinking on "property rights, participation, interactions of institutions at multiple levels and experimentation in adaptive management and interactive governance" (p. 13).

Berkes' view of resilience is prefaced by a trenchant critique of conventional notions of natural resources and their management. Criticisms are directed towards the commodification of nature and its domination by a management élite using positivist and reductionist science in pursuit of false certainties and spuriously simple technical solutions, the consequent disempowerment of local communities and the erosion of local control over resource use. Conventional management approaches tend to reduce the inherent diversity that characterises the ecological and social systems associated with coastal fisheries, thus damaging the systems' resilience, making them more susceptible to crisis and less able to recover and self organise in response to natural perturbation (Berkes 2010a). More specifically, Adger (2000) alleges that specialisation and privatisation—two hallmarks of modern management—will reduce the social cohesion through which individuals and social groups adapt to environmental and economic change.

Despite theoretical advances emphasising the intrinsic uncertainties of marine ecosystems, recent developments in EU fishing policy (revival of MSY, long term management plans such as the cod recovery plan) suggest that outmoded equilibrium-based ecosystem models and mechanistic approaches to management still hold sway. Ultimately, these could prove dangerously counterproductive, reducing both the natural variability of the ecosystem and the ability of fishers to come to terms with uncertainty through flexible fishing patterns.

As the basis of a new paradigm for fisheries management, resilience theory envisages interlinked ecological and social systems responding to uncertainty, threshold effects and change through adaptive behaviour rather than abortive attempts by management to arrest or divert the course of change. The management goals are, therefore, framed not in terms of stabilising yields (MSY) and maximising economic revenues but focused more on building the resilience of the ecological and social systems and maintaining the flexibility of fishing operations in an increasingly uncertain world. While resilience is an inherent property of natural ecosystems

(and pre-industrial society), it is essentially a learned skill in modern societies. It relies on the accumulation and sharing of local ecological knowledge, collective experience, participatory forms of institutional learning and a willingness to keep open the option of innovative response in pursuit of adaptive forms of management.

2.2.4 Evaluation

None of the three key concepts discussed above—wicked problems, interactive governance and resilience theory—are examples of radical new thinking. They each represent a stepwise progression of much earlier innovations developed in different fields. More importantly, they represent a convergence of ideas stemming from a philosophical aversion to the styles of fisheries governance that have unwittingly contributed to the largely unsustainable state of the world's developed fisheries and now threaten the future status of fisheries in the developing countries. Together they regard fisheries not as a self-contained policy area but one that is closely bound up with marine environmental conservation, on the one hand, and social/community sustainability, on the other. Reformulation of fisheries as a wicked problem and the application of resilience theory to its solution could help to reconfigure the notion of precautionarity and give substance to the ecosystem approach to fisheries management, much celebrated in policy rhetoric but still lacking in real achievement.

All three concepts come together to acknowledge the interdependence of ecological, economic and social systems, call for adaptive rather than prescriptive forms of problem solving that are tailor made to the conditions of the given fishery, place emphasis on the incorporation of stakeholders as full partners in the decision making process, and look to all these attributes to enrich institutional learning. There is, however, a sense in which the new approaches may run the risk of putting too much emphasis on the local (specific) nature of fisheries problems at the expense of their generality and universality. We must be careful, therefore, not to overindulge a localist perspective. On the contrary, we must remain fully alert to the importance of scale and the need for coherence both vertically across different scales of governance and horizontally between neighbouring administrative areas.

In sum, the three concepts begin to outline a refreshingly different framework for thinking about fisheries and offer a serious challenge to more conventional views about their management. The question that the second half of the chapter addresses is whether such a framework can deliver practical benefits particularly in a complex, highly structured system of governance like the EU. Berkes (2010b) acknowledges that the most likely setting for a resilience based approach is 'small-scale, community-based fisheries' in developing countries. How far this setting can be extended to include the small-scale coastal fisheries of Europe is a moot point. Thus far, the alternative framework remains only an outline and the three concepts are essentially philosophical contributions to the debates on fisheries governance. As 'works in progress' they have still to evolve into operational forms, though we can

Table 2.1 The alternative framework for small-scale fisheries management

Objectives	Structures and process	Regulatory approach
secure the resilience of local social and ecological systems	local, stakeholder led organisations	based on principles of 'parametric management' (Wilson and Kleban) and reliant on shared experience and understanding of fish stock behaviour in the local ecosystem
maintain broad range of fishing opportunities	integrated action re ecological and social systems – guided by precautionary, ecosystem based approach – informed by scientific advice incorporating local ecological knowledge	flexible use of 'technical conservation measures' (MLS; spatial/temporal closure of grounds; gear regulations etc.)
generate flexible, adaptive responses to changing economic and environmental conditions	open and transparent interactive dialogue among all stakeholders to define problems and scope solutions	avoidance of measures that limit flexibility of fishing operations (e.g. 'privatised' catch quota; effort limits)

begin to sketch out the basic requirements of the governing systems for small-scale fisheries based on the studies by Jentoft and Chuenpagdee (2009), Kooiman et al. (2005) and Berkes (2010a). The results presented in Table 2.1 may seem a far cry from the systems of management that characterise the CFP but perhaps not all that far removed from the surviving elements of local fisheries management still to be found in parts of the EU.

2.3 Small-scale Coastal Fisheries

2.3.1 Problems of Definition

The wicked nature of the problems associated with managing coastal fisheries derives from the diversity of coastal ecosystems, the complexity of the economic and social circumstances of their exploitation, and the often intricate relationships linking the ecological and social systems. It is compounded by the difficulty of defining what we mean by coastal fisheries and further exacerbated by the paucity of reliable information at all levels as to their size, structure and social significance. The problem of definition begins with the choice of either structural or spatial parameters—that is whether we attempt to define coastal fisheries on the basis of scale of enterprise, using the surrogate of vessel size (length, tonnage or engine power) or their location using distance from the shore (3, 6 or 12 nautical miles). The choice of parameter is likely to influence the style of management—whether coastal fisheries are managed as a subset of the fishing industry as a whole, or as a separate socio-ecological entity. Difficulties can arise where governments attempt to combine the two approaches as in the UK (see below).

However and wherever the boundary is drawn, a significant number of enterprises will be found to exhibit characteristics more in keeping with those on the other side of the line, as in the case of the ‘super under 10 m’ vessels in the UK fleet with fishing capacities well in excess of that normally associated with small-scale fisheries. Still further complications may arise over the inclusion or exclusion of recreational fisheries and different forms of mariculture, including the traditional cultivation and harvesting of inter- and sub-tidal shellfish beds and the more recent finfish farming. The latter is scarcely consonant with the popular image of ‘small-scale enterprises’ but important in the context of ecosystem effects.

Even without these complications, the bewildering economic, social and cultural diversity of small-scale fisheries may prove difficult to accommodate in an equitable system of management at the local scale. In the absence of reliable information as to the true nature of small-scale fisheries, there is a danger of being lulled into accepting a stereotype of polyvalent artisanal fisheries, combining several seasonal activities, deploying a variety of *métiers* (usually but not invariably static gears), engaging in small-scale commodity production and conditioned by distinctive life mode—when, in fact, the truth is often very different. There is also a tendency rather unwisely to present an image of small-scale fisheries as inherently eco-friendly, predicated as a function of vessel size and static gears in limiting habitat damage and, together with short trip distance, generating a modest carbon footprint. This view usually ignores the cumulative impact of large numbers of small vessels operating in a limited space.

Even more dangerous from a management perspective is to ascribe a set of economic drivers very different from those associated with large-scale fishing enterprises—to assume, in fact, that small-scale fisheries are the antithesis of so-called industrial fisheries. Most artisanal fisheries are integrated into the market economy either exploiting local opportunities or seeking wider niche markets for their high quality fresh fish and shellfish. True, there is a correlation between coastal fisheries and a small-scale, family based enterprise structure. But within that simple assertion there lurks a wide range of business objectives, personal aspirations, levels of technological sophistication, market awareness, participation rates (full-time, part-time, seasonal and occasional) and survival strategies. One self-evident truth is that small-scale fisheries tend to be dispersed among very large numbers of independent enterprises often lacking effective economic and political organisation and, therefore, exerting little political influence within the industry as a whole and playing a diminishing role in wider community politics.

2.3.2 Small-scale Fisheries and the Common Fisheries Policy

Practically everywhere one looks small-scale fisheries dominate the size structure of the world’s fisheries. This is certainly true in the EU where around 83 % of the 85,000 strong fishing fleet is made up of vessels under 12 m overall length, but they account for only 10 % of gross tonnage and 35 % of aggregate engine power

(EC 2010a). Their contribution to overall landing value and to employment in the fisheries sector is more difficult to calculate, due to the paucity of comparable data and varying rates of participation. They are certainly significant at regional and local levels where in many of the remoter fisheries dependent areas the small-scale sector contributes an important source of local employment.

The European Commission's approach to small-scale fisheries is ambivalent. The CFP scarcely provides a sympathetic framework for the deliberation of wicked problems or for the successful incubation of resilience thinking. Not only is the EU's fishing zone far too large for effective governability, but the governing system enshrined in the CFP comes close to the archetypal centralised, command and control model reliant on a positivist and reductionist science and mediated by a management élite that Berkes (2010a) found inimical to the stewardship of natural resources—and 'a far cry' from the kind of thinking that resilience implies (Berkes 2010b, p. 55). In practice the CFP neatly sidesteps the issue of small-scale fisheries through a derogation from the 1982 regulation governing the conduct of the CFP that granted exclusive use of inshore waters (0–6 nm) to the coastal state's fishing industry. This allowed member states to assume much of the responsibility for management.

From an EU perspective, small-scale fisheries are viewed as a social rather than economic issue, associated more with the sustainability of coastal communities in the remoter parts of the EU's peripheral regions than with the overall performance in the fisheries sector. As Gallizioli (Chap. 3) makes clear the CFP is not seen as an instrument of social policy. Thus the CFP has made few direct concessions to the small-scale sector in providing protection from the effects of structural and geographical concentration in the commercial fishing industry. To an extent social issues are addressed through financial support from the European Fisheries Fund's Axis IV programme for improving the sustainability of coastal (and inland) areas with significant levels of fisheries employment through community led action (see Budzich-Tabor, Chap. 10). This involves a territorial rather than sectoral approach to sustainable development. Support is channeled through 'fisheries local action groups' (FLAGs) charged with devising and overseeing a strategy for strengthening the economic resilience and competitiveness of the local fishing industry through cooperation, partnership building and exploiting new niches in the marine ecosystem and local economy¹.

Somewhat surprisingly, the Commission chose to raise the issue of small-scale fisheries in the context of the 2012 reform of the CFP. In its Green Paper (EC 2009) the Commission raised the possibility of establishing differentiated management regimes for large-scale and small-scale sectors of Europe's fishing fleets, predicated on what might appear to be a false dichotomy. The suggestion was again linked to

¹ By the end of 2011 there were well over 200 FLAGs established across virtually all of the EU's coastal member states, with a particularly strong concentration in the Baltic states. Projects qualifying for financial support from the European Fisheries Fund were designed to strengthen the competitiveness of the fishing industry through adding value to local production, improving local marketing capability, diversifying fishing activities and increasing the integration of fisheries with other sectors of the local economy – notably tourism – *inter alia*.

the small-scale sector's "role in the social fabric and the cultural identity of the EU's coastal regions" (p. 14). Whereas the approach to managing the large-scale sector would have capacity reduction and economic efficiency as its central concerns using market based incentives (tradable fishing rights) to achieve these aims, the approach to small-scale fisheries management would be predicated on undefined social objectives, allocating non-tradable fishing rights to be used individually or through collective management schemes. Moreover, public funding would be available "to help the small-scale segment adapt to changing conditions in the wake of CFP reform" (p. 14)². The Commission's view was that decisions concerning the small-scale sector should be taken as close as possible to the communities themselves—thus opening up the possibility of community-led management in which the seeds of resilience thinking might take root.

The notion of differentiated management regimes met with a mixed response in the consulting process that followed (EC 2010b). Although some member states lent support to the idea, there was a more widespread feeling that the choice of management system was best left to individual member states. No reference was made to the idea of differentiated management in the proposals laid before the Council of Ministers and the European Parliament in 2011 (EC 2011a). Repeated warnings were made of the need for "specific measures to help manage small-scale coastal fleets" (EC 2011a, p. 3) both as a general principle and as a caveat to the mandatory introduction of tradable fishing concessions as the principal instrument for managing overall fishing capacity and promoting a profitable industry. Privatisation of fishing rights has to be seen as an unfriendly act in the context of small-scale fisheries (Højrup 2011). It places limits on flexibility and adaptive behaviour and only those with capital or borrowing power can invest in the market for additional fishing rights. Moreover it limits the scope for future actions to transform the management system. Despite the adoption of notional time limits to such schemes, systems of privatised use rights acquire a permanence of their own, creating powerful vested interests and making it difficult for governments to afford the costs of compensating those who have invested heavily in the market for fishing rights.

Despite an initial commitment to fundamental reform, including a major redistribution of responsibilities between the European institutions on the one hand and the regions and member states on the other, the outcome of the reform process suggests a further strengthening of the present management framework (see Table 2.2). Few concessions have been made to the original ideas of regionalising the CFP

² Although proposals for the new Maritime and Fisheries Fund, 2014–2020 (EC 2011b) place renewed emphasis on integrated territorial development to reverse the decline of fisheries dependent communities, attention is also paid to the role of small-scale coastal fleets. In a sector where the majority of businesses are micro-enterprises with limited access to funding, special measures attracting higher levels of grant aid are proposed to support professional advice on business and marketing strategies and innovative development. Priority will be given to collective approaches building on existing social capital and permitting the attainment of critical mass for investment. The new fund will, for the first time, recognise the role of spouses in family fishing businesses through support for training and skill acquisition in fields of entrepreneurship and business management.

Social Issues in Sustainable Fisheries Management

Urquhart, J.; Acott, T.; Symes, D.; Zhao, M. (Eds.)

2014, XIII, 355 p. 46 illus., 10 illus. in color., Hardcover

ISBN: 978-94-007-7910-5