"When is resilience sustainable? A critical analysis of the challenges facing English small-scale fishers, and their varying responses"

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Abstract

This project concerns itself with current marginalised state of the English small-scale commercial marine fisheries sector, known more commonly as its "Under-10 metre fleet". The last 40 years have been a period of turbulence for the UK's fishing industry, during which the English under-10 metre fleet and its local fishing communities have come under particular pressure. If this continues, it could impact the long term viability of the fleet, which in turn could be an economic, social and cultural disaster for many isolated and deprived coastal fisheries communities. This research used qualitative data obtained from 112 key informants to fulfil four objectives: first to investigate the drivers underpinning the fleets vulnerability; second to examine the three resilience strategies used by the fleet to deal with these threats and the factors which led different communities and individuals within these communities to choose different strategies; third to evaluate the viability of these strategies and the extent to which communities have successfully taken charge of their own destinies; and fourth to assess what steps could be taken by governments to support the sector, and whether such steps lie in local, bespoke responses or national strategies. This study contributes to the growing literature on the marginalisation and vulnerability of small-scale fishing communities around the world. It is vital that the current wave of global support for small-scale fishers is properly harnessed and this study will hopefully help in this task.

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Abbreviations

AR	Adaptive resilience
CEFAS	Centre for Environment, Fisheries and Aquaculture Science
CFO	Chief Fisheries Officer
CFP	Common Fisheries Policy
CQS	Community Quota Scheme
CBD	Convention on Biological Diversity
DEFRA	Department of Environment, Food and Rural Affairs
EA	Environment Agency
EC	European Commission
EMFF	European Marine and Fisheries Fund
EMS	European Marine Sites
EU	European Union
FA	Fisher's Association
FAL	Fisher's Association Lead
FAO	Food and Agriculture Organisation of the United Nations
FLAG	Fisheries Local Action Group
FQA	Fixed Quota Allocation

FPO	Fish Producer Organisation
GFCM	General Fisheries Commission for the Mediterranean
ICES	International Council for the Exploration of the Sea
ICO	Inshore Community Ownership
IFCA	Inshore Fisheries and Conservation Authority
IUU	Illegal, Unreported and Unregulated
LIFE	Low Impact Fishers of Europe
MARE	Centre for Maritime Research
MAFF	Ministry of Agriculture, Fisheries and Food
MCA	Marine and Coastguard Agency
The 2009 Act	Marine and Coastal Access Act
MCZ	Marine Conservation Zone
MFA	Marine and Fisheries Agency
MMO	Marine Management Organisation
MPA	Marine Protected Area
MSC	Marine Stewardship Council
NE	Natural England

NEF	New Economics Foundation
NFFO	National Federation of Fishermen's Organisations
NGO	Non-Government Organisation
NUTFA	New Under Ten Fishermen's Association
PR	Passive Resilience
PO	Producer Organisation
RBS	Registered Buyers and Sellers Scheme
SAIF	Sustainable Access to Inshore Fisheries Project
SFC	Sea Fisheries Committee
SGESRC	Scottish Government Economic and Social Research Council
SSF	Small-Scale Fisher
STECF	Scientific, Technical and Economic Committee for Fisheries
TAC	Total Allowable Catch
TBTI	Too Big to Ignore
TR	Transformative Resilience
UKAFPO	United Kingdom Association of Fish Producer Associations
WT	Wildlife Trust

WWF World Wildlife Fund

Chapter 1. Introduction

1.1 Rationale

This project is concerned with identifying the primary drivers amongst the threats that the English small-scale commercial marine fisheries sector faces and assessing its capacity to pursue coping strategies in response to such threats. The last 40 years have been a period of significant change for the UK's fishing industry (Morgan, 2013), during which the long term viability of many smaller fishing communities has been under severe pressure (Defra, 2009). The demise of this small-scale fleet (SSF) would be detrimental to the regional economies, not least by reducing employment both directly amongst the fleet but also amongst spin-off businesses such as associated restaurants and fishmongers. Equally of note is the cultural and social risk this demise poses, since small-scale fisheries embody rich cultures with long histories (Gómez et al., 2006; Gómez and Lloret 2016).

What are small-scale fisheries? According to the literature, small-scale fisheries can be defined in general by (1) their labour intensive harvesting techniques which makes them local job creators (FAO, 2005; Salas et al., 2007; Morgan, 2013; FAO, 2003); (2) their limited fishing capacity (Mare, 2012; Salas et al., 2007); (3) their traditional localised ecological knowledge (FAO, 2005; Johannes, 1982; Symes and Phillipson, 2009); (4) their light environmental footprint (FAO, 2005; Kolding et al., 2014; Chuenpagdee and Jentoft, 2015); (5) their small units of production (Mare, 2012; Salas et al., 2007) and (6) their socio-ecological embeddedness (Onyango, 2015; Brookfield et al., 2005; Symes, 2009). Within the English context though, they are currently defined solely by vessel length: 10 metre or under.

In this thesis, the challenges facing the English inshore sector are examined and key drivers of vulnerability identified. Whilst much of the relevant SSF literature is set in the context of the developing world, framing vulnerability in terms of poverty (Béné, 2009; Chambers, 1989; Khan, 1998; Deepa et al., 2000; World Bank, 2000; Prowse, 2003) or disaster research (Clay and Olson, 2008), thinner coverage frames vulnerability in terms of insufficient participatory mechanisms in fisheries managers and limited social capital in fishing communities (Salas et al., 2007). It seems that once immediate life-threatening issues are no longer pressing, the issue becomes one of power relationships in the form of

social exclusion, which gives those with more social, political or economic clout more options in dealing with change (Clay and Olson, 2008; Mills et al., 2011). Powerful elites will be more involved in decision-making processes and have more influence resulting in policies which favour the large-scale vessels at the expense of the SSF. SSF fishers report this as an injustice, whereby their exclusion is facilitated by top-down mechanisms which fail to recognise how managerial actions inflict adverse impacts on often isolated coastal communities (Lim and Valencia, 1990; Crosoer et al., 2006). According to some critics, these top-down and exclusionary governance systems have led to SSFs being largely ignored and marginalised, a condition that is evident not only in England (Defra, 2009; Gray et al., 2011) but throughout the world (Berkes, 2001). This is exacerbated as the SSF are often constrained by being fragmented, uncoordinated and unable to speak with one voice when compared with say the pelagic and demersal industrial fleets. With SSF's limited social capital in mind, Folke (2006) explains how absent or weak levels of organisation coupled with a lack of social cohesion may lead to an increased vulnerability and reduced resilience in a fishing community.

In the literature, although many threats to SSFs are common, the social constructions of vulnerability across small-scale coastal fishers and their associated communities in terms of their impact upon their livelihoods are varied (Jentoft et al., 2010; Thorpe et al., 2007; Morzari-Luna et al., 2014; Faraco et al., 2016). This heterogeneity is also found in the ability of fishers to pursue coping strategies and the forms of strategies they adopt. For example, some communities will pursue occupational pluracy, pursing a range of activities whereby fishing is merely one component of a livelihood (Salas et al., 2011), whilst other fishers chop and change their target fishery dependent upon the seasons or legal restraints (Morgan, 2013). This study focuses especially on these varied response strategies within the context of the English SSF and on how the governance mechanisms pursued by the relevant managerial bodies have affected them. This PhD project makes an original contribution to our knowledge of SSFs by undertaking primary research involving face-to-face key informant interviews to examine, in depth, through a resilience framework how the English inshore fleet (or under-10 metre fleet) has responded to challenges and how regional management agencies have served to both facilitate and impede their endeavours.

Key words: English fishermen, inshore fishermen, under-10 m fishermen, small scale fishermen, fishing community, governance, participation, vulnerability, resilience and IFCA.

1.2 Research Aim, Objectives, and Questions

1.2.1 *Research aim*

This work set out to investigate the resilience of English inshore fishermen in the face of existential threats to their viability.

1.2.2 *Research objectives*

1. To identify the primary challenge which affects the sustainable operations of the English SSF;
2. To discover the range of resilience strategies which English SSFs draw upon to respond to these challenges;
3. To determine what factors influenced which strategy is used, and how sustainable they are; and
4. To assess what steps could be taken by governments to support the sector.

1.2.3 *Research questions*

1. What is the primary challenge facing the English SSF in continuing to fish?
2. Which are the main forms of resilience reported by inshore fishers in dealing with these challenges?
3. To what extent are the key challenges and solutions sui generis – i.e. unique to each area – rather than common to each area?
4. What factors influenced fishers in their selection of these coping strategies? In particular, what was the impact of the management agencies?

1.3 Thesis Structure

In addition to this introductory chapter, the thesis consists of eight chapters. A brief overview of each chapter is provided below:

Chapter 2 (Global Context of the Small-Scale Fishery Issue) provides a global understanding of SSF by an examination of secondary material. The chapter consists of four sections: the first section examines the literature on the value of the small-scale sector. The second section reviews the nine main challenges facing the small-scale fleet across the world according to commentators. The first eight challenges are externally inflicted: inappropriate fisheries management policies; political marginalisation; ocean grabbing; natural disasters; lack of alternative employment; limited access to credit; inadequate health care; and over-fishing. The ninth challenge was reported to be self-inflicted: poor self-organisation. The third section reviews the coping strategies of fishers which have been identified across the globe within the catching sector in response to these challenges, namely engaging with informal networks; establishing fishers' organisations; co-management; diversification; migration; asset stripping; and illegality. The fourth section summarises the key trends identified in this chapter.

Chapter 3 (Background to the English Small-Scale Fishery Case) provides an overview of the English fishery sector and establishes the working context within which this research was conducted. Following a brief description of how the small-scale fleet is defined, the chapter outlines the managerial governance structures of the English inshore fleet, focusing particularly on the evolution and development of the quota management system.

Chapter 4 (Methodology and Theory) establishes the methodology and theoretical framework used for this study. On methodology, there is an explanation of the site selection process, followed by a detailed description of the methods used, including data collection techniques and analysis of the perceptions data collected. The next section reviews the reliability and validity of the data gathered and addresses ethical considerations. The final section is a discussion of the theories of vulnerability and resilience, focusing especially on three modes of resilience: passive, adaptive, and transformative.

Chapter 5 (Vulnerability of the English Small-Scale Fishery) provides a descriptive account of the challenges perceived by the English SSF. Two categories of vulnerability

are explored: perceptions of external threats from outside the fleet and perceptions of internal threats existing within the fleet itself.

Chapter 6 (Resilience of the English Small-Scale Fishery) focuses upon the perceptions expressed by the inshore fleet about three different strategies of resilience they adopted. The first section of the chapter examines the strategy of passive resilience, which is subdivided into negative and positive modes. The second section examines the strategy of adaptive resilience, which comprises five responses: (1) operational flexibility; (2) reducing overheads; (3) quota tactics; (4) marketing initiatives and (5) job diversification. The third section examines the strategy of transformative resilience, which is subdivided into radical and moderate modes.

Chapter 7 (Discussion) discusses the key findings of the research. The chapter begins with a comparative analysis of the ways in which vulnerability is manifested in the English inshore fisheries. This is followed by a discussion of the factors that lead to each of the three resilience strategies. The third section examines whether fishers and communities can and do adopt more than one resilience strategy. The fourth section asks whether there are any trends in the way resilience strategies change over time. The fifth section discusses which of the resilience strategies is most sustainable in the long-term and whether any particular resilience strategy is currently dominant. The final section of the chapter considers how helpful the Inshore Fisheries and Conservation Authorities (IFCAs) were in promoting the resilience strategies of fishing communities.

Finally, Chapter 8 (Conclusion) concludes the thesis with five sections. First, it presents a summary of the thesis' findings. Second, it makes a number of recommendations for fisheries policy. Third, it rehearses the wider implication of the thesis' findings. Fourth, it provides some reflections on the PhD experience. Fifth, it suggests some directions for future research.

Chapter 2: Global Context of the Small-Scale Fisheries Issue

2.1 Introduction

Whilst there is no single universally accepted definition of small-scale fisheries (SSF) (Carvalho et al., 2011; Freire and Garcia-Allut, 2000; Stobutzki et al., 2006; Kochalski, 2017), there have been several attempts by authoritative sources to pin down general sectoral descriptive characterizations, such as that produced by the FAO (2003, p.7):

> "Small-scale fisheries can be broadly characterized as a dynamic and evolving sector employing labour intensive harvesting, processing and distribution technologies to exploit marine and inland water fishery resources. The activities of this subsector, conducted full-time or part-time or just seasonally, are often targeted on supplying fish and fishery products to local and domestic markets, and for subsistence consumption. Export-oriented production, however, has increased in many small-scale fisheries during the last one to two decades because of greater market integration and globalization. While typically men are engaged in fishing and women in fish processing and marketing, women are also known to engage in near-shore harvesting activities and men are known to engage in fish marketing and distribution. Other ancillary activities such as net-making, boat-building, engine repair and maintenance, etc. can provide additional fishery-related employment and income opportunities in marine and inland fishing communities. Small-scale fisheries operate at widely differing organisational levels ranging from self-employed single operators through informal microenterprises to formal sector businesses. This subsector, therefore, is not homogenous within and across countries and regions…"

Bearing in mind this heterogeneity, this chapter is designed to provide a global background on SSF drawn from the literature, in order to place the English SFF within a world-wide context. The chapter has three sections: (1) the first section examines the global value of the SFF sector; (2) the second section examines the challenges facing the SSF sector throughout the world and (3) the third section examines the coping strategies adopted by the SSF sector across the globe to deal with those challenges.

2.2 The Global Value of the Small-Scale Fishery Sector

Fishing is counted amongst the world's oldest livelihood options (Thompson et al., 1983; Van Ginkel, 2009), and whilst no definitive statistic exists, it is though that the sector employs roughly 50 of the world's 51 million fishers globally (FAO 2008-2019). It is estimated that 90% of those employed in capture fisheries are classified as SSF, with most residing in developing countries (FAO, 2008-2019; Urquhart et al., 2013; Eide et al.,

2011). In addition, there are many others for whom fishing is not a full-time occupation but represents one component of a multi-activity livelihood strategy (FAO, 2005). SSFs are arguably, therefore, the most important sector in the wider fisheries industry (World Bank et al., 2010, Scholtens, 2016) and their contributions are increasingly being recognized (Allison and Ellis, 2001; FAO, 2005; 2010). Small-scale fishing operations make vital (if inadequately recorded) contributions to the food security of many millions of people in fishing places and beyond, especially for the poor (FAO, 2005; UNDP, 2005, Andrew et al., 2007; Nayak and Berkes, 2010; Berkes, 2001; Jentoft, 2011; Andrew et al., 2007; UNDP, 2005; World Bank et al., 2010). The literature calculates that SSFs contribute between 15% and 30% to total world fisheries production (Chuenpagdee et al., 2006; Chuenpagdee and Jentoft, 2015; Chuenpagdee and Jentoft, 2011), 46% of all capture fish (Scholtens, 2016), and up to 50% of all food fish originates from small-scale fisheries (FAO, 2005). Almost all fish from SSFs is used for direct human consumption (FAO, 2005; Zeller and Pauly, 2005; Pauly, 2006; Jacquet and Pauly, 2008). In contrast, a substantial percentage of the catch from industrial fisheries is used for animal feed, amongst other products not intended for direct human consumption (Parker and Tyedmers, 2015; Cashion, et al., 2017). Nutritionally, fish is often presented as an important source of protein, especially where other sources of animal protein are scarce or expensive (FAO, 2005). Therefore, the small-scale sector plays a central role in feeding the poor and vulnerable (FAO, 2005; Jentoft and Eide, 2011; FAO).

SSF are also job creators owing to their labour-intensive harvesting techniques (FAO, 2005; Salas et al., 2007, Morgan, 2013), with a higher number of employees recorded per ounce of fish landed than the industrial fleet (EFRACOM, 2013). The sector accounts for 91% of all fisheries-related employment (Scholtens, 2016), which includes part or full-time employment and income for many rural and coastal households. Members of a household can contribute either directly as part of the fishing operations, or indirectly in spin-off sectors such as fish processing and local markets (Lynch, et al., 2016; Morgan, 2013). Subsequently, the sector helps improve the distribution of wealth among the various social groupings; engaging women, children, and people with few other options to sustain themselves. SSF therefore provides a ‘safety net’ or ‘welfare’ occupation for those at risk groups and helps to stem emigration. SSF trading is a particularly important means of women’s economic empowerment (Kawarazuka and Béné, 2010).

Whilst SSFs exert pressure upon fisheries resources, their environmental impact is by and large less than that of industrial fisheries (FAO, 2005; Kolding et al., 2014; Chuenpagdee and Jentoft, 2015). They tend not to be nomadic (MacGoodwin, 2001) and limitations on their operational range as a consequence of vessel size (Mare, 2012; Salas et al., 2007) make them predominantly dependent on coastal inshore waters and local regional resources (Guyader et al., 2013; O'Riordan et al., 2012; García-Flórez et al., 2014). They generally target a multitude of species rather than chasing a certain species thereby contribute less to stock degradation than large vessels who in turn tend to chase fewer species (FAO, 2005; García-Flórez et al., 2014; O'Riordan et al., 2012). They work with the seasons, adapting to seasonal variety (Mara, 2012) and generally have a low discard rate. They tend to use smaller vessels (Jacinto and Pomeroy, 2011) and are less likely to use damaging trawled gear, resulting in a lower seabed impact and a lower greenhouse gas emissions per kilo of fish landed than the industrial fleet (EFRACOM, 2013). This also tends to limit their levels of production, so their catch per unit of effort is smaller than those in industrialised fisheries (Mar, 2012; Salas et al., 2007).

Importantly, SSFs are often active in stewardship initiatives and conservation efforts to sustain their immediate surroundings (Chuenpagdee and Juntarashote, 2011) facilitated by their intimate knowledge of the marine ecosystems they exploit and their main target species (MacGoodwin, 2001). This has been illustrated by many examples from around the world, where it has been reported that by involving SSFs in the design and operation of Marine Protected Areas (MPAs), such initiatives have a higher chance of succeeding (Chuenpagdee et al., 2013; Caveen et al., 2015). They have been found to enforce self-imposed rules and have high levels of marine stewardship (Gray et al., 2011; Basurto, et al., 2013), serving as watchdogs of the marine environment: "we are largely again stewards of the sea … if you ask yourself what would happen If we weren't there then other people would get up to no good … We're there day in day out ... We are eyes on the sea" (EFRACOM, 2013, pp. 27). SSFs claim to work sustainably within the area they fish: "We are good stewards of the environment where we have worked for centuries ... We, the European artisanal and low impact fishers ... want to leave a legacy of healthy seas and oceans in a world where there is less fishing, but better fishing. We want our sons and daughters to fish in healthy oceans with thriving fish stocks and to eat better quality fish than most people eat today'' (EAFC, 2012). SSFs are also repositories of valuable traditional knowledge concerning fish stocks and their surrounding marine environment

(FAO, 2005; Johannes, 1982). Symes and Phillipson (2009, p.2) note that: "[small scale] fishing communities are reservoirs of knowledge, experience and understanding of local fisheries that cannot be replicated in any other form".

Moreover, SSF is much more than a means of ensuring livelihoods (Onyango, 2015). SSF socio-cultural values manifest themselves through contributions to the social and cultural fabric of the fishers' community and their wider communities (Morgan, 2013; Reed et al., 2011). Allen (2013) summarises it well in his blog contribution; "Small-scale fisheries are the cornerstone of many of Canada's coastal communities''. Brookfield et al (2005, p.3) claimed that the industry represents "the forum through which community bonds, values, knowledge, language and traditions are established, confirmed and passed on". Furthermore, there is evidence to suggest that inshore fisheries have a strong influence on the social capital of local coastal communities (Symes, 2009). Crews tend to be chosen from close family or fishing community ties, important for generating enduring, egalitarian and reciprocal community relationships (Symes, 2001). Jentoft (2000) argues that this community level social capital has long been ignored in fisheries management, which focuses instead upon economic efficiency and the conservation of fish stocks. It appears that by removing the community from management, social bonds and traditional values can be eroded and social responsibility among fishers weakened. The oft-quoted description of fishing as a 'way of life' (Aryeetey, 2002; Urquhart et al., 2013; Morgan, 2013; Brookfield et al., 2005; Jacob et al., 2001; Nuttall, 2000), rather than solely a job (Trimble and Johnson, 2013) remains applicable to many SSFs (Morgan, 2013) where values, knowledge and traditions are established and passed on between fishers (Brookfield et al., 2005; Van Ginkel, 2001).

Moreover, SSF is held to be an interesting, challenging, and independent vocation (Kraan, 2011; Nunoo et al., 2006) from which fishers gain a strong sense of pride, social identity and solidarity (Reed et al., 2011; Apostle et al., 1985; Gatewood and McCay, 1988; Pollnac, 1979 – as cited in McGoodwin, 1990; Onyango, 2015). Urquhart and Acott's (2014, p.15) study indicated that ''they were proud to be identified as fishermen''. A fisher from Pollnac and Poggie (2006, p.8)'s study stated, "It's not the money that's important, it's the job. Fishers define themselves by their job, if they couldn't fish, they wouldn't be themselves – they'd have no identity''. This can be seen in fishers' deep-seated desire to fish, and often continue to do so even when it is no longer economically

viable; even when prices crash or a market disappears, fishers continue to work within their sector (Morgan, 2013): "their relation to fishing is expressive and existential, therefore, fishers often persist in working in a failed fishery" (Van Ginkel, 2001, p.189). Pollnac and Poggie (2006) suggest that this is tied to fishers' personality characteristics (adventurous, active, aggressive and courageous – i.e. risk takers and high self-testers) which sit at the core of the self-identity of SSFs. Narratives of SSF have been interwoven into many communities popular myths, folktales and local history (McGoodwin, 1990; Gudeman, 2001; Urquhart and Alcott, 2014; Aryeetey, 2002; Jentoft and Eide, 2011).

2.3 The Global Challenges Facing the Small-Scale Fishery Sector

By and large, small-scale fisheries are widely considered to be in a state of crisis (Chuenpagdee and Jentoft, 2018). This crisis has been attributed to declining inshore fisheries resources as a result of environmental degradation and overfishing (FAO, 2016). Other commentators bring in additional themes of cultural, social, economic, legal and political marginalisation (Chuenpagdee and Jentoft, 2018; Nayak and Berkes, 2010).

Given that the majority of the world's fisheries are small-scale, it is imperative to understand what are the causes or driving factors behind this crisis. There is no shortage of suggested causes from commentators, especially from literature concerned with developing countries' SSFs (Béné, 2009, Chambers, 1989; Khan, 1998; Deepa et al., 2000; World Bank, 2000; Prowse, 2003; Clay and Olson, 2008). For example, writers refer to SSFs' high levels of exposure to economic shocks and natural disasters (Allison et al., 2006; Allison et al., 2009). These include financial factors such as lack of access to cash and micro-credit facilities (Salas et al., 2011); inability to respond to technical change (Thorpe et al., 2007); fishers' risk of contracting debilitating diseases (Mills et al., 2011) because of inadequate access to services (Salas et al., 2011); ecological fragility of the fishery (Thorpe et al., 2007, Cinner et al., 2009); insecure access to markets, fisheries and equipment (Thorpe et al., 2007); over-dependence on fishing (Thorpe et al., 2007); lack of alternative livelihood options (FAO, 2005; Salas et al., 2011, Cinner et al., 2009); overexploitation and depletion of resources (Chuenpagdee and Jentoft, 2015, FAO, 2005; Jentoft and Eide, 2011); conflicts over resources and coastal space with large commercial fishing operations (FAO, 2005; Andrew et al., 2007; Jentoft and Eide, 2011, Chuenpagdee and Jentoft, 2015); ethnic and class tensions (LiPuma and Meltzoff, 1997; Meltzhoff and

Schull, 1999; Allen and Gough, 2006; Kitner, 2006; Blount and Kitner, 2007; Masozera et al., 2007; Aizenman, 2007); globalization of markets (Jentoft and Eide, 2011; Chuenpagdee and Jentoft, 2015); geographic remoteness of many communities (Thorpe et al., 2007); fluctuating gasoline prices (Chuenpagdee and Jentoft, 2015, Jones et al., 2010); climate change (Jentoft and Eide, 2011; Chuenpagdee and Jentoft, 2015; Andrew et al., 2007; Sievanen, 2014; Morzaria-Luna et al., 2014; Himes-Cornell and Kasperski, 2015); the high physical risk of SSF fishing activities (Thorpe et al., 2007); decline in recruitment due to opportunities elsewhere (Chuenpagdee and Jentoft, 2015, Jones et al., 2010); migration of populations from coastal areas due to industrial development and tourism (FAO, 2005); pollution and environmental degradation (FAO, 2005); inappropriate economic and fisheries management policies (Chuenpagdee and Jentoft, 2015; Jones et al., 2010; FAO, 2003; Crosoer et al., 2006; Lim and Valencia, 1990) weak stakeholder representation and participation (Chuenpagdee and Jentoft, 2015); and political marginalisation (Thorpe et al., 2007). Since the SSF sector is not homogenous in its operations and managerial involvement, its exposure to challenges differs widely across communities, and affects different fisher households differently (Jentoft et al., 2010; Thorpe et al., 2007; Morzaria-Luna et al., 2014; Faraco et al., 2016). There is always something unique about the problems that a SSF faces in a given locality (Chuenpagdee and Jentoft, 2015). Nevertheless, it is possible to detect some common problems, and I have identified nine main challenges from a review of the literature: the first eight are challenges that are externally caused, whilst the last challenge can be categorised as self-inflicted, since it concerns the lack of organisation observed at a grass-roots level.

2.3.1 *Fisheries management policies*

Small-scale fisheries have often been neglected in classical approaches to fisheries management (Andrew et al., 2007) which have focussed on larger scale commercial fisheries especially targeting valuable demersal and pelagic species. This is partly because of the difficulty of applying management measures that fit the different contexts of small-scale fisheries (Berkes, 2001; Castilla and Defeo, 2005; Chuenpagdee et al., 2005). SSFs are very diverse in terms of participants, resources, gears, geographical spread, scale, and connectivity to other livelihoods (Chuenpagdee and Jentoft, 2015; Berkes, 2001; Berkes, 2003). It is also because of limited research and management capacity in government agencies, and consequent lack of quantitative data on trends in fish stocks (Allison and

Ellis, 2001; Charles, 2001; Wilson et al., 2003; Pomeroy and Rivera Guieb, 2006). As a result, managements approaches tend to adopt a narrow and homogenous perspective with a restricted fisheries governance vision (Chuenpagdee and Jentoft, 2015), described by Degnbol et al. (2006, p.1) as ‘’disciplinary boundaries [which] narrow the perspectives of fisheries management, creating tunnel vision and standardized technical fixes to complex and diverse management problems’’. For the most part, fisheries policies and governance are directed at the daily tasks that technical and routine solutions may be able to handle (Chuenpagdee and Jentoft, 2015; Kooiman, 2003; Kooiman et al., 2005). Policies often lack social and cultural objectives (Symes, 2000), and critics claim that simplistic centralized attempts to tackle varied, complex and remote SSF issues leads to continued systemic failures (Olsson et al., 2004).

To deal with these issues, writers have postulated that SSF fisheries management should become more holistic, taking socio-economic and cultural issues into account (Salas et al., 2007; Urquhart et al., 2011; Urquhart et al., 2013; Isaacs, 2012; MacGoodwin, 2001; Hadjimichael et al., 2013). Clay and Olson (2008) and Ross (2013) recommend incorporating into SFF management an understanding of community levels of fisheries dependency and sources of vulnerability. Allison and Ellis (2001) and Karper and Lopes (2014) suggest that this can be undertaken by adopting a ‘sustainable livelihoods approach’ whilst others suggest fisheries management policies should incorporate a social well-being interpretation (Trimble and Johnson, 2013; Coulthard et al., 2011). Elsewhere other frameworks are suggested, such as using a resilience management approach (Pope et al., 2014). Whatever option is chosen, Grafton et al. (2007) stress that management must draw on good modes of governance, whilst Karper and Lopes (2014) say it must be flexible, taking the differences between social groups into account.

2.3.2 *Political challenges*

Commentators discuss the issue of insufficient SSF participation in the governance process, caused by managerial obstacles (Pita et al., 2010) and the refusal of fishers to get involved (Heck et al., 2011). Accounts of small-scale fisheries in southern Africa (Isaacs, 2012) tie in with a global observation that fisheries are commonly governed by the hierarchical governing mode, with nation states as the dominant actors and policy makers often viewing the SSF as an underclass within the wider industry (Mathew, 2003; Thorpe,

2013; Dugan, 2005, Andrew et al., 2007; Berkes, 2001; Chuenpagdee and Jentoft, 2015), favouring instead the interests of large-scale industrial fisheries as these groups are often much easier to engage with (Symes and Phillipson, 1997; Salas et al., 2007; Crosoer et al., 2006; Lim and Valencia, 1990) (though this is not always the case (Veitayaki, et al., 2018)). Small-scale fishers are reported to often attract little political support (Allison and Ellis, 2001; Lam and Pauly, 2010; Faraco et al., 2016), and face indifference and neglect by their government (Béné, 2003; Chuenpagdee and Jentoft, 2015). This can result in ‘’the development of large-scale approaches over small-scale ones and the resources being concentrated in fewer and fewer hands’’ (FAO, 2003, p. 9). For some commentators, these factors have undermined the traditional self-determination of many fishing communities (Chuenpagdee and Jentoft, 2015) and led to failures of leadership and enforcement (McGoodwin, 1990; Jentoft et al., 1998; Armitage et al., 2009; Prescott et al., 2015). According to critics, a lack of fishers' input has meant management has a limited understanding of the problems facing SSF communities (Andrew et al., 2007; Jones et al., 2010; Salas et al., 2007), and therefore pays insufficient attention to the socio-economic consequences of its policies (Berkes, 2001; Castilla and Defeo, 2005; Chuenpagdee et al., 2005). For example, Crilly and Esteban (2013) and Soliman (2015) reported the way individual transferable quotas (ITQs) have been ascribed globally without any social or economic analysis of the consequences for the SSF sector, and this has meant that the system unintentionally favours large-scale participants. Lack of fishers' input also means ineffective monitoring and enforcement of regulations designed to protect SSFs, such as damage to their gear (Pita et al., 2015; Intchama et al., 2018; Gómez et al., 2006; Scholtens, 2016; Salas et al., 2007).

To deal with these problems, many writers (e.g., Andrew et al., 2007; McCay and Acheson, 1987; Pinkerton, 2011, Pomeroy and Berkes, 1997; Sathyapalan and George, 2015; Aswani et al., 2013; Agrawal and Gibson, 1999; Davis and Wagner, 2006; Chuenpagdee and Jentoft, 2018) have proposed major changes to improve SSF governance systems, advocating the implementation of institutional solutions based on the sharing of responsibility between government and local actors in which small-scale fishers play an important role. This is discussed largely in terms of moving to co-management (Mikalsen et al., 2001; Cohen et al., 2015; Gutiérrez et al., 2011; Hara et al., 2015; MacNeil and Cinner, 2013) and adaptive co-management arrangements (Olsson et al., 2004; Armitage et al., 2008; Lane and Stephenson, 1998; Russell and Dobson, 2008;

Sandström and Rova, 2010). In 2014, the FAO published the Voluntary Guidelines for Securing Sustainable Small-Scale Fisheries in the Context of Food Security and Poverty Eradication (SSF Guidelines) (FAO, 2015) to help states bring about changes in order to support the sustainability of their small-scale fleets (Chuenpagdee and Jentoft, 2018).

2.3.3 *Ocean grabbing*

Many SSFs were reported to suffer from what is termed 'ocean grabbing' as they face being excluded from the fishing grounds on which they depend (Chuenpagdee and Jentoft, 2015; Beck and Nesmith, 2000; Nayak and Berkes, 2010; Béné, 2009). Commentators explained how these coastal resources were reallocated to other industry uses, such as the recreation and tourism sector (Chuenpagdee and Jentoft, 2015), the industrial fisheries sector (Scholtens, 2016; Gómez et al., 2006; Intchama, et al., 2018; Bavinck, 2005; Carvalho et al., 2011), aquaculture activities (Nayak and Berkes, 2010) and oil exploration (Quist and Nygren, 2015). Grounds were also reported to be increasingly assigned as MPAs (Mascia et al., 2010).

As coastal development has mushroomed and a tourism industry developed, SSF communities were observed to increasingly suffer economic and social disruption (Apostle et al., 1998; McGoodwin, 1990; Johnson and Orbach, 1990; Heinz Foundation, 2000; Clay and Olson, 2008). For example, Gómez et al. (2006) document how tourism activities have been favoured in the north-west Mediterranean to the detriment of the small-scale fisheries. They observed marine-based recreational activities associated with a rise in tourism (e.g., boating, diving and angling) driving fishers away from their fishing grounds in peak seasons. The development of industrialised fisheries subsectors alongside small-scale ones has also been reported to result in tension and strife as both sectors compete for the same grounds (Bavinck, 2005). As Berkes (2001: 223) puts it: ''Major conflicts between the [small-scale and industrial] fishing sectors have been occurring in different parts of the world, from Senegal to Canada, and from Indonesia to Barbados". Scholtens (2016) describes how fishers' livelihoods were compromised by an Indian trawler fleet operating in northern Sri Lankan fishing grounds perceived to have seized 'their' fishing grounds. Inadequate political representation of the Tamil population and a weak cooperative organisation were among the factors reported as effectively blocking SSFs from confronting trawlers or compelling authorities to assist them in doing so (Scholtens,

2016). Evidence from Africa and Latin America points in a similar direction, for instance, Vercruijsse (1984) describes conflicts that took place between canoe and trawler fishers of Ghana and indicates their existence in nearby Ivory Coast (see also Bennett et al., 2001). Masalu (2000) notes similar phenomena in Tanzanian coastal fisheries, while Lopes et al. (1998) documents inter-sectoral conflicts in Mozambique. The FAO (1999) notes how the influx of shrimp trawlers into SSF traditional ground often results in a reduction of catches, whilst Scholtens (2016) reports trawlers competing with SSFs over ground in northern Sri Lankan, regularly destroy local fishers' nets, causing them crippling financial losses.

As well as competing with legal vessels, the small-scale sector also contends with an influx of illegal, unreported and unregulated (IUU) vessels. For example, IUU fisheries in Guinea Bissau have been estimated to take 60,000 tonnes of the country's fish per year (Doumbouya et al., 2017; Intchama et al., 2018). IUU vessels compete directly with the SSF sector by targeting similar species and entering areas that are reserved to SSF operators. This has a major impact on fish stocks in Guinea Bissau (CCLME Project, 2016), jeopardizing the food security, livelihoods and income of around a quarter of a million people in a country that heavily depends on fish for its animal protein (Belhabib et al., 2015b).

Aquaculture is another major competitor for water area usage at the expense of the traditional fishing grounds of local SSFs (Nguyen and Flaaten, 2011; Ben Tre DARD, 2009). For example, coastal fisheries in India have seen some major struggles involving SFF and the aquaculture industry since the emergence of global markets for marine products such as shrimp since the 1990s (Nayak and Berkes, 2010). This has been a major issue in India's Chilika lagoon, Prateep, as the development of aquaculture businesses resulted in the loss of resource access rights (Nayak and Berkes, 2010): 6,000 hectors of customary fishing areas, in addition to the already encroached areas, were given out to non-fishers for aquaculture. The small-scale capture fisheries of Chilika, and the large population that depends on it, have been in decline because of such government policies favouring aquaculture as they view it to be the best way to achieve local economic success (Nayak and Berkes, 2010). As a result, many fishers lost their livelihood as ground was given over to aquaculture, and many migrated away from the area which eventually caused fishing cooperatives to collapse (Nayak and Berkes, 2010). Issues raised by these

competing marine activities are not just reduced access to fishing grounds, but also their ecological damage. For example, dredging operations in India's Chilika lagoon Prateep have caused major livelihood loss to SSFs due to the ecological displacement brought about by the opening of a new 'sea mouth' (Nayak and Berkes, 2010). Diseases have also been reported to spread by aquaculture activities out to wild fish, which in turn impacts the stability of fishers' incomes (Ben tre TARD, 2009; Nguyen and Flaaten, 2011). Ocean grabbing also includes the activities of major marine based industries. For instance, in the Gulf of Mexico, a zone of exclusion for all but the oil industry was established in 2003 (Quist and Nygren, 2015). This declaration has restricted SFFs' access to their fishing grounds and forced them to travel further out to sea, making their fishing operations more demanding and dangerous (Quist and Nygren, 2015).

The establishment of MPAs, which is regarded by many researchers as the most effective tool for conserving biodiversity (Dudley, 2008), is seen by many SSFs as another form of ocean grabbing, because fishers have experienced restrictions on their access to landing places and work space by such spatially-based protection efforts (Weyl and Weyl, 2001; Chuenpagdee and Jentoft, 2015). SSFs argue that governments that establish MPAs often do not appreciate the importance of small-scale fishing, placing the welfare of fish above the well-being of fisheries-dependent coastal communities (Mascia et al., 2010; West et al., 2006). MPA cover can be expected to rise rapidly in the future because the marine realm is far from reaching the targets established in the Convention on Biological Diversity (CBD) (Faraco et al., 2016; Thomas et al., 2014). Under the Sustainable Development Goals, 2014, targets for MPAs were set and by 2018, 16 per cent (or over 22 million square kilometres) of marine waters under national jurisdiction—that is, from the high water mark to 200 nautical miles from shore—were covered by protected areas, more than doubling the 2010 coverage level (United Nations, 2018). An example of how this restricted access has affected SSF communities was documented in the north coast of Paraná State, Southern Brazil. Here SSF are facing increasing problems of access to their target grounds as a consequence of biodiversity conservation policies (Faraco et al., 2016). MPAs are considered to be the backbone of South Africa's marine conservation strategy (Lemm and Attwood, 2003; Helvey, 2004; Laffoley, 2008; Kerwath et al., 2013), and it has embarked on an ambitious programme to expand the coastal and marine area under protection and establish a representative network of MPAs (Sink et al., 2012). This has adversely affected SSFs living adjacent to these sites who have lost access to these

protected grounds (Sunde and Isaacs, 2008; Sowman et al., 2011; MDT, 2013). This has led to growing discontent amongst fisher communities who argue for the restoration of their traditional rights of access to meet their food and livelihood needs (Sowman et al., 2011).

2.3.4 *Natural disasters*

In addition to man-made challenges, SSFs and their communities often live on or near exposed coastal regions which make them vulnerable to big weather events such as cyclones or hurricanes (Chuenpagdee and Jentoft, 2011). In some countries like Bangladesh, Nicaragua, Guatemala, and Mexico, this happens quite frequently (Islam, 2011; Gonzalez, 2011; Andrade and Midré, 2011; Salas et al., 2011). Natural disasters adversely impact SSFs in three main ways. First, these events expose SSFs to greater life-threatening dangers than fishers operating in bigger vessels (Chuenpagdee and Jentoft, 2011). Heavy winds and high waves caused by these events inhibit fishers from going to sea (Islam, 2011). For instance, the hardship caused by the aftermath of the 2004 tsunami to the fishers of Ranong and Krabi provinces, was documented by Chuenpagdee and Juntarashote (2011, p.345) who referred to the "incident that robbed them of their livelihoods." Second, despite these risks, many fishers defy warnings and continue fishing, which results in many fatalities every year (Islam, 2011; Ahmed and Neelormi, 2008). For instance, during cyclone Sidr in 2007, many fishers died because they ignored the cautionary signal of a cyclone (Islam, 2011). When disasters strike, limited finances make it difficult to restore homes and infrastructure, and the loss of fishing gears, boats, livestock, and other household assets can wipe out entire livelihoods (Islam, 2011). Third, these communities usually live near their workplace on the beach which makes them especially vulnerable to natural disasters.

Climate change contributes additional disturbance through multiple pathways (Badjeck et al., 2010). Changes to water temperature, precipitation and oceanographic variables such as wind and wave action can bring about increasingly risky weather conditions (Hall, 2011; Faraco et al., 2016) which can disrupt fishing operations (Westlund, 2007). These severe weather events can also destroy or severely damage assets and land-based infrastructure such as landing sites, vessels and gear (Jallow, et al., 1999), as witnessed in Jamaica in 1998, whereby SSF lost 90% of their lobster (*Panulirus* argus) traps during

Hurricane Gilbert (Aiken et al., 1992). This can also bring about significant ecological and biological changes to ecosystems upon which the SSF rely (Badjeck et al., 2010) resulting in reductions of fish stocks (Cheung et al., 2010) or changes in their spatial and/or temporal distribution (Morzaria-Luna et al., 2014). This in turn can impact the livelihoods strategies and outcomes of SSF communities (Coulthard, 2008; Iwasaki, et al., 2009; Sarch and Allison; 2000) as fishers may not be able to afford high adaptation costs i.e. new gears and increased fuel to reach new grounds (Pörtner et al., 2014). In Vietnam's Mekong Delta, environmental conditions are already showing signs of climate change (Ehlert, 2012), with increasingly unreliable flood and weather patterns (Biggs, 2004; Adger et al., 2000). According to researchers, the impacts of climate change will be felt predominantly by small-scale fishers, because they constitute more than 90% of the world's fishers, live in close proximity to the coast, and predominantly operate within vulnerable developing countries (Badjeck et al., 2010). Climate change may also impinge on SSF through indirect pathways (Hall, 2011). In the Caribbean, for example, damaged tourist infrastructure following hurricanes has led to increases in numbers of workers undertaking short-term work as fishers, thereby increasing overexploitation and conflict (Hall, 2011). Similarly, in Africa, droughts have been shown to lead farmers into fishing (Conway et al., 2005).

Of course, fishers have always had to adapt to the vagaries of the weather (Faraco et al., 2016; Glantz and Thompson, 1981; Cole, 1996; Gordon and Munro, 1996; Lauck et al., 1998; Rothschild et al., 2005). Meteorological uncertainty is inherent in fisheries, so there is an expectation of change and a stock of knowledge and experience of coping with it and adapting to it (Miller and Fluharty, 1992). However, current and expected rates of change in weather patterns are unprecedented (Faraco et al., 2016; MacKenzie and Schiedek, 2007; Dulvy et al., 2008) and this means SSFs struggle even more to adapt to their changing working conditions not least because their ecological knowledge becomes rapidly defunct, and their limited spatial context and scale of their activities restrict their adaptive capacity (Morton, 2007). Moreover, they do not have much flexibility, opportunity, or capital to reinvest in alternate occupations, as is evidenced in the Northern Gulf of California (Aragón-Noriega et al., 2010).

2.3.5 *Access to alternative employment*

Lack of alternative employment opportunities for SSFs has been highlighted by many researchers (Aryeetey, 2002*;* Allison et al., 2011). There are many reasons for lack of non-fishing jobs, including poor transport infrastructure preventing commuting (Allison et al., 2011). Due to their distance from public facility hubs, fishing communities along the coast are usually the last to benefit from economic development (Islam, 2011) so it is not uncommon for fishing communities to be poorly served by roads and markets (Allison et al., 2011). This means that for some fishers it is not only difficult to obtain jobs elsewhere, but it is difficult for them to develop their own jobs, such as direct marketing – i.e., sell their catch in distant markets which fetch higher prices - so instead they sell the fish at coastal landing sites for lower prices (Islam, 2011; Andrew et al., 2007). Ali (2010) found that Bangladeshi fishers only received 1.5% of the final consumer price by being locked into an exploitative fish marketing chain.

Other reasons for a lack of alternative employment include little external investment (identified in Thanh Phong, Vietnam by Nguyen and Flaaten, 2011); low education levels (Islam, 2011; Nguyen and Flaaten, 2011; Allison et al., 2011); limited transferability of fishery skills; and unavailability of training programmes in other skills (Islam, 2011). Aryeetey (2002) discusses this issue in the context of West African SSFs, where he notes that literacy rates in fishing communities are low (29% in Sierra Leone) (Horemans, 1998), as children are withdrawn from school early in fishing communities to provide child labour in fishing activities, and this leaves them unable to easily seek alternative job options. In Bangladesh, the rate of illiteracy in fishing communities is very high, with only a small percentage completing their primary schooling owing to a high drop-out rate (Kabir, et al., 2012). Fishing is very labour-intensive, and fishers cannot afford to pay for manpower from outside the household to allow their children to attend school (Islam, 2011). Also, schools are often inaccessible due to lack of transport infrastructure (Amarasinghe and Bavinck, 2011) or they don't exist beyond a primary level. For example, both the fishing communities of Bata Atha and Rekawa in Sri Lanka are located about 3 km away from the main road, and there is no proper public transport in these areas. Schooling for children has, therefore, always been a problem for fishing parents, who were unable to send children to pre-schools and national schools (Amarasinghe and Bavinck, 2011). On the other hand, some researchers have reported that fishing communities are facing a decline in recruitment of SSFs (Jones et al., 2010; Marciniak, 2011) due to urbanisation and opportunities in other sectors such as tourism. This has been

found to be a particular issue amongst the young, who, having witnessed the difficulties faced by their SSF parents, are unwilling to follow them into the fisheries sector and seek non-fisheries jobs (Marciniak, 2011).

2.3.6 *Access to credit*

An inability to gain credit through the formal credit market (i.e. banks) was identified as a contributor to fisher and fishing community vulnerability (Mills et al., 2011; Aryeetey, 2002). Without capital, the people cannot invest in innovative technologies or working capital (Aryeetey, 2002). Fishers' access to the formal credit market (i.e. banks) is very limited due to lack of collateral assets like landed property, therefore, SSFs are dependent on informal credit mechanisms (Amarasinghe and Bavinck, 2011; Islam, 2011) such as the dadon system operating in Bangladesh. This informal arrangement is often blamed for exploiting the fishers because it binds the fishers to the money lender in a debt cycle (Habib, 2001; Kleih et al. 2003). Similar arrangements exist across the world such as those discussed by Aryeetey (2002) in West Africa where creditors assume control of the sale of fish landings, often trimming off a good part of the profits from the transactions, leaving some canoe owners and crew members in a permanent state of indebtedness. Amarasinghe et al. (2005a) pointed out that the interest rates for informal loans could be as high as 180%, so this alternative option leads to further vulnerability (Amarasinghe and Bavinck, 2011).

2.3.7 *Access to health care*

In the literature, access to health care facilities is reported to pose a further external challenge to SSFs specific to the developing world. Frequent bouts of Illness impair a SSF's capacity to work (Islam, 2011), which could push a family into bankruptcy and poorer health because the cost of medicine is often paid by reducing the frequency of meals or, in extreme cases, by the starvation of family members (Islam, 2011; Mills et al., 2011).

2.3.8 *Over-fishing*

SSFs are reported to sometimes work in a Malthusian fashion as stocks dwindle by overfishing, and thereby contribute to the destruction of the ecosystems and fish stocks from which they draw their livelihoods (Chuenpagdee and Jentoft, 2011; Korda et al.,

2008). For example, Andrade and Midre (2011) reported how in Livingston, Guatemala, to maintain minimum income levels, fishers must keep fishing even at the expense of sustainability, because no other income opportunities exist, increasing their activities until resources become economically and/or biologically overexploited. They are also observed to use unsustainable gear types (including beach seine nets) which have exacerbated the problem (Nguyen and Flaaten, 2011; Hosch, 2002). The non-selectiveness of the gear means it catches almost everything within the net due to the small mesh size used, including undersized and juvenile fish which are landed often illegally (Kraan, 2011). This has been observed in Bangladesh, where fishers have also been found breaching legislation by targeting protected species or using illegal gears (e.g. monofilament fishing nets). Likewise, in Vietnam, illegal fishing gear with a very small (1–1.5 mm) mesh size is widely used as a normal fishing tool (Nguyen and Flaaten, 2011). Artisanal fisheries in West Africa are also facing serious challenges due to the virtually open access nature of the industry and expansionary policy measures in the past that encouraged more people to enter the fishing sector (Aryeetey, 2002).

The effects of global overfishing are serious, with some stocks already collapsed and others on the way to becoming economically non-exploitable (FAO, 2018; Béné, 2003; Béné et al., 2004; FAO, 2005; Clark, 2006; Onyango, 2015; FAO, 2004; Clay and Olson, 2008). Indeed, the FAO reported in 2018 that the percentage of stocks fished at biologically unsustainable levels had increased from 10 percent in 1974 to 33.1 percent in 2015, with the largest increases in the late 1970s and 1980s. In fisheries that are poorly managed, the race for fish creates excessive fishing capacity beyond a sustainable yield (Faraco et al., 2016). For example, overfishing has been reported to impact the sustainability of SS fisher's livelihoods in the province of Phangnga, Thailand, where current management efforts are ineffective at protecting stocks against nomadic trawlers and illegal activity perceived to undermine biological protection (FAO, 2000; Jones et al., 2010).

As a result, SSF and their associated communities globally are increasingly struggling to cope with dwindling fish stocks (Faraco et al., 2016; Urquhart et al., 2013). Overcapacity in fisheries leads to several problems: fishers have to travel farther from shore for sizable fish thereby putting their lives at risk (Jones et al., 2010); fishers may be forced to migrate away from their communities (Jones et al., 2010); there will be a decline in the quality of

life of fishers and their families; there is increasing conflict in the fishery as fishers compete for fewer fish; heightened tension is likely between fishers and management; and lower levels of employment, export revenue, food security and rural social stability are expected (Faraco et al., 2016; Metzner and Ward, 2002; Ward et al., 2004).

The literature also discusses a self-inflicted challenge contributing to the vulnerability of the SFF: poor self-organisation.

2.3.9 *Poor self-organisation*

The literature also discussed characteristics of the SSF sector itself which lead to the political exclusion and marginalisation of SSF communities. Weak political representation of SSFs in the managerial power structure is a capacity handicap (Allison and Ellis, 2001) which is attributed to several factors. First, fishers and their communities are accused of lacking an understanding of modern governance institutions and the ways in which policies are formulated, and thus unable to influence these to their advantage even when the opportunity arises (Olsson et al., 2004). In some instances, the relationship between small-scale fishing communities and government is characterized by hostility (Chuenpagdee and Jentoft, 2015). Second, the communities were found to be poorly integrated which prevents them obtaining adequate representation within the administrative structures. For example, Paladines (2015) reports the lack of trust, leadership and cohesion among SSFs on mainland Ecuador and the Galapagos Islands as the reason why they lack political influence. In Bangladesh, high subscriptions were impediments to joining cooperative organisations (Islam, 2006).

2.4 Coping Strategies Adopted by the Small-Scale Sector

Despite the above vulnerabilities, many SSFs have survived (Eide et al., 2011). Under circumstances where people feel vulnerable, individuals and communities often develop coping strategies to deal with this vulnerability (Chambers, 1989; Jóhannesson et al., 2003; Clay and Olson, 2008; Jiménez-Badillo, 2008; Chuenpagdee and Jentoft, 2015). The literature is full of stories about what the fleets are doing themselves, whether they are living on the Yucatan Peninsula of Mexico (Salas et al., 2011), or the shores of Lake Malombe in Malawi (Hara, 2011). The majority of the stories tell of adaptive coping strategies (Folke, 2006; Smith and Wandel, 2006) as they draw on a range of choices to

secure their everyday lives. A given situation may generate different responses by SSFs even within the same fishing community (Thorpe et al., 2007) both at an individual and group level (Clay and Olson, 2008; Neis, 2000; Acheson, 2003). Not all the strategies are sustainable without external intervention (Henry and Johnson, 2015): coping strategies have limitations. Seven main coping strategies adopted by the SSF sector have been identified in the literature: informal networks; fishers' organisations; co-management; diversification; migration; asset stripping; and illegality.

2.4.1 *Informal networks*

The first coping strategy adopted is informal networking whereby fishers draw on social networks (i.e. fellow fishermen, relatives, and patron-client networks) to work toward common goals (Ramirez-Sanchez and Pinkerton, 2009). Acheson (1988: 2) noted that, "survival in the industry depends as much on the ability to manipulate social relationships as on technical skills". For example, some communities were found to deal with the issue of a lack of credit and threat of the risks associated with money lenders by lending each other money in the form of no-interest loans made on an informal basis (Haque et al., 2015; Islam, 2011). Whilst informal credit schemes via private moneylenders are an option, many fishers tap into their own family and extended social networks, which typically charge little or no interest on their loans and thus allow fishers to maintain livelihood security with little risk. However, this is a limited solution since the amount of capital that can be mobilized through such sources is generally small (Haque et al., 2015). These strategies tend to work best at individual or family levels, but fishing community-wide networking coping actions have also been reported by Salas et al. (2011) and Salas and Pitcher (1999), who write of fishers forming teams to go fishing during the windy season, and then sharing their catches regardless of who brought in more. Given the unpredictable nature of the sector, families were found to jointly contribute to fishers' incomes (Islam, 2011; Marschke and Berkes, 2006). This was particularly the case for female counterparts who have subsequently become the primary financier of the fisher household, example, in the Chittagong district, women work in the garment industry (Islam, 2011). Different family members are also found working in different aspects of the SFF sector. For example, in the Sundarbans area of Bangladesh, almost all women (and youngest girls) in fishing families are active in income-generating activities, mainly

shrimp and prawn fry collection. In Mexico, whilst the men fish for octopus, the women target crab which in turn is used as bait for octopus (Salas et al., 2011).

Fishers from within and between communities in the Loreto municipality, Baja California Sur (BCS), Mexico, were also found to share ecological and technical information in response to varying ecological conditions (Ramirez-Sanchez and Pinkerton, 2009). This sharing included information on the abundance and location of fish and was only possibly due to kinship, friendship, and good social relations. Cooperative actions in Mexico have also been reported by Salas and Pitcher (1999), where fishers form teams to go fishing during the windy season. Other examples of cooperation include the relationships built up among coastal communities and some inland communities. These are trust-based agreements for providing mutual support: fishers can seek shelter within the inland communities during the hurricane season, while the people from those communities can go fishing seasonally to the fishers' fishing grounds, especially during the octopus fishing season (Salas et al., 2011). Fishers were also seen to come together to informally strategize temporary fixes to an external problem. For example, fishers operating in the Maine Lobster (*Homarus americanus*) industry collectively agreed to reduce their fishing intensity to try and fix the price crash, hoping that a reduction in supply would increase prices (Henry and Johnson, 2015).

Fisher's ability to pursue such coping mechanisms is reliant upon certain conditions being in place (Ramirez-Sanchez and Pinkerton, 2009; Schwarz et al., 2011; Salas et al., 2011; Amarasinghe and Bavinck, 2011). At the broader community scale, the level and nature of social cohesion, reflected by the ability of a community to work together to accomplish desired goals, is a factor contributing to such networking (McCool et al., 1997). So some individuals and communities will be more resilient than others and be more capable of pursuing joint coping strategies (Hadjimichael et al., 2013; Brookfield et al., 2005; Salas et al., 2011).

2.4.2 *Fishers' organisations*

The second coping strategy adopted by the SSF sector is to establish fishers' organisations (Aryeetey, 2002; Salas et al., 2011). By organising into a cooperative, fishers are able to potentially yield greater control over their product, obtain a wider variety of services, and have greater bargaining power than an individual fisher would have (Kohls and Uhl, 2001;

Jacinto and Pomeroy, 2011). Fishers associations (FAs) in Japan have been able to achieve gains in resource management redressing the lack of bargaining power of individual fishers in markets (Jacinto and Pomeroy, 2011). Bangladeshi SSF were observed to organise themselves in cooperatives in order to lease access to water bodies from the government (Sillitoe and Mahbub Alam, 2014). The literature reports how fishers are able to use their cooperatives to combat managerial decisions (Isaacs, 2012). For example, in Sulawesi, a traditional social movement (Kamalise) emerged to push for common property resource rights and a greater role for upland groups in resource management decision making (Armitage et al., 2008). In Yucatan, some fishers belong to producer cooperatives which have facilitated alternative livelihood options in the tourist sector (Salas et al., 2011), thus providing financial support in times of crisis.

These groups were also found to enforce self-imposed regulations (Deswandi et al., 2012; Sillitoe and Mahbub Alam, 2014; Evans and Andrew, 2011). For example, Bangladeshi cooperatives require their fishers to employ techniques that ensure the conservation of fish numbers – such as ensuring that nets maintain a minimum mesh size that allow fry to escape (Sillitoe and Mahbub Alam, 2014). As well as ensuring sustainable practices, fishers' organisations have also been used to reduce gear conflict between fishers sharing a common area (Jacinto and Pomeroy, 2011). Other fishers' organisations have laid down clear boundaries within which to operate (Evans and Andrew, 2011). For example, the House of Chiefs operate as a cooperative and have established a defined boundary for the sea cucumber fishery in the Kia fishing community, located in Isabel Province, Solomon Islands (Evans and Andrew, 2011).

2.4.3 *Co-management*

The third coping strategy of the SSF sector is co-management. Communities were found to develop cooperative arrangements with local level governing institutions (Marschke and Berkes, 2006; González, 2011; Chuenpagdee and Juntarashote, 2011). For example, in Cambodia, the national government helped create the political space for local-level experimentation, whereby fishers have worked with local-level resource management institutions to create opportunities for households and villagers to solve resource management issues (Marschke and Berkes, 2006). Elsewhere co-management arrangements have allowed communities to create management plans. For example,

fishers in Bang Saphan village, Prachuab Khiri Khan, in Thailand have been supportive of a community-based fisheries management project initiated as part of the government programme to address gear conflicts, and through this have agreed to the demarcation of about 240 km2 for protection (Chuenpagdee and Juntarashote, 2011). One author (González, 2011) discusses how fishers craft transformative solutions to increase fleets' political community leverage by seeking public office in municipal and regional governments.

2.4.4 *Diversification*

The fourth coping strategy is diversification. Some fishers employ occupational pluracy as a coping strategy whereby fishing is just one component of a portfolio of activities to support fishers' livelihoods (Marschke and Berkes, 2006; Salas et al., 2011; Thorpe et al., 2007; González, 2011; Fauzi and Anna, 2010; Salmi, 2005). For instance, many fishers combine fishing with farming (Faraco et al., 2016) and tourism (Haque et al., 2015). It is generally established that diversity in some form or another leads to increased resilience in social–ecological systems (Folke et al., 2002; Henry and Johnson, 2015; Folke et al., 2002; Turner et al., 2003). Fishing is a high-risk occupation prone to seasonal and cyclical fluctuations in stock size and location, some of which are highly unpredictable (Allison and Ellis, 2001). Diversification reduces the risk of livelihood failure by spreading it across more than one income source (Haque et al., 2015). It also helps provides a buffer against market uncertainty or failure and generates financial resources in the absence of credit markets (Allison and Ellis, 2001).

Some fishers were found to seek options outside the fisheries sector in times of hardship (Pana and Glenn, 2012; Marschke, and Berkes, 2006), either fully opting out of the fishing sector or becoming involved part-time in other economic sectors (such as tourism) while remaining connected, though less involved, with the fishery (Salmi, 2005). Tourism is a popular alternative or complementary activity observed in the literature as a coping strategy among fishers (Salas et al., 2011). For example, fishers operating in Palawan in the Philippines have diversified their means of livelihoods away from fishing to working as tour guides or boatmen (Pana and Glenn, 2012). Some fishers have moved into aquaculture (Nguyen and Flaaten, 2011) and agriculture as part-time occupations (Deswandi et al., 2012; Allison and Ellis, 2001). On the South Java Coast, individuals

switch between rice-farming, tree-crop farming and fishing in response to seasonal and inter-annual variations in fish availability (Charles, 2001; Allison and Ellis, 2001). In a fishing community in Sungai Pisang, Indonesia, over two-thirds of village households rely on paddy farming, while the other third depend on capture fisheries (Deswandi et al., 2012). In West Africa, declines in coastal resources led fishers to diversify into hunting for bush meat (Brashares et al., 2004; Hall, 2011). Marschke and Berkes, (2006) report that in Cambodia, in tight times, households which normally started different aspects of the fishing operation were found to diversify into non-fishing activities for wage labour, as illustrated by one household whereby one daughter cuts clothes, another markets the fish, the wife sells goods from their home and the two sons were sent to the city to find other work (see also McGoodwin, 1990).

Others were observed to seek diversification within the fishing sector (Henry and Johnson, 2015). Given the high uncertainty of their working environment, some fishers harvested multiple species to buffer the effects of a price collapse or reduced catch of a particular species by shifting to other fisheries (Berkes, 2007; Henry and Johnson, 2015). This versatility allows them to gain sufficient income from fisheries throughout the year and helps spread the pressure on fisheries resources, enabling the protected stocks to recover (Chuenpagdee and Juntarashote, 2011). As illustrated by Maine fishers who shift seasonally from ground-fish to harvesting Maine lobster (*Homarus americanus*) (Henry and Johnson, 2015). Small-scale fisheries in Thailand have also been found to target multi-species and utilise multi-gears, with fishers depending on the seasonal availability of the fish species (Chuenpagdee and Juntarashote, 2011). Similarly, Danish small-scale fisheries (McGoodwin, 1990) switch between different target species, gear types and fishing areas to retain flexibility. Likewise, in the Pacific North area of Baja California Sur, during and after El Nino events, some fishers move from lobster to abalone, fin fish and sea cucumber (McCay et al., 2011). Fishers operating on Lake Malawi responded to the reduced availability of their target catch by switching to a cheaper gear type (gill net) and using a new method of catching the chambo (*Oreochromis lidole*), in order to move their operations offshore. Other strategies include increased targeting of lower value species (Hara, 2011), and downsizing. Diversification options are dependent upon flexible territorial systems and managerial mechanisms (WHAT, 2000).

However, diversification was deemed by Onyango (2011) and Kraan (2011) to be an undesirable option because of the unique value of fishing: as we noted earlier, for many fishers, being a fisher is not only a way to earn an income, but a way of life. Being a fisher is part of one's identity, as, for instance, expressed in the songs sung by Ghanaian fishers during their fishing operations and in the decoration of their canoes, and fishers may be very reluctant to seek other jobs (Islam, 2011).

2.4.5 *Migration*

The fifth coping strategy adopted by SSFs is migrating from their communities for strategic periods of time to find fishing work elsewhere. Such migration was not permanent (Islam, 2011), but temporary, often triggered by the seasonal and spatial variation of their targeted stock, as illustrated by fishers from the Java Sea who undertake long-shore and inter-island migrations (Allison and Ellis, 2001). Migration was also caused by adverse managerial decisions, for example, when faced with the closure of their mainstay – the sea snail (*Rapana venosa*) fishery - small scale fishers from the Turkish Black Sea were found to have migrated to Istanbul and the Sea of Marmara to dredge for sea snails there. The SSFs in Sierra Leone have been found to relocate temporarily to neighbouring countries in the face of an increase in regulations and deteriorating catches (Thorpe et al., 2011). Mobility is also an integral part of the Ghanaian SSF fleet strategy (Kraan, 2011): in their case they follow their target species migration, the sardine, from the west toward the east. Another form of migration is for SSFs to move to work in prosperous countries and send remittances to their families back home. For example, Garífunas fishers in Guatamala were found to migrate to the United States to find comparatively well-paid work and send remittances (Andrade and Midré, 2011). For these fishers and their families, international remittance has become an important component of household income, but it is not without risk as many of the fishers enter the US illegally and face the risk of expulsion, and it also sees their families fractured.

Another form of migration is inward migration, which can exacerbate the problems facing the SSF sector. Many traditional small-scale communities face a challenge of mass migration of those seeking livelihood opportunities on the coast (Hall, 2011). For example, inward migration into the Ranong and Krabi provinces of Thailand from Myanmar to work as crew members for the industrial fishing companies was discussed by

Chuenpagdee and Juntarashote (2011). Some of them were found to engage in small-scale fishing activities (using illegal fishing gears in some instances), thus competing directly with the local fishers. In the Caribbean, damaged tourist infrastructure following hurricanes has led to increases in numbers of workers undertaking short-term work as fishers, thereby increasing overexploitation and conflict (Hall, 2011). Similarly, in Africa, droughts and war have been shown to lead farmers into fishing (Conway et al., 2005; Hall, 2011). The lack of familiarity and connectivity to the sea and to the local communities of these immigrating fishers create serious problems for the sustainability of SSF in such communities.

2.4.6 *Asset stripping*

The sixth coping strategy is asset stripping. This illustrates how strategies adopted by SSFs are not always sustainable. This coping strategy is a desperate, short-term one pursued because of a lack of alternatives (Marschke and Berkes, 2006). While it may provide short-term security, it does so by undermining potential future options (Wood, 2003). Such strategies can involve running down productive assets by increasing fishing pressure on healthy fish stock (Henry and Johnson, 2015) or targeting key species during sensitive times such as their breeding season (Islam, 2011). This invariably exacerbates fisher's vulnerability, leaving people poorer than they were before as target stocks become over-exploited (Marschke and Berkes, 2006; Start and Johnson, 2004; Islam, 2011; Andrade and Midré, 2011; Henry and Johnson, 2015) and markets become flooded.

Another form of asset stripping was deferring maintenance on fishing vessels, which meant their SSF safety could be compromised while at sea (Allen and Gough, 2006). The safety of SSFs was also compromised by sailing farther to fish in deeper areas. These actions can be risky for all SSFs in their small vessels, but especially for lobster (*Panulirus* argus) divers (Salas et al., 2011), because diving for longer periods in deeper waters without careful regulations can increase health problems and higher chance of diving-related mortalities. Between 2004 and 2009, 250 decompression accidents and five deaths have been reported in Yucatan associated with lobster (*Panulirus argus*) diving (Salas et al., 2011).

2.4.7 *Illegality*

The seventh coping strategy employed by SSFs is illegality (Karper and Lopes, 2014), another unsustainable strategy. Some fishers were found to use illegal destructive gear (Nguyen and Flaaten, 2011; Islam, 2011; Salas et al., 2011). For example, Vietnamese fishers used fishing nets with an illegal mesh size that violated the fishing regulations (Nguyen and Flaaten, 2011). In Bangladesh, the use of illegal monofilament nets to catch undersized fish was reported to be widespread (Islam, 2011). In Mexico, facing a reduction in octopus yield, some fishers took the risk of fishing octopus by diving and employing a hook, which is a forbidden gear. Others employed chlorine to force the animals to leave their refuges (Salas et al., 2011). Fishers were also found to be removing undersized specimens thus excluding juveniles from recruitment to future fisheries. For example, in Bangladesh, fry collection (of very juvenile shrimp species (*Acetes sp.*), is the main occupation of women and young girls of Mothurapur, despite a ban on collecting wild fry (Islam, 2011). Another strategy was targeting banned species, such as horseshoe crab (*Limulus polyphemus*) which is considered a living fossil and protected by Mexican law (Salas et al., 2011).

Fishers were also found to poach within MPAs (Isaacs, 2011). Taking advantage of the lack of enforcement of many MPAs, non-compliance with the paper restrictions can be seen as a coping strategy by SSFs to deal with their situation. For example, in South Africa, in response to no-take MPAs and strict fishing permits, fishers have resorted to poaching activities, particularly in relation to abalone (*Haliotis midae*), which is taken at night (Isaacs, 2011). However, poaching brings insecurity to livelihoods and cannot be regarded as a long-term solution (Faraco et al., 2016; Cernea and Schmidt-Soltau, 2006). This also generates conflict between those doing fishing legally and those prepared to breach legislation.

2.5 Conclusion

This chapter sought to provide a global background to SSF. Across the world, SSF's take a number of different shapes and sizes, however what appears to unite them are five main features; environmental credentials, labour intensive arrangements, their contribution to the local market and food security; their contribution to their wider communities' social fabric; and the sense of identify and pride tied up with those who identify as SSF. Whilst challenges faced by SSFs in the coastal areas of many scores of countries are in many

ways unique, this chapter identified a number of unifying threats, including ocean grabbing, political marginalisation and powerlessness, environmental degradation and poor self-organisation. Five main coping strategy evoked in response to threats also emerged from the literature, namely engaging with informal grass-roots networks, creation of or contribution to co-management arrangements, job diversification, illegality and stripping assets in the form of shedding crew or downsizing vessels. That said the literature covering coping strategies was thin on the ground and an understanding of how capable communities are to pursue these strategies, and factors which served to facilitate or impede their endeavours, were hard to find. This global perspective enables us to place the English SSF in the context of a world-wide phenomenon – the increasing pressure felt by SSF in almost every littoral country. In the case of the English SFF, we will find some common ground with the experiences of SSF elsewhere in the world, but also many distinctive (possibly unique) vulnerabilities and coping strategies. This English case is explored in the next chapter along with an outline of the legal and managerial framework under which this fleet operates.

Chapter 3. The English Small-Scale Fishery

3.1 Introduction

In the European Parliament, as part of its 2013 Common Fishery Policy (CFP) reform process, Alain Cadec (2013) suggested a change in how SSFs are defined drawing on the "Joao Ferreira report", stating that "The definition of small scale fishing needs to be widened to take account of a range of criteria in addition to boat size, including … the impact of fishing techniques on the marine ecosystem, the time spent at sea and the characteristics of the economic unit exploiting the resource". An organisation established in 2012 to stand up for the interests of SSF in the European Union (EU) also emphasised the need to define the sector on their environmental and social impact, not the length, of their vessels (Seafish, 2013). This together with other pressure ensured that as part of their review of the CFP in 2013, the EU committed to a general definition of SSF which encapsulates both lengths of SSF vessels together with ecological criteria. It now identifies its SSF fleets as those vessels measuring under-12 metres in length and using low impact gear (i.e. trawls fully excluded) (Fleet Register, 2016; Maritime Affairs and Fisheries, 2016; García-Flórez et al., 2014). However, under its Article 17 ruling, it pulls social criteria into how fishing rights are allocated.

In England, the definition of 'small-scale' used for fishing vessel administration rests solely on a 10 metre or under length threshold (Davies at al., 2018). This reflects the practice of the English fishery which has long divided the fleet into two parts – the 10 meter and under sector generally encapsulated by the term 'inshore fleet' (Sowman, 2006; Schumann and Macinko, 2007; Hauck, 2008; Gray et al., 2011; Davies et al., 2018; William-Evans and Williams, 2018); and the over-10 metre sector generally encapsulated by the term 'offshore fleet' or industrialised fleet. I will adopt these terms to keep in line with English grey and peer reviewed literature.

The English definition is a crude and simplistic proxy for a highly heterogeneous sector and has resulted in a skewed fleet structure. Restrictive policy measures implemented in the 1990s across the offshore fleet, coupled with targeted decommissioning schemes run in the early 2000s provided an incentive for fishers to downsize and enter the inshore fleet. This led to the creation of the so-called 'super-under-10s' or 'rule-beaters' whereby vessels were either modified or built to bring them just within the length threshold to fit

within the 10 metre limit (Davies et al., 2018; Hatcher and Read, 2001; Cardwell, 2012). Currently, the super-under-10 metre vessel is the most common size class in the 2,602 strong under-10 metre fleet with over 300 vessels in this length category (Davies et al., 2018). The next largest size class captures vessels measuring 4.8–5 metres in length (Davies et al., 2018).

The inclusion of super-under-10 metre vessels creates an anomaly within the English inshore fleet because it blurs the line between industrial and small-scale, by combining diverse fishing operations with very different needs into one homogenous pool. Some commentators have said that the inclusion of these vessels within the under-10 metre size class is highly inappropriate and undermines the category altogether (Davies et al., 2018; Crilley and Estaban, 2013). These critics point to how super-under-10s are engineered to have the greatest possible catching capability without breaking the 10-m length mark (Cardwell, 2012). This enables them to catch significantly more fish in terms of volume than the remainder of the inshore fleet combined (Cardwell, 2012). This is illustrated by the 2015 landing records which document vessels 0–8m in length landing 9,000t of fish and shellfish worth £26.1m, while 8–10 metre vessels landed 33,500t worth £64.1m (MMO, 2016). Others explain that they are able to work in conditions which would be impossible for the smaller vessels. Sightings data captured by management organisations suggests that these vessels travel much further from port, often fishing up to and beyond the 12nm zone, while smaller vessels (under 8 metres) have a much shorter range (Breen et al., 2015). It has also been noted that these vessels are more likely to deploy mobile gears than smaller ones (Davies et al., 2018). These factors make the super-under tens more akin to the over-10 metre fleet than the traditional inshore fleet, while the remainder of the inshore fleet is much more aligned with small-scale enterprises, and although many of them benefit from innovative technological developments, their lower catching efficiency sets them apart from the high-catching quota-dependent part of the fleet (NFFO, 2013). This anomaly created by the super-under-tens is problematic for the rest of the inshore fleet, particularly in relation to the allocation of fishing opportunities, because the super-under-10s are able to access fish when others cannot and at a greater rate since they can land greater quantities and thus drain the quota pool which they share with other less efficient size classes at the expense of these smaller vessels.

In addition to academic criticism, these arrangements have also drawn condemnation from within the fishing sector itself too. A national-based representative group, the National Federation of Fishermen's Organisation (NFFO) described this group as 'the most salient factor in the current imbalance between under-10 metre quotas and inshore fleet capacity' and 'the cuckoo in the under ten nest' (NFFO, 2013). Meanwhile, the British government attempted to deal with this anomaly and in 2008, provided £5 million to decommission these high catching capacity boats to free up quota for the rest of the sector (Gray et al., 2011). This was highly criticised as being underfunded as it only enabled 50 vessels to participate and included no measures to prevent owners from using the compensation money to build new super-under-10 metre vessels.

The existence of the super-under-10 metre vessels poses a dilemma for how this thesis deals with the English SSF sector, because in theory, their experience should be quite different from the rest of the inshore fleet. There were two alternative options considered for how best to deal with the presence of super-under 10s within the context of this thesis: to exclude or include them in the following analysis of the English SSF. Excluding them would be to follow the lead of the European wide campaign and representative group 'Low Impact Fishers in Europe' (LIFE), which defines SSF in terms of its light environmental footprint. It would also be in line with Article 17 of the reformed CFP which favours defining SSF as inshore fishers using low-impact methods, specifically mentioning that the trawled gear many in this bracket use cannot be included as such (Davies et al., 2018). Following the example of LIFE and Article 17 and excluding the super-under-tens from this thesis would give credence to the claim made by the rest of the English SSF sector that their operations are more environmentally sustainable to the marine environment than the offshore sector. On the other hand, including the super-under-10 metre fleet within the English SSF bracket, gives credence to the claim made by super-under-10 owners that they exemplify a very successful strategy of adaptive resilience. Such fishers who choose to enter the under-10 metre fleet through vessel modifications have been referred to as 'rule-beaters', indicating that they have managed to beat the system under which the rest of the inshore vessels languish, and so should be applauded for their entrepreneurial nature in adjusting their business model to fit the 'regulatory landscape' (NFFO, 2013). However, the super-under-10 fleet are dominated by small-scale family enterprises, highly dependent on a local resource base, fishing mostly within the six nautical mile inshore zone (SAIF, 2010) with a localized

infrastructure (Symes and Phillipson, 1997), relatively limited capital intensive gear, labour intensive participation, and a catch per unit of effort much smaller than in the offshore sector (Hauck, 2008). These chime with factors accredited to SSFs globally.

The British Government has suggested that after the UK's withdrawal from the EU, the distinction between inshore and offshore vessels will be removed because it is anomalous, since the 'super tens' are more high-powered, technically sophisticated, and capable of catching larger quantities of fish than some offshore vessels. However, in the meantime, given the factors discussed above together with the fact that at the time of writing, the UK fisheries administration includes the super-under 10s in the English SSF, I deemed that for the purpose of this work, my definition of the English SSF should include the super-under tens. So I interviewed both super-under-10 metre skippers and owners as part of my fieldwork. However, I recognise that English SSFs' claims to be environmental stewards may not cover the super-under-10 metre vessels given their high catching capacity.

With regard to the meaning of a SSF community, it refers to the community of fishers which predominantly operate out of the same landing port or harbour. It does not refer to residential status, since fishers themselves may live in different locations and commute into the port or harbour. Nor does it refer to levels of interaction, since fishers may operate out of the same location but not interact with each other. This corresponds to how the Marine Management Organisation (MMO) collects its statistics, focusing at a port/marina or harbour level. It is worth noting that each community is unique both in terms of their operational, organisational levels, cultural aspects, normative orientations and social values.

3.2 Profile and Value of the English Inshore Fleet

3.2.1 *Profile*

In 2017, the UK fishing industry was composed of 6,148 fishing vessels, out of which 4,834 were inshore vessels and 1,314 were over-10 metre vessels, although the highest proportions of over-10 metre vessels are found in Scotland (17% of their fleet exceeded 15 metres) and Northern Ireland (30% of their fleet exceeded 15 metres) (MMO Statistics, 2018). Out of the industry as a whole, inshore vessels account for 9% of the

fleet's capacity and 34% of the fleet's power (MMO Statistics, 2018). In 2017, 82% of the English commercial fishing fleet was composed of inshore vessels amounting to 2,602 English-registered inshore vessels compared to 554 English-registered offshore vessels (MMO Statistics, 2018). The 'super-under-10s' made up a significant portion of the total power and capacity (tonnage) of the inshore fleet (Davies et al., 2018). In England, 90% of the offshore fleet makes use of towed gear (Fleet Register, 2015) compared to 22% of the inshore fleet (William-Evans and Williams, 2018). The inshore fleet is operational around the whole of the English coast but the greatest concentration is found along the English Channel (see figure 1), with the largest proportions of 10 metre and under vessels found in Hastings, where inshore vessels made up 92% of their fleet (MMO Statistics, 2018).

3.2.2 *Value*

Pollnac and Poggie (2006) controversially suggest that the direct economic importance of the English inshore fleet is limited to households that make their living from fishing. However, from 2008 to 2016, English inshore vessels accounted for 21% of the total value of fish landed by English vessels (Davies et al., 2018), and in the UK, over three quarters of the fleet are inshore vessels (Phillipson and Symes, 2010) supporting at least 45% of total UK fisheries related employment, not counting informal and family labour (Prime Minister's Strategy Unit, 2004). Symes and Phillipson (2009, p.2) explain that the inshore fleet "incorporate essential forms of informal labour hidden from the view of official statistics, without which many small family enterprises could not survive''. For example, skippers often select crew based on agnatic and affinal kinship ties in a fairly closed occupational community (Urquhart and Acott, 2014). However, economic benefits spin out to the wider community including both the upstream sector, which provides the inshore fleet with goods and services required to operate effectively, including fuel, ice, fishing gear, boat building, repairs and maintenance services; and the downstream sector, which provides the link between the under-10 metre fisher's processors, merchants and retailers (Morgan, 2013). This fleet can also help a community attract seaside tourism (Reed et al., 2013), since the presence of an inshore fleet invokes a form of romanticism in a location.

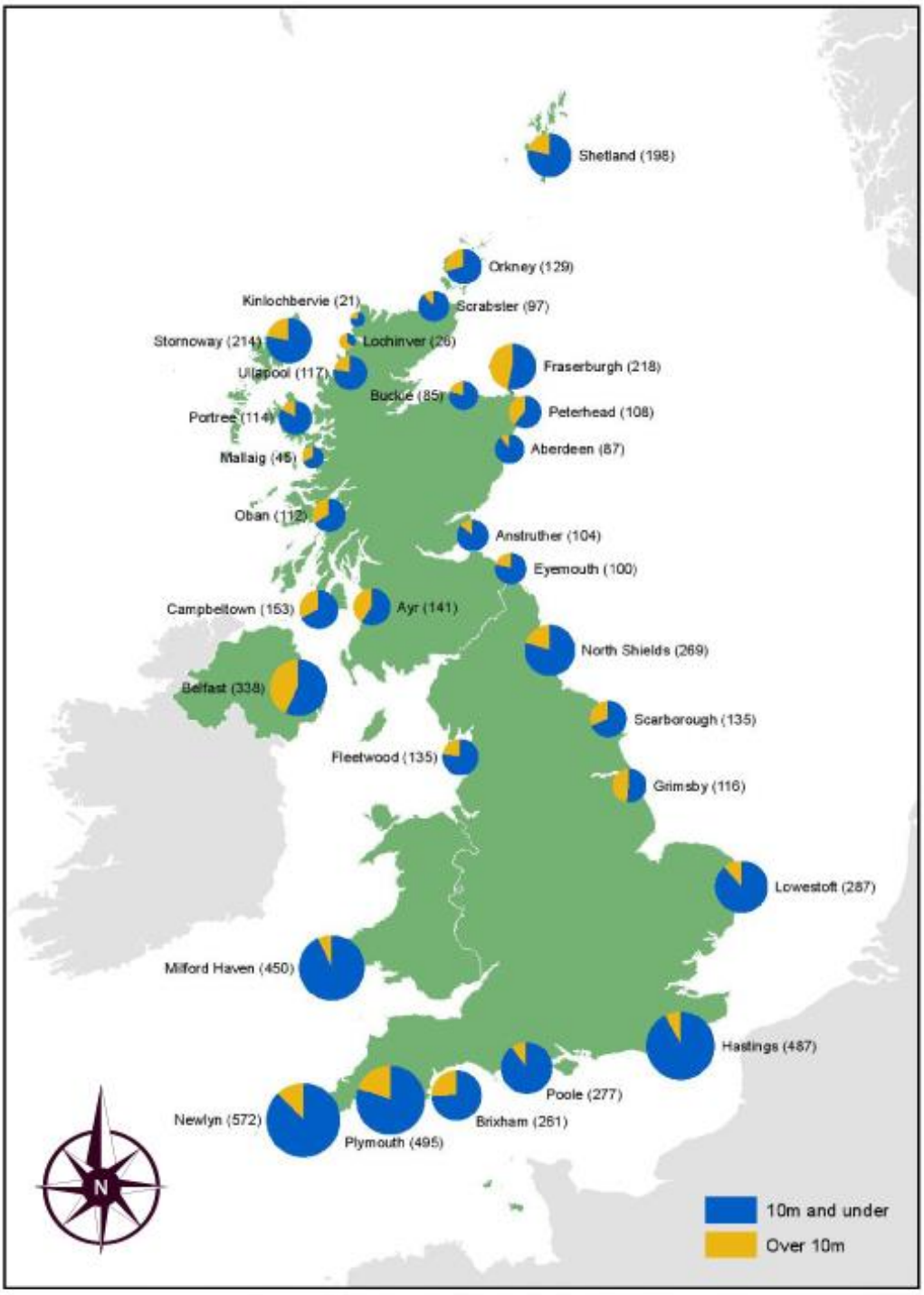

Figure 1: Number of vessels by administration port (2017) (Source: *MMO UK Sea Fisheries Statistics, 2018*)

Some authors (Morgan, 2013; Reed at al., 2013) have shown how the value of the English inshore sectors moves beyond economic contributions, including a broad range of social and cultural benefits for the wider community. A small-scale fishery valorises the character of an area, and contributes to a sense of place and community identity based on

a rich heritage of fishing (Urquhart and Acott, 2014; Aryeetey, 2002; Morgan, 2013; Brookfield et al., 2005; Jacob et al., 2001; Nuttall, 2000). As Brookfield et al. (2005, p.3) claim, 'the community understands and makes sense of the world from a perspective that is garnered from years of involvement with the fishing industry'. Therefore, for fisheries-dependent communities, as Brookfield et al. (2005, p.3) so aptly put it, 'fishing is the glue that holds the community together'. This fleet is also a reservoir of knowledge, experience and understanding of local fisheries that cannot be replicated in any other form (Symes and Phillipson, 2009). In addition, inshore fishermen gain a strong sense of pride, social identity and solidarity from their occupation (Reed et al., 2011). The oft-quoted description of fishing as a 'way of life' rather than solely a job is particularly applicable to many small-scale fishermen (Aryeetey, 2002). This can be seen in fishers' deep-seated desire to fish even when it is no longer economically viable (Van Ginkel, 2001).

3.3 Governance of the English Inshore Fleet

Current management of the English fishing fleets is undertaken at an international, national and regional level (see figure 2). At an international level, the European Commission sets out the CFP rules which are then picked up by member states. Within the England context, it falls to the Department for Environment, Food and Rural Affairs (DEFRA) to interpret these CFP rules into national legislation which in turn is implemented and enforcement by the Marine Management Organisation (MMO). This provides the MMO with a remit which includes managing quota allocations for the inshore fleet; licensing English vessels; administering fisheries-related grant allocations and establishing a marine zonation plan for English territorial waters. In addition to the management framework set out by the CFP, each Member State is able to impose marine and fishery management measures which apply only to their own fishers (Phillipson, 2002). In England, the Inshore Fisheries and Conservation Authorities (IFCA) are tasked with this responsibility and provide regional management drawing on co-management methods which see their actions guided by a committee of local stakeholders. However, the IFCAs' work remit is dictated largely by Defra and their non-statutory committee members chosen by the MMO. Further influential bodies include Natural England (NE) which acts as the governmental conservation advisory body to DEFRA, the MMO and the

IFCAs, whilst the Centre for Environment, Fisheries and Aquaculture Science (CEFAS) provides scientific advice to all levels of management.

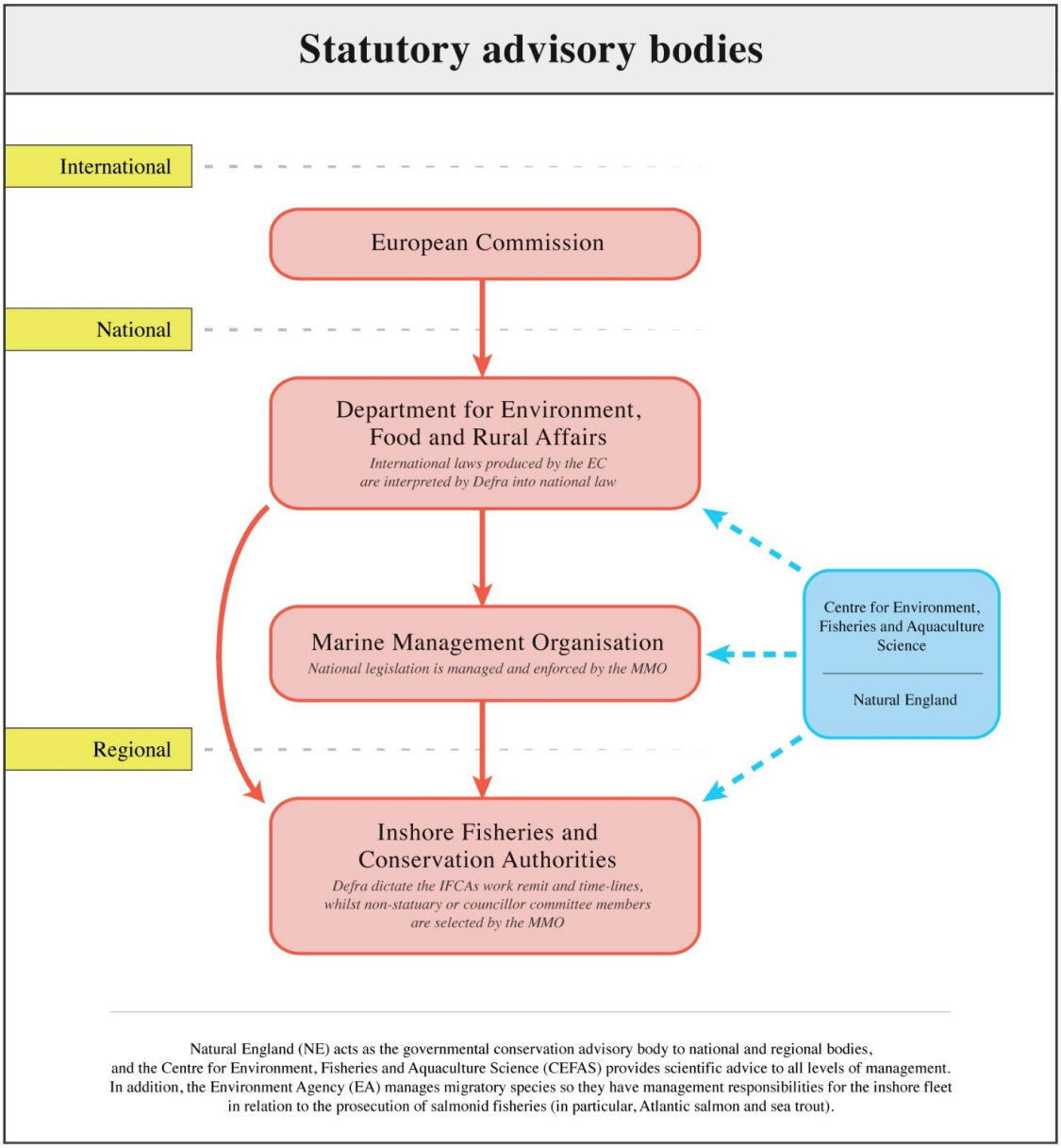

Figure 2: English Fisheries Management Organogram

The MMO's jurisdiction stretches out to the EEZ (200 nm) or the median line – the point halfway between England's and neighbouring countries boundaries, whereas the IFCA's remit extends out to six nm from their coastline and is restricted to county boundaries. Whilst there is only one MMO body, there are ten separate IFCA's (see Figure 3) covering the coastlines of Cumbria (North Western IFCA), Northumberland (Northumberland IFCA), Yorkshire (North-East IFCA), Lincolnshire, Norfolk and

Suffolk (Eastern IFCA), Kent and Essex (Kent and Essex IFCA), Sussex (Sussex IFCA) Dorset, Hampshire and the Isle of Wight (Southern IFCA), Devon and the Severn Estuary, including Lundy Island (Devon and Severn IFCA), Cornwall (Cornwall IFCA), whilst the Isles of Scilly IFCA manages the waters of the islands.

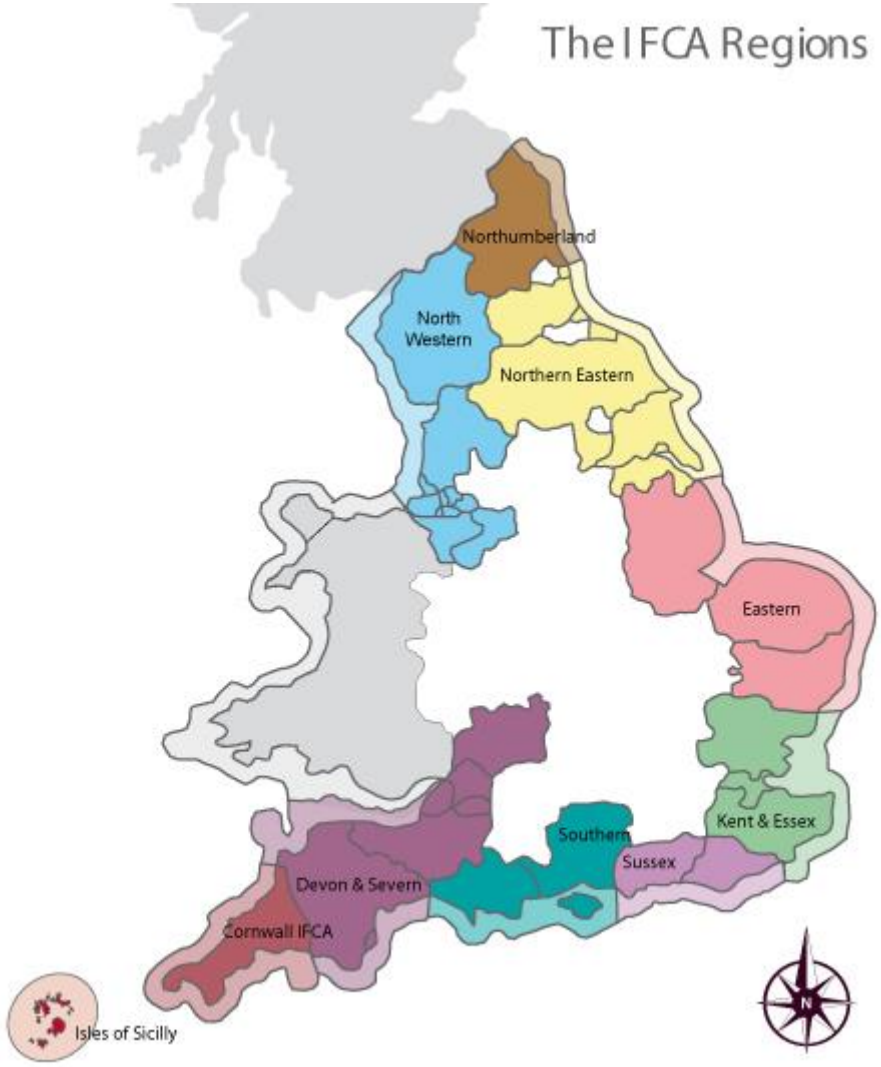

Figure 3. Geographical scope of IFCA districts (*Source: The Association of IFCA*s)

The IFCAs administration arrangements evolved into its current format in April 2011, when the Marine and Coastal Access Act (2009) (the 2009 Act) came into being. Prior to this, these groups were known as the Sea Fisheries Committees (SFCs) - which had been in place since the late 19th century and included both Welsh and English waters. Under the Sea Fisheries Regulation Act (1966), the SFCs were given a statutory defined remit reaching out to six nautical miles from the mean spring low water mark. The SFCs remit included fisheries regulation, stock enhancement, and monitoring and enforcement within

their districts. Regulations could be generated through the creating of byelaws or fishery orders (but this was limited to molluscan and crustacean fisheries) which could take the form of a several order (to limit public rights of fishing) or a regulating order (to develop licensing systems). These regulations were decided upon by a committee composed of representatives from the different sectors active within the SFCs' districts. .

In the move to the IFCA format, the Welsh remit was lost leaving them holding a solely English focus (Pieraccini and Cardwell, 2016). Whilst they still operate within the six nautical mile limit (Phillipson, 2002) their geographical remit included estuarine areas which were previously managed by the EA. Their duties were extended beyond fisheries to include conservation goals in the form of a wider management of the marine environment (Defra, 2010; Pieraccini and Cardwell, 2016). Section 153 of the 2009 Act states that: (1) [IFCAs] must manage the exploitation of sea fisheries resources in that district. (2) In performing its duty under subsection (1), the [IFCA] must – (a) seek to ensure that the exploitation of sea fisheries resources is carried out in a sustainable way; and (b) seek to balance the social and economic benefits of exploiting the sea fisheries resources of the district with the need to protect the marine environment, or promote its recovery, from the effects of such exploitation. However, whilst they can set local byelaws, these byelaws are not effective until confirmed by Defra (Appleby and Jones, 2012; Pieraccini and Cardwell, 2016). Moreover, the IFCAs are not autonomous in their agenda-setting process. In addition to their fisheries management duties, they were given a large conservation-focused programme of work by Defra in 2013, requiring that all commercial fishing operations working within European marine sites be assessed to ensure that they did not impact the integrity of the protected features. The IFCAs were established during a period of economic austerity, and they have suffered dramatic budgetary cuts despite increased responsibility and work demands.

Like the SFCs, IFCAs also are governed by a management committee. The membership for both SFC and IFCA management committees includes representation from their local council(s), and these members are democratically elected councillors assigned to the IFCA by the councils in question. Also, they have representation from statutory national agencies concerned with fisheries and conservation: the MMO, Natural England (NE) and the Environment Agency (Pieraccini and Cardwell, 2016). Other prospective members must self-nominate for membership. The selection of these members under an SFC remit

sat with the SFC itself, but the MMO is now responsible for this appointment process, and their selections are labelled 'MMO appointees' (Pieraccini and Cardwell, 2016). MMO appointees make up roughly half of IFCA committees and are appointed on a voluntary basis. Prospective members must submit their application forms to the MMO, who then select and interview applicants who meet the role profile laid out under MCCA, taking the pre-existing balance of sectors and expertise on the IFCA into account. In some cases, MMO officers are joined by external consultants in order to undertake the interview process. Applicants are not eligible for appointment if they have been convicted of a criminal offence and the conviction is not spent for the purposes of the Rehabilitation of Offenders Act 1974. This includes many fisheries offenses. The successful candidates are chosen by the MMO who will subsequently write to them with their offer of appointment (MMO, 22.01.2016). The IFCA do not play any part in this selection process.

The MCCA's regulation 151(2) states that potential IFCA members should be: ''(a) persons acquainted with the needs and opinions of the fishing community of the district, and (b) persons with knowledge of, or expertise in, marine environmental matters'' (Pieraccini and Cardwell, 2016). According to Defra (Hansard, 4 March 2011: Column 608W), applicants who fulfil these requirements are assessed by the MMO against three criteria: an active interest and involvement in the local community; a passion for making a positive difference in the local area; and excellent communication, influencing, and participation skills (Pieraccini and Cardwell, 2016). Critics have commented that the application form is a highly complex, competency-based application that discourages many applicants (Pieraccini and Cardwell, 2016), and that nominees are subject to a process of vetting by the MMO and Defra in which there is no opportunity for public scrutiny (Pieraccini and Cardwell, 2016). These regionalised management arrangements provide an opportunity for IFCAs to develop cooperative relationships with local communities (Smith, 2013; Österblom et al., 2011; Kochalski, 2017; Pieraccini and Cardwell, 2016) However, criticism of the English regionalised IFCA co-management system is made by Rodwell et al. (2014) and Phillipson and Symes (2010) who point to its inadequate resources and its inability to fully integrate fishers into the local marine environmental management system. Chapter 7 considers these at length these and other issues facing IFCAs and how their responses have affected the resilience of the SSFs within their jurisdiction.

Two national fishermen's organisations form another element in the SFF governance system. The NFFO represents fishing interests from all four administrations in the UK (England, Scotland, Wales and Northern Ireland), and is well-established in government forums. It was formed in the 1970s to provide a voice for the industry in light of European Community membership and the emergence of a CFP (Phillipson, 2002). The financial resources of the NFFO are collected by member organisations and are based on subscriptions and levies on members according to vessel capacity units. Whilst it represents both inshore and offshore vessels, 98% of its membership is held by the larger fleet (Greenpeace, 05.01.2013). The second national representative organisation is the New Under Ten Fishermen's Association (NUTFA) which only represents the inshore sector. It was formed by the inshore fleet's fishers following the introduction of the Registration of Buyers and Sellers (RBS) legislation in 2005/6, which for the first time provided Government with an indication of the catches taken by the inshore fleet. NUTFA is much less influential than NFFO, partly because it is fragmented and poorly funded.

There are also local port based Fishermen's Associations (FAs) which aim to represent the interests and welfare of their members in consultation with government and other organisations involved in the marine environment (Phillipson, 2002). FAs are very diverse in terms of membership numbers, interests and organisational structures. For example, while some include members who target a wide range of different target species, vessel sizes and fishing methods, others have a more specific membership base consisting of a single species or vessel group. The means of generating funds for FAs are varied, including regular subscriptions per vessel or person, one- off payments, levies on landings, and occasional contract work through their federations.

Finally, there are Fish Producer Organisations (FPOs – from now on referred to as Producer Organisations (POs)), which were created in the early days of the CFP (William-Evans and Williams, 2018). POs are associations of fishers and vessel owners established under EC legislation with financial aid from the EU in the early 1970s (Phillipson, 2002; Cardwell, 2012). Their role was initially to adjust supply to market requirements in order to guarantee a fair income to producers and stability of supply (Phillipson, 2002). Their remit changed in the 1990s, starting with Defra's decision to provide industrial vessels with logbooks and introduced quota limits for this fleet which in turn was affixed to their licence. In reaction to these limitations, the Shetland Producer Organisation (SPO) asked

the UK government if it could be allowed to manage its own quota, and it was granted this request in the mid-90s (Cardwell, 2012; Appleby et al., 2018). This devolved management spread as other UK POs followed suit, and more and more POs took managerial control of their members' shares of national TAC (Appleby et al., 2018; Cardwell, 2012; Phillipson, 2002). So sector vessels which are part of a PO have their quota allocations managed by their PO, but non-sector vessels sitting outside the PO system have their allocations still managed by the government. However, the number of vessels in the offshore non-sector (i.e., non-PO) has dwindled to 442 of the 1229 large-scale vessels flying the UK flag (Appleby et al., 2018). Since the mid1990s, the amount of UK TAC managed by POs has been slowly increasing, and by 2015 approximately 94% of quota by tonnage was under PO control (Appleby et al., 2018). Until 1996, quota shares of TAC could not be transferred between POs, but after that date, Defra decided to relax these rules. This process was made easier after Defra adopted an FQA model for quota arrangements. The process was again smoothed when Defra ruled in 2006 that FQAs could be separated from non-active vessels. As an unintended consequence, however, an informal, unregulated market for quota was established (Cardwell, 2012; Appleby et al., 2018).

The gradual devolution of quota management saw UK offshore boats split between two different management regimes: the PO members (dominated by industrial vessel owners (William-Evans and Williams , 2018) became known as 'the sector' and vessels still managed directly by the government (dominated by inshore vessels) became the 'the non-sector'. The English fleet can, therefore, be divided into three separate groups: (i) vessels belonging to a PO which manages their quota management system on their behalf; (ii) vessels over 10 metres in length not belonging to a PO and (iii) the 10 metre and under vessels. Groups (ii) and (iii), collectively known as the 'non-sector', are managed directly by the MMO under the direction of Defra.

3.4 The Managerial Landscape of the English Inshore Fleet

3.4.1 *Quota management arrangements*

The workability of the fishing quota system is the most widely discussed challenge to the English fleet (e.g. Hatcher and Gordon, 2005; Hatcher, 1997; Hatcher, 1997; Morgan, 2013). Many papers focus on the socio-economic impacts of the quota system on the inshore fleet (Gray et al., 2011; Cardwell, 2012; William-Evans and Williams, 2018), and

other authors including Campling and Havice (2014), Appleby (2013), and Mansfield (2004), criticize the creeping privatisation of fish quota. Symes (1992) pointed to the inevitable conflicts between equity and efficiency as a result of the two-tiered quota system (one system for the offshore fleet and another system for the inshore fleet).

Quota management is the pivotal governing instrument in UK fisheries. Once the overall share of TAC at an EU level has been agreed by the Council of Ministers, it is split amongst the member states (William-Evans and Williams, 2018). At this point, the UK is free to determine the method for their allocation of quota for each species to the UK fishing industry (Anbleyth-Evans and Williams, 2018; Phillipson, 2002). Until 2012, Defra was ultimately responsible for individual quota allocation within the annual TAC set by the EU and monitoring on behalf of England, Scotland, Wales and Northern Ireland. However, a concordat was signed in 2012 which devolved power to all four of the administrations to manage quotas and vessel licensing (Defra, 2012a; Smith, 2013). In England, the duty of distribution is held by Defra which has passed it on to the MMO for implementation (Defra, 2012a). In England, before 1st January 1999, these quotas were attached only to offshore vessel licences, based on track records which were calculated on the vessel's catch history during a three-year rolling period documented in a logbook (Gray et al., 2011; Phillipson, 2002; Cardwell, 2012; Appleby et al., 2018). Many vessel owners participating in this exercise by their own admission were imaginative or economical with the truth when logging their entries and this meant that their track record was exaggerated (Gray et al., 2011). In the case of sector vessels, a PO would receive an annual quota allocation based on an aggregate of their member vessels' track records (Phillipson, 2002) and it distributed the quota as it deemed fit. In 1993, the Government granted POs the permission to trade quotas, and in 1994, to retain the track records of member vessels when their owners surrendered their licences (Cardwell, 2012). This meant that an unofficial market for quota grew throughout this period (Cardwell, 2012). In the case of non-sector vessels, the quota was distributed by the Ministry of Agriculture, Fisheries and Food (MAFF, the predecessor of Defra) (Cardwell, 2012).

In an attempt to simplify the quota management system and prevent fishers over-declaring their catches in order to inflate their track record and acquire more quota (Cardwell, 2012), Defra introduced a fixed quota allocation (FQA) system in 1999 (Cardwell, 2012). The rolling track record was replaced with a fixed number of 'quota units' based on catches

made from 1994-1996 (MSEP, 2014; Appleby et al., 2018; Hatcher and Read, 2001; Davies et al., 2018). It also stated that no new licences would be issued, so anyone wanting a licence had to obtain it by transfer or purchase from another vessel (Phillipson, 2002). Despite the government's assurances that FQAs were non-transferable and were not to be treated as private property, the FQA system made quota trading much easier (Appleby et al., 2018), and an unintended consequence of this policy was the rise of a private fishing rights market as these licences acquired a market price. The result has been a concentration of quota within large fishing corporations (Sumalia, 2010; William-Evans and Williams, 2018). In 2002, it was decided that FQAs could be separated from vessel licences but only in limited circumstances such as if a vessel sank or was decommissioned: they could not be removed from an active licence (Cardwell, 2012).

In the early 1990s, whilst this period of regulatory overhaul in the offshore fleet was taking place, many offshore vessel owners rushed to claim inshore licences, modifying their offshore vessels or using decommissioning subsidies to scrap their vessels and buy or build new ones below the 10 metre threshold (Davies et al, 2018). The virtually unregulated inshore sector was particularly attractive to non-sector offshore vessel owners who wanted to avoid stringent monthly limits and a less favourable quota regime (Cardwell, 2012). This resulted in a surge of high-catching capacity 'super-under-10' vessels, just under-10 metres in length (Cardwell, 2012; Hatcher and Read, 2001; Davies et al., 2018). These vessels were referred to as 'rule-beaters', engineered to have the greatest possible catching capacity without breaking the 10 metre mark. However, the rush was curbed by the decision in 1993 not to issue any new inshore licences (Ota and Just, 2008). The move into the 'super-under-10m' category was again kick-started by two decommissioning rounds for the over-10 metre vessels undertaken in 2001 and 2003 to reduce fishing opportunities and withdraw capacity and effort from the UK fisheries to help stabilise the target fish stocks (MMO Statistics, 2016; Cardwell, 2012). However, unlike previous rounds of decommissioning which required fishers to surrender their licences, vessels and quota allowances, these new rounds removed the vessel and associated licence from an owner, but allowed the vessel owner to keep their FQA allocations to avoid an expensive decommissioning payment for the destruction of their fishing boats. The owners were allowed to move their FQA units to another vessel owner or to POs over the following three-year process, and as a result, a new class of 'slipper skippers' were created, consisting of retired fishers leasing quota out which had been

granted to them as FQAs in 1999 to the highest bidder in a secret auction (Cardwell, 2012). Other owners used their decommissioning money to buy 'rule beaters'. Between 1996 and 2006, the number of (active) over-10 metre vessels in the UK fell by 40% (Marine and Fisheries Agency, 2007), but a much-criticized hyper-market had been created for leasing quota at exorbitant prices, and the number of super-under-10 metre vessels increased to over 300.

Licensing was not extended to inshore vessels until 1993 (Cardwell, 2012), and even then, there was no statutory requirements either under EU or national legislation to record and declare their catches (MFA, 2008; MMO Statistics, 2016; Cardwell, 2012). In 1993, the European Commission's Council Regulation 2847/93 confirmed that boats under ten metres did not require logbooks. Until 1999, monitoring of their catches was not recorded in a systemic fashion (Cardwell, 2012): data collected comprised log sheets and landing declarations voluntarily supplied by very few fishermen (MMO Statistics, 2016). Their catch was also recorded in a randomized manner known as 'stratified sampling' by Defra officials located in the ports, whereby fisheries officers randomly visited a port and took note of every nth vessel's landings. This has led commentators to report that the figures used to estimate under-ten catches of TAC species can be considered to be nominal and minimal (Hatcher et al., 2002).

However, because of the rapid increase in super-under-10 metre vessels, MAFF began to tighten control on the hitherto largely unregulated inshore fleet, and the sector was brought into the North Sea nephrops (*Nephrops norvegicus*) quota system at the end of 1999. Before this, the inshore fleet were limited to technical conservation management measures such as area closures and gear restrictions, primarily focusing on shellfish species, issued by SFCs (Cardwell, 2012). Over the next few years, catch limits for the inshore vessels were extended to all quota stocks (Hatcher et al., 2002), and the under-10 m vessels were managed directly by the government, allocating quota monthly via a shared community 'pool' (Appleby et al., 2018). Data collected on the inshore vessels were taken to reflect the sector's landing ability, and provided the figures from which the fleet was assigned a percentage of the UK's annual TAC. This was particularly galling to the inshore fleet because decisions about their allocation rates were effectively based on a system of guess work (Defra, 2009; Hatcher et al., 2002) resulting in an allocated portion of the TAC that

did not accurately reflect their actual landings (William-Evans and Williams, 2018; Balata and Vardakoulias, 2017).

Critics complained that this management regime failed the fleet on several levels (William-Evans and Williams, 2018; Cardwell, 2012; Morgan, 2013). Defra set a distribution of the allowable catch across the year through a regime of imposed monthly catch limits based upon previous seasonal fishing patterns and suggestions by a handful of prominent fleet members - a process in which the inshore fleet have extremely limited input (Defra, 2009; Cardwell, 2012). Quota is allocated at an ICES (International Council for the Exploration of the Sea, the main scientific body for researching the state of the fishing stocks in the North Atlantic) area level, with little sensitivity to regional variations (William-Evans and Williams, 2018; Morgan, 2013). Fishers must follow the imposed schedule rather than take advantage of the regional natural fisheries cycles (Cardwell, 2012; Morgan, 2013). These natural cycles have annual variability which is not accounted for, and this variability is perpetuated by climate change which has rendered target fish's traditional cycles ever more unpredictable so quota may be available when the target species is not even present (Defra, 2009; EFRACOM, 2013; Golovnina, 2013).

Inshore vessels do not 'own' their quota, and they draw their fish allocations from the pot managed by the MMO which assumes that not all vessels will land their allocated amount. Therefore, if they don't catch what they are apportioned by the end of the month then it can be lost as other vessels may have caught all theirs and drained the pool, so to speak. This arrangement is perceived by fishers to generate a monthly 'race to fish' (Defra, 2009) whereby the 'rule-breaker' vessels, renowned for their catching capacity are favoured (Cardwell, 2012; Davies et al., 2018). Inshore fishers are subject to criminal punishment if they break the strict terms of their quota allocation. By contrast, for most of the over-10 metre sector, quota management by the POs allows flexible annual take-up of quota, and individual vessel-owners' conduct is rarely subject to criminal prosecution for exceeding quota allocation (Cardwell, 2012). Inshore vessels are allowed to join a PO, but if they do so, they lose their right to fish from the government-administrated inshore quota pool. Of the 4,299 inshore vessels in the UK fleet, only 53 are members of POs (MMO, 2018). Monthly vessel catch limits are also subject to allocation changes at extremely short notice (Defra, 2009). This creates uncertainty for inshore operators, which limits their planning ability (Defra, 2009; Rossiter and Stead, 2003; Morgan, 2013; Seafarers UK, 2018). This

unpredictability also affects their credit rating, making it difficult to access investment (Seafarers UK, 2018).

The introduction of the RBS legislation in 2005 (MMO, 2016; Davies et al., 2018) replaced the random sampling of data collection with a scheme requiring buyers and sellers of first sale fish to submit sales notes (William-Evans and Williams, 2018). The MMO (MMO Statistics, 2016) explained that this was introduced to enable the inshore fleet to build a track record, although it is widely suspected that it has been used to make policing of catches easier (Cardwell, 2012). It is worth noting the track record this allowed fishers to accrue was related to the vessel not to the licence held by the fisher. The RBS showed that the inshore fleet was landing much more than the government assumed and the inshore pool was nowhere near large enough to account for properly recorded inshore catches (Cardwell, 2012; William-Evans and Williams, 2018). However, by that point the allocations were fixed and inshore vessel owners could not remove a quota allocation from the government under-ten pool in order to carry track record into a PO, so there was no exit strategy for them (Hatcher et al., 2002). Fisheries Minister Richard Benyon admitted that the quota allocation to under-ten boats was both unfair and unrepresentative of their historic catching rights (HC Deb, 22 February 2012, c326WH). Illustrations of this unfairness are that in 2011, the UK's 10 metre and under vessels (constituting 78% of the UK fisheries fleet) were given the right to catch only 1.2% of the UKs TAC in ICES area IV (North Sea), and only 7% of the UK TAC in ICES area VII (English Channel, Western Approaches, Celtic Sea and Irish Sea) - the areas where these vessels are most numerous (Cardwell, 2012). The remaining 98.8% and 93% of fishing rights in these areas respectively go to the over-10 metre vessels which constitute 22% of the UK industry (Cardwell, 2012).

In 2007, reacting to criticisms that the allocated quota was too small, Defra presented the inshore fleet with the short-term option of leasing additional quota from the POs at cost, whilst they sorted out the imbalance in the system for the under-tens (Defra, 2009; Gray et al., 2011; Cardwell, 2012). However, leasing quota is an unregulated arrangement driven by market forces and can reach prohibitively high rates leaving little margin for profit (Greenpeace, 15.05.16; Carpenter and Kleinjans, 2017; Davies et al., 2018; Gray et al., 2011). The prices set for leasing out FQA can vary by hundreds of pounds. Fishers interviewed in 2016 and 2017 by William-Evans and Williams, (2018) reported that

leasing a tonne of cod (*Gadus morhua)*, could cost from £300 to £800. The resulting catch might bring just £1,100 at market, leaving a profit margin of £300 before staff and equipment costs (William-Evans and Williams, 2018). Quota leasing is deemed far too expensive for most inshore skippers, as Tom Brown (Joint Secretary, Southern North Sea Inshore Fishermen's Association) pointed out: ''It's all very well saying they'll extend quota leasing for the inshore sector to cod, but where will people get that sort of money, even if there is any cod to lease? It costs £800 a tonne now and will probably rise to £1000 a tonne'' (*Fishing News*, 03.08.2007: 3). Leasing also increased high grading: "All they're doing is encouraging even more discards because people will only save the very best fish to cover their leasing costs. It flies totally in the face of conservation'' (*Fishing News*, 03.08.2007: 3). Moreover, the system of quota leasing raised the normative issue of "slipper skippers" or "armchair moguls'', who owned quota without going to sea, having obtained a commodity that was originally distributed free—a practice described by many under-10 m skippers as ''immoral'' (Gray , et al., 2011).

Two further significant attempts were taken by the government to address the unfairly small quota allocations to the small-scale fleet. In 2008, Defra proposed an attempt to reduce the size of the inshore fleet to match its quota through a £5 million decommission scheme, aiming to target the most efficient 'super under-10's' to release quota for more artisanal vessels (Defra, 2008; Gray et al., 2011). This saw owners surrendering their vessels, licences and quota allocations to national government for redistribution (Gray et al., 2011). However, this scheme was heavily criticised: "you couldn't possibly have managed it more badly than Defra did'' (NUTFA, 2014). It was accused of being underfunded (the £5 million budget only decommissioned 50 vessels, resulting in a miniscule quota increase for the remaining vessels (one estimate was from 50 to 55 kg per month per vessel of cod quota in area VIId) (*Fishing News*, 05.06.2009: 4; Gray et al. 2011); discriminatory (arbitrary eligibility criteria); and unfair (inshore owners had to surrender quota whereas over-10 metre owners in a previous decommissioning scheme did not). There was also nothing stopping the owners using the money to invest in better vessels, thus making the fleet more efficient at catching fish.

The second Defra initiative split inshore licences into two categories (Defra, 2008). A 'full' licence was allowed for vessels perceived to be actively targeting quota species, based on recorded landings of quota species exceeding 300kg in any consecutive 12-

month period between July 2006 and January 2008. A ‘capped’ licence allowed vessels to land up to a total of 300kg a year of quota stocks if their recorded landings of all quota stocks did not exceed 300kg in any consecutive 12-month period between July 2006 and January 2008 (Gray et al., 2011). This measure was designed to prevent the gap left by decommissioned vessels from being filled up by relatively inactive vessels being brought into active service (Defra, 2008). It is important to note that fishers’ track record entitlement based on the amount of fish they landed was attached to the vessel not to the licence. This meant if a vessel was sold, the track record went with it, or if a new vessel was built there was no track record that came with it. This two-tier licensing scheme met with fierce opposition from the fishing industry. According to Dave Cuthbert (Co-Chairman, NUTFA) at a meeting in September 2008, NUTFA, NFFO, PO leaders and local representatives ‘‘all stressed that licence capping was unfair, unjust, highly discriminatory and would destroy the fabric of the under-10 metre fleet’’ (*Fishing News*, 26.09.2003: 3). The view of the meeting was that under-10 m fishers who had bought full licences had a right to keep them: ‘‘The legal principle of ‘legitimate expectation’ that is applied in respect of over-10 metre quota holders should apply equally to under-10 licence holders’’ (*Fishing News*, 26.09.2003: 3.). Owners of limited licences stood to lose thousands of pounds overnight without compensation. One of them, David Platt of Portsmouth, demanded that fishers be reimbursed for the loss of value of their licences (*Fishing News*, 29.02.2008: 3). NFFO (09.12.2008) described the two-tier licence policy as ‘‘rough justice for the under 10’s’’, in that the reference period for catch records was very short and arbitrary, and it penalised skippers who may well have been pursuing non-target species to take the pressure off quota species—the very environmentally responsible behaviour that Defra should be encouraging, not punishing by confining them to a ‘‘derisory ‘hobby’ level’’ of quota. Moreover, the effect of having a second class licence which restricted the holder to 300 kg of fish per year would be to increase high grading to maximise the value of the 300 kg, and this would mean increased rates of discarding—the very opposite of Defra’s aim in introducing the two-tier licence scheme (Gray et al., 2011). This scheme, therefore, met with non-compliance as many fishers took advantage of a loophole and re-registered their vessels under either Welsh or Scottish management. Only after costly and lengthy negotiations was this loophole blocked in early 2014 by means of the ‘coastal concordat’. When the 2012 concordat was imposed, shifting quota management to the devolved administrations, it gave Defra a clearer understanding of

exactly what quota held by a PO belonged to English interests (Cardwell, 2012). This clarity prompted the UK Fisheries Minister, Richard Benyon, to announce in 2012 that some quota would be permanently reallocated to the English under-tens from English vessels in English POs in 2013, though he made it clear that only consistently underused stocks that were in high demand by the inshore fleet would be reallocated.

In 2009, through the 'Sustainable Access to Inshore Fisheries' project, Defra developed the concept of 'Inshore Community Ownership (ICO)' as a way to address the much criticized quota allocation management methods through devolved management (Defra, 2009). Quota was to be transferred into Community Quota Schemes (CQSs), independent profit-making organisations which would hold the quota and from whom quota could be leased to inshore fishers. Under this scheme, 25 vessels across Ramsgate, West Mersea and Lowestoft would take part to illustrate the possibility of fishing under quota loaned from POs. However, when the small amount of FQA to be transferred was revealed, the scheme was adopted by only one community as they were able to target fish from two ICES quota pools (William-Evans and Williams, 2018). The scheme was unattractive to other groups because the quota intended for sharing was based upon vessel track records not the owner's record, so those who had recently purchased new vessels had no track record of quota despite the owner having fished quota species for years. This meant that despite spending over £200,000 on the initiative, including employing two Community Group managers, the project ended up with only three vessels in the pool with loaned quota from POs (NUTFA, 2015).

The informal, ad hoc and haphazard way in which quota trading has developed in the UK during the last 40 years means that the Government has always had a somewhat ambiguous relationship with the market (Appleby et al., 2018). This ambiguity culminated in a court battle between the government and the UK Association of Fish Producers Organisations (UKAFPO) in 2013 ((UKAFPO v Secretary of State for the Environment, Food and Rural Affairs) which investigated whether FQAs could be considered private property. The case arose from the ambiguous way the UK government has treated the issue - stating that FQAs should not be transferred, yet facilitating trading by permitting quota holdings to take transfers into account (Appleby et al., 2018). The court ruled in favour of Defra by declaring that its reallocation of consistently underused quota allocation was legal (Cardwell, 2012), but the court also ruled in favour of the claimants'

assertion that FQAs could be considered as possessions as defined in the European Convention on Human Rights and the European Union Charter. The judge held that since the unofficial trade in quota had been officially recognised by the government numerous times, specifically through reconciliation; since the government had decided that quota could be transferred separately from a licence; and since FQAs had been allowed by the government to develop monetary value and to be marketed, it had been deemed to be a possession (Cardwell, 2012; William-Evans and Williams, 2018). This ruling meant that any attempted allocation of FQAs that were not consistently unused – the majority – would fail.

In response to the complexities and restrictive nature of the quota system, some fishers moved into targeting non-quota stocks, though many of these ended up getting their licences capped. Some fishers with capped licences have found bass (*Micropterus salmoides*) (a non-quota species) to be a highly profitable stock as an alternative to the increasingly competitive crab (*Cancer pagurus*) and lobster (*Homarus gammarus*) fishery, but they face proposed bass restrictions through further licence capping policies. A similar picture can be seen with other profitable non-quota species such as mullet (*Mugilidae sp*.), salmon (*Salmo salar*) and sea-trout (*Salmo trutta*), which are now restricted in Cornwall and Devon by rules preventing netting in estuary waters. Such developments effectively confine much of the inshore fleet to targeting shellfish, which itself is being increasingly pressured by Defra. For example, in 2005 a system of restrictive licencing for activity targeted at shellfish was introduced (MMO Statistics, 2016). As part of this system, new reporting requirements were introduced requiring inshore fishermen to complete diaries of their daily activities to be submitted on a monthly basis.

Finally, the MMO has taken a very tough stance with quota breaches, whereby under-10 metre fishers are subject to criminal punishment if they break the strict terms of their quota allocation (Cardwell, 2012). Cardwell (2012) gives the example of two Hastings inshore fishers who were prosecuted for landing cod over their monthly quota of 150 kg. For this, in 2006 the Crown Court fined them £14,070. David Amess, MP for Southend West, accused the MMO of being "vindictive ... inconsistent and draconian" in its treatment of under-ten fishers, an accusation backed by Ian Paisley, the MP for North Antrim at the time, who stated that the MMO was guilty of "using a sledgehammer to crack a nut" when it came to under-ten quota prosecutions (Cardwell, 2014, pp. 70).

3.4.2 *The landing obligation*

High levels of discards across the English fleet caught the attention of the public in 2010, in part through the 'Fish Fight' campaign (Kelleher, 2005; Catchpole and Revill, 2008), whereby people were outraged by the economic and ecological impacts of returning dead or dying catch to the sea (Bellido et al, 2011; Crean and Symes, 1994). As a result, legislation in the form of the EU 'landing obligation' was introduced under Article 15 in the 2013 CFP reform (Council Regulation No 1380/2013) (Catchpole et al., 2017; Veiga et al., 2016). Under this legislation, a total ban on all discard activities was to be in place by January 2019 (Defra, 2009; Guillen et al., 2018). Under the existing legal framework, there are a number of interconnected reasons contributing to the practice of discarding (Kelleher, 2005). A mix of complex administrative policies and management measures including insufficient quota allocations and capped licences have forced fishers to discard when quota for a given species has been exhausted (Gray et al., 2011). For example, fishers in the eastern channel explained the issues of operating in a mixed fishery, whereby low winter cod quota meant skippers moved to target Dover sole (*Solea solea*). However, in order to do so they were legally obliged to use smaller mesh sizes of 90-100mm (compared to the 120 mm nets used for cod), and as a result they ended up with a high by-catch of cod (*Fishing News*, 30.10.2009: 8-9; Gray et al., 2011). A Hasting skipper told Gray et al (2011) that '''they force you to use smaller meshes, 'cos you can't catch cod so you end up catching cod. It's a joke''. Also, economic incentives result in the practice of high grading whereby fish of lesser value are discarded in favour of more valuable ones (Morgan, 2013; Gray et al., 2011).

The no-discard policy was an addendum to the pre-existing legal structures (Veiga et al., 2016; Defra, 2009; Guillen et al., 2018; Catchpole et al., 2017; Veiga et al., 2016) including the current quota arrangements, and is expected to raise the issue of so-called 'choke' species (Baudron and Fernandes, 2015; Guillen et al., 2018; Veiga et al., 2016). 'Choke' species have the lowest quota in a mixed-fishery, which restrict the fishing opportunities for other quota species (Baudron and Fernandes, 2015) an issue which can only be rectified if either further quota has been leased or the next month's allocation transferred. The EU decreed that there will be TAC adjustments made to help avoid the choke species problem, (STECF, 2015; STECF, 2016; Guillen et al., 2018), and the European Fisheries Council at its December 2018 meeting made some limited concessions

to avoid chokes, including international swaps and additional selectivity and avoidance measures (*Fishing News*, 28.12.2018: 2). Any potential uplift is unlikely to be sufficient and still fails to solve the problem faced by those targeting mixed fisheries. The second new major challenge facing the inshore fleet from the landing obligation is likely to be logistical (Veiga et al., 2016). It will mean more time spent handling and sorting on board as well as processing at ports and finding uses for the fish they are obliged to land (Veiga et al., 2016). A UK-based practical trial concluded that some ports, particularly the smaller ports, will have problems of congestion and added cost (for staff and transport) to deal with the previously discarded fish (Catchpole et al., 2017; Catchpole and Revill, 2008). This challenge is going to bear down heaviest on the inshore fleet as they are smaller vessels with limited storage capacity (Veiga et al., 2016). This raises a further issue about impacts on the maritime safety of those fishers operating these vessels (Villasante et al., 2015). Unwanted fish that have to be landed are generally characterised by low economic revenue (Macfadyen et al., 2011; Tzanatos, 2006), and because the SSF sector is running on small margins, complying with the landing obligation could render their fisheries activity economically unsustainable.

3.4.3 *Nature conservation objectives*

The inshore areas where the inshore vessels largely operate are also the focal points of nature conservation (Costello et al., 1996; Kochalski, 2017). Approximately 23% of English inshore waters are protected under the EU Birds and Habitats Directives (Defra, 2012), a figure that expanded under the 2009 Act which called for a wider network of MPAs (Defra, 2009; Morgan, 2013). This did not affect fisher's access rights until 2013, when Defra revised the way that fisheries are managed within all European Marine Sites (EMS) in England to comply with Article 6 of the Habitats Directive, ensuring that they have no adverse impact on any of the sites' features. This has affected much of the inshore fleet's access to their traditional grounds as their gear has been deemed to have a negative interaction with the protected features. These frameworks assess impacts purely on ecological grounds and do not have scope to take social or economic impacts into account (Kochalski, 2017). Even if they are not directly affected, fishers have reported negative consequences. This was illustrated by the 60 square mile scallop (*Pecten maximus*) dredging and bottom trawling ban in Lyme Regis imposed in 2008. The relocation of

fishing effort by affected fishers led to increased conflict with static gear fishermen outside the closed area, who blamed this conflict for falling incomes (Cardwell, 2012).

3.5 Managerial and Governance Implications

Authors have claimed that the English administrative authorities treat the inshore fleet, in political terms, as an 'underclass' within the wider industry (Symes and Phillipson, 1997). They explain that the ultimate executive power over fishing is held by the state (Gray et al., 2005; Reed et al., 2013), and the inshore fleet are largely excluded at both national levels from participation (Slowfish, 2012; Reed et al., 2013; EFRACOM, 2013). Although there are members of the English inshore fleet who hold positions on the IFCA committee, it is alleged that their interests are subordinated to the larger vessels which dominate the regional and national platforms (Reed et al., 2013; Slowfish, 2012; Symes and Phillipson, 1997; Reed et al., 2013; Greenpeace, 15.05.2013). They also compete with conservation groups who have ensured that conservation objectives have dominated management agencies priorities (Rodwell et al., 2014; Reed et al., 2013). A third major group weakening the inshore fleets' position in governmental decision-making are the offshore developers (Gray et al., 2005). Commentators allege this is the case with the renewable energy sector, deeming they hold considerable sway in government circles because of the UK's international green energy commitments (Gray et al., 2005). To some extent the fleet has itself to blame for its political exclusion because of its internal divisions at both the community level where local organisations are often loose and fissiparous , and also at a regional and national level, where many inshore fishers refuse to be affiliated to national organisations (Slowfish, 2012; Gray et al., 2005). Commentators write of perceived insincere policy consultation (Berkes, 2001; Defra, 2009; Gray et al., 2011) which has generated grassroots mistrust of the decision-making processes. This was illustrated by the Defra 'Sustainable Access to Inshore Fisheries' (SAIS) project (Gray et al., 2011; Defra, 2009), which was badly organised, and largely excluded the inshore fleet. This increased suspicion of consultations, and eroded trust and goodwill between fishers, government and regulatory authorities (Defra, 2009).

3.6 Other Challenges Affecting the Inshore Fleet

Other challenges affecting the English inshore fleet include cheap imports of fish by multinational fishing companies (Brookfield et al., 2005; Morgan, 2015), and high costs

such as rising fuel prices (Abernethy et al., 2010; Morgan, 2013) compared to the prices they are receiving for fish. Abernethy et al. (2010) observed that fuel prices for fishermen in Newlyn increased by 359% between 1998 and 2008, while fish prices remained relatively stable over this period. An aging fleet is another problem (Seafarers UK, 2018; Reed et al., 2013; Symes and Phillipson, 2009), whereby young people are not attracted to enter the industry due to its poor economic prospects, low and inconsistent wages and the nature of working under such restrictive and complex regulatory controls (Morgan, 2013; Defra, 2009; William-Evans and Williams, 2018; Seafarers UK, 2018; Brookfield et al., 2005; EFRACOM, 2013). Off-shore marine energy developments (de Groot et al., 2014; Gray et al., 2005) and the establishment of MPAs (Jones, 2008) were further challenges, along with the authorities' alleged inadequate understanding of the SFF sector (Reed et al., 2013; Urquhart and Acott, 2014; Ota and Just, 2008).

3.7 Responses by the Inshore Fleet.

Some individualistic responses to these challenges are evident whereby fishers have either amended their operational practices to keep overheads low by fishing closer to port, devoting less time to exploratory fishing (Morgan, 2013; Abernethy et al., 2010; Reed et al., 2013), undertaking tasks such as maintenance work themselves (Brookfield et al., 2005) or moving to lone working when they cannot afford crew (Morgan, 2013). Fishers also diversified their activities both within the sector (Morgan, 2013; Cunningham et al., 1985; Symes, 2001; Brookfield et al., 2005) and outside the sector (Morgan, 2013; Brookfield et al., 2005; SGESRC, 2008; Seafarers UK, 2018). Some of these tactics are not without risks: for example, moving to target a non-quota species or seek employment outside of the sector risks licence capping. Other fishers continued to fish even when it was no longer economically viable to do so (Brookfield et al., 2005; Reed et al., 2013; Van Ginkel, 2001).

Some collectivist solutions are captured by several publications, especially those fishing communities seeking collaborations with scientists to influence the managerial processes. This is illustrated by the collaboration between Devon shell fishermen and European GAP 2 scientists to help fishers demonstrate the sustainability of their fishing activities. Elsewhere, fishers have cooperated to overturn the quota allocation imbalance at a community level. Touchingly, Cardwell (2012) explains how a group of Mevagissy fishers

came together in 2002 and got their children to write to Father Christmas via Defra, begging not to be made destitute at Christmas in protest at an unjust quota imbalance (Fishing News, 13.12.2002). William-Evans and Williams (2018) described the work of NUTFA created in 2006 as a platform from which to campaign for a fairer share of the UK's fishing opportunities. Since its implementation it has engaged in several major campaigns on behalf of their inshore members, including entering into a ground-breaking alliance with Greenpeace to support Defra in pursuing a judicial review. This involved giving witness at the quota judicial review (EFRACOM, 2013; Cardwell, 2012; Fishing News, 05.07.2017) arguing that fishing rights could not legally be considered private possessions. Frustrated by Defra's inaction in the face of what they interpreted as a win in 2015, NUTFA together with Greenpeace took Defra to court to argue it had failed to implement Article 17 of the EU's reformed Common Fisheries Policy, which emphasises transparency and environmental, social and economic criteria in the allocation of fishing opportunities. They argued in court that the "Fixed Quota Allocation" has no environmental merit as it results in distributing the same amount of quota to the same vessels year-on-year without incentivising them to fish in a more sustainable way. Implementation of Article 17, they argued, should have meant that those vessels which fish in a more environmentally-friendly way and create many more jobs in coastal communities than do large industrial boats, would be receiving a greater proportion of the quota. The court, however, ruled that the degree to which environmental criteria are prioritised is ''a matter for the decision maker'', stating: "Whilst Article 17 obliges each Member State to include criteria of an environmental, social and economic nature, on the face of it, it is silent as to the weight to be ascribed to those criteria in the allocation process'' (Greenpeace, 18.01.16).

In 2017, NUFTA together with fishers from both the south east and west developed an inshore focused PO (William-Evans and Williams, 2018), allowing it to protect and sustain fishing opportunities for the inshore fleet (William-Evans and Williams, 2018; Stobberup et al., 2017; Davies et al., 2018). Through this platform, the inshore fleet gain equal political clout to the traditional POs and access to pertinent meetings (Stobberup et al., 2017), because whenever government considers legislative change, it consults 'the industry', by which, in a fishing context, it primarily means the POs. It decentralises the quota management powers away from the MMO (William-Evans and Williams, 2018) granting it flexibility. A PO is also able to monitor its members' catches more closely –

and thus react more quickly to changes in quota take-up by adjusting effort – than the MMO, to which catch reporting travels through longer channels and from many directions. This platform also provides the fleet with the option of retrospective leasing (William-Evans and Williams, 2018), allowing members to evade prosecution by retrospectively leasing quota from another member's allocation or from quota held by the PO itself under a dummy licence. Other PO benefits include better access to the European Maritime and Fisheries Fund (EMFF), currently the only gateway to government grant funding, because a PO can achieve up to 100% for projects, which is more than individual operators can do. Its success, however, is still dependent upon the under-10 metre fleet gaining fair access to the resource by overcoming the current allocation mechanism (William-Evans and Williams, 2018).

In 2012, English fishers also collaborated with a number of European communities to establish a pan-European organisation known as Low Impact Fishers of Europe (LIFE) (CFP, 2013) which acts as an umbrella 'organisation for organisations' providing a clear and coherent voice at an EU level to campaign for the rights of small-scale EU fishers. LIFE has already had several successes, such as influencing the process for licencing electric pulse fishing by industrial Dutch vessels (LIFE, 2018).

Much of the fishers' adverse condition has been ascribed to the CFP (Stobberup et al., 2017; Phillipson and Symes, 2018). It was, therefore, unsurprising when in 2016 the UK's EU referendum was backed by 92% of British fishermen, supported by a series of campaigning organisations such as Fishing for Leave (William-Evans and Williams, 2018). This campaign played on the SSF's feelings of distrust in a system they did not understand (William-Evans and Williams, 2018) and long history of antipathy towards the CFP (Phillipson and Symes, 2018). Fishers have high expectations of a Brexit that will change the way quota is allocated across the English fleet, overhaul historical access agreements, and alter the landing obligation rules (Phillipson and Symes, 2018; William-Evans and Williams, 2018; Stobberup et al., 2017).

The likely consequences of Brexit are starting to be understood (Stobberup et al., 2017; William-Evans and Williams, 2018; Rossiter, 2018). Whilst British negotiators draw up detailed plans for a post-Brexit future realising the UK fishing industry's aspiration for significantly increased fishing opportunities, European institutions are, in parallel,

demonstrating their determination to protect existing access rights and quota entitlements for Europe's fishermen (Phillipson, 2018). It is possible that the UK may not emerge clutching such large benefits as hoped for by the majority of the UK fishers (Hirst and Bennett, 2017). Brexiteers appeared to have capitalised on confusion between responsibility for the relative stability criterion for EU quota allocations to Member States, and responsibility for the distribution of the UK's quota allocation to its LFS and SSF sectors (William-Evans and Williams, 2018; Davies et al., 2018; BBC, 2016). In reality, whilst relative stability dictates the percentage of annual quota that the UK as a whole received from, once the member states share of the EU TAC has been assigned, it is up to the UK government to distribute it accordingly across its industry, so the UK government has always held the power to address this inshore fleet grievance (William-Evans and Williams, 2018; Davies et al., 2018; Carpenter, 2016; Carpenter, 2018; Balata and Vardakoulias, 2017). Also, not all foreign vessels currently fishing in English waters would be automatically excluded since some of them are registered and flagged in the UK and have purchased quotas from UK fishers. With regard to other foreign vessels, once freed from the EU, it would be for the UK government to make laws about their landing a certain percentage of catch in the UK. Brexit could also jeopardise the recent recovery and future sustainability of shared fish stocks and the EU's movement towards an integrated sea basin approach to the management of areas like the North Sea (Phillipson, 2018). Lastly, the loss of access to the single market, now a clear policy of the hard Brexit lobby, could undermine the marketing prospects of some English fishing communities, especially those dependent on exporting shellfish products (Watts, 2017): 85% of the total shellfish haul is currently exported to the continent (The Guardian, 23.03.2018; Stobberup et al., 2017).

The UK has thus far capitulated to Brussels' demand for it to remain part of the CFP until at least 2021 and further concessions are expected (Stobberup et al., 2017; Greenpeace, 04.07.2018). The latest fisheries White Paper sets out the vision of an independent British fishing policy post-Brexit (Carpenter, 2018), explaining how the government is open to "alternative approaches to the future allocation of quota". However, it promises to "recognise" the "business model" which has allowed big fishing companies to buy up (from other fishermen) a disproportionately large share of catching opportunities in Britain (Greenpeace, 04.07.2018). This flies in the face of core socio-economic objectives laid down in the 2013 reformed CFP, in particular Article 17 of the (CFP) (Regulation (EU)No

1380/2013) which bans "dominant positions" and calls on member states to ensure that quota is assigned to those who demonstrate environmental and community values (William-Evans and Williams, 2018). Fishers backing the Brexit campaign were also seeking to overturn the right of flagship foreign vessels being able to register in the UK and purchase quota, but this practice will not change under Brexit and is one which Defra could overturn now through legislation targeted at landing a certain percentage in the UK (William-Evans and Williams, 2018).

Other collaborative solutions include securing funding. The Axis 4 funding stream is one of the arms of funding provided under the old European Fisheries Fund (EFF) introduced in 2007. Its key objective is the maintenance and development of jobs in fisheries areas, "through support for diversification or the economic and social restructuring of areas facing socio-economic difficulties as a result of changes in the fisheries sector" (Article 43.2b) (European Commission, 29.5.2006, p.11). Six English fishing communities collaborated with external bodies to win funding in 2010. Committees composed of a combination of public, private and civil society partners known as Fisheries Local Action Groups (FLAGS) were formed to help the fishers achieve their objectives (Seafarers UK, 2018). In Hastings, FLAG funding was used to replace the old bulldozers and create a new revenue stream for the fishers by working with the private sector restaurants and through education sessions to widen the market for the fleet's sustainable species and by-catch (Brookfield et al., 2005). The North Shields fleet worked with their FLAG funding to showcase their niche products and encourage demand for exclusive North Shields fish (Brookfield et al., 2005; Seafarers UK, 2018). It is worth noting that whilst these groups are run at a local level, the process is administered by the MMO on behalf of DEFRA, and all funding bids and proposed projects must be approved by them before funding is released.

The successor to the EMF is the European Maritime and Fisheries Fund (EMFF, due to run from 2014-2020), born out of the 2013 reformed CFP and holding social sustainability at its core. The Eastbourne inshore fleet were able to collaborate with the New Economics Foundation (NEF) through their Blue Deal project to help secure their position within their harbour which was being threatened by developers (Balata and Vardakoulias, 2017). This partnership resulted in a successful EMFF grant bid for £1 million which allowed for the purchase of the grounds and build and kit-out a processing unit on the quayside. This gave

the fishers control of their own fish sales and the ability to shape their own future, rather than relying on wholesalers and middle-men to provide the food they harvest from the sea (Balata and Vardakoulias, 2017).

3.8 Conclusion

This chapter has focused on four main aspects of the English inshore fleet covered in the literature to enable us to better understand the context and world within which they operate. It started by examining how the definition of SSF used within this thesis agrees or disagrees with global definitions, then examined how authors have assessed the SSF sector's value. It then discussed the managerial arrangements, including the challenges they generate for the SSF fleet, as well as other challenges faced by the SSF, especially in relation to the quota system. Finally, the coping methods adopted by the English inshore fleet as reported in the literature were rehearsed.

The main contribution made to this literature by the current thesis is two-fold. First, it provides a large amount of primary data on the SSF in England, obtained from interviews with fishers, managers and selected stakeholders which record the testimonies of interviewees. These data comprise a unique record of perceptions of experiences which are extremely informative, often deeply moving and sometimes amusing. Second, the study uses resilience theory to interpret these data systematically, and the result is a picture of a resilient industry standing up to huge challenges.

Chapter 4. Methodology and Theory

4.1 Introduction

This chapter explains and justifies the methodological design and the theoretical framework used for this study. The first section is dedicated to the site selection process, followed by a detailed description of the methods used for obtaining data, including data collection techniques and analysis of the perceptions data. The second section provides a review of the reliability and validity of the data gathered and addresses issues of ethical considerations and methodological issues. The third section discusses the theoretical framework that has been chosen to inform the analysis of the results of the fieldwork.

4.2 Methodology

4.2.1 *Methodological approach*

This study was based on qualitative techniques, because the research questions outlined in the introduction are essentially descriptive, explanatory, and evaluative. The methodological approach was built around an interpretive paradigm, seeking to understand peoples' lived experiences from the perspective of the people themselves (Hennink et al., 2011). This recognizes that participants' perspectives are unique to them as they are socially and culturally constructed, and context is important when exploring participants' experiences (Snape and Spencer, 2008). Within this paradigm, both emic and etic perspectives has been explored. . An emic approach provides information on the insider's point of view, what their perceptions and beliefs are and how they imagine things (Hennink et al., 2011). It is the analysis of cultural phenomena from the perspective of the persons who participate in the culture being studied. An etic approach shifts the interpretation to the outsider's point of view, what their perceptions and beliefs are and how they imagine things (Hennink et al., 2011). When using the etic approach, a researcher emphasizes what s/he considers important. Although emic and etic practices could be regarded as inherently in conflict, the complementarity of emic and etic approaches has been recognized (Jingfeng, 2013). When these two approaches are combined, the "richest" view of a society can be understood. On its own, an emic approach may struggle with applying overarching values. The etic approach is helpful in enabling researchers to see more than one aspect of one culture, and in applying observations, links

(similarities and differences) to other cultures. This arrangement facilitated a commitment to remain true to the words of the participants (emic) (Snape and Spencer, 2008, p.7), whilst allowing the breadth of the study to be taken account of (etic) This approach was deemed appropriate for the English SSF in order to get as close as possible to an authentic picture of this distinctive fleet within the time permitted. Accordingly, the methodological design acknowledges my presence and role within the research process, and is mindful about how my assumptions and prejudices can impact on the interactions undertaken and the data collected, but seeks to minimise the impact of the researcher on the research process, enabling neutrality to be maintained.

4.2.1.1 Site identification

Whilst the regulation and management of the English fishing industry is overseen by both the MMO and the IFCAs, the MMO declined to participate in the study citing a lack of capacity owing to high workloads. It was thereby, decided that the research would focus on SSFs within their IFCA areas, and a geographical scope was designed to include all ten IFCA districts (see Figure 3). In order to maintain anonymity the IFCAs were assigned codes and will be referred to as IFCA 1 to 10 from henceforth.

In order to identify target sites within each IFCA district, the relevant IFCA Chief Fisheries Officer (CFO) completed a score sheet using a Likert scale whereby they could rate different ports or harbours and the fishing communities which operate out of them (which shall be referred to as communities) against variables of resilience along a scale of 1 (disagree strongly) to 4 (agree strongly) as part of their interview (see Table 1 and Appendix D). The communities which scored the highest (and deemed by the IFCA CFO to be the most resilient) and the lowest (and deemed by the IFCA CFO as the most vulnerable) within each district were chosen to be included in this study. These variables outlined in Table 1 were informed by the relevant literature (e.g. Folke et al., 2003; Folke, 2006; Gunderson and Holling, 2002; Olsson et al., 2006; Olsson et al., 2004; Walker and Lawson, 2006) and centred on three sub-themes: self-organisation, community networks and economic options. There were two occasions when communities got equal scores for resilience, and in this case it was decided that they would all be included within the study. This method of selecting which fishing communities to select for study within each IFCA

area was chosen as a relatively quick way to identify target communities. It was a more practicable option than the time-consuming process which would have been required in persuading all English fishing communities to undertake a self-assessment form. Of course, this strategy presented a degree of risk of bias as it relied on the opinion of the CFO, which may not provide a true, fair or complete evaluation of a community. However, the benefits in term of time-efficiency outweighed the risks. A total of 21 fishing communities were identified in the ten IFCA areas, between one (as the island was deemed to consist of one community) and three (as two communities scored equally) in each IFCA area.

Table 1. Assessment of community characteristics provided to IFCA CFO's

Variables	**Communities**
Self-organisation	
Presence of active fisheries association	
Presence of a motivated leader	
High participation rates in fisheries association	
Trust (between fishers within the community)	
Community tradition in self-organisation	
United community	
Community rules established and self-enforcement mechanisms	
Community networks	
Fleet are embedded within the community (wider community support)	
Community networks with other fishing communities	
Community engages with other grass-root networks (e.g. FLAG)	

Community engages with IFCA	
Vertical collaborative working arrangements	
Economic options	
Diverse produce to persecute	
Communities able/willing to diversify and foster innovative solutions	
Access to markets	
Ability/willingness to capitalize on opportunities arising from niche market	
Aging fleet	
Accessible fleet for youngsters	

4.2.1.2 Selection of interviewees

Once study sites had been identified, a list of appropriate 'gatekeepers' or 'guardians' for each of these communities was compiled. This list was identified initially by the IFCA CFOs but then verified by other local experts such as the local fishermen' mission, Royal National Lifeboat Institution, and local harbour representatives to avoid bias. These 'gatekeepers' were initially contacted by email or mail, followed up by a phone call at the gatekeeper's convenience during which the study objectives were outlined, any concerns discussed and the respondent's endorsement sought. The benefit of working through the gatekeepers was threefold: Firstly, in some communities, it was not appropriate to access the community without first seeking the endorsement of a local 'guardian' or 'gatekeeper'; Secondly, gatekeepers were invaluable to glean information about the culture and demographics of relevant community members together with fishing arrangements which facilitated the planning process. They also highlighted any problematic characters (such as those with drinking problems or violent tendencies) and any potential safety issues.

Thirdly, the gatekeepers became promoters for my research within the local community. In the majority of occasions, the endorsement of these trusted advocates had a significant influence on whether community members participated in the study. Before any formal research commenced, a couple of days was spent talking to the fishers and informing them about the work. This helped to develop trust resulting in interviews and discussions that were open and honest accounts of individual experiences. It is worth noting that those who have left the industry or taken early retirement were not interviewed as there was not enough time to track down such candidates within each target community.

The gatekeepers also became a key in the recruitment process for the focus groups. They helped advertise the event to as many under-10 fishers as possible from their associated community with the intention of making the attendance wide-reaching and representing diversity across the stakeholder groups. To assist this process, they were provided with information sheets (see Appendix B). Guardians were also able to recommend times, dates and locations for meetings which were then duly booked by the researcher. Under the advice of a guardian and in order to act as a prompt to potential participants, focus group events were also advertised through the popular fishing industry publication, the Fishing News and local newspapers (see Appendix A). Local harbour authorities were also contacted and asked to circulate poster invites and put them on all their relevant notice boards. Participant homogeneity in focus groups whereby participants share socio-demographic characteristics or foster shared experiences, serves to foster open and productive discussions (Hennink et al., 2011). Taking this into account together with advice offered by NUTFA and experienced academics, who explained that the offshore skippers and externals should be omitted as their presence is likely to make the under-10 fishers speak less freely and risk conflict scenarios, these focus group discussion sessions were only advertised to the under-10 metre fleet members operating within a target community. However, on a couple of occasions other stakeholders such as a FLAG coordinator and a market owner turned up and with the fishers' permissions, were not turned away. Krueger and Casey (2000) criticise creating groups from people who know each other, because their well-established dynamics and hierarchies will influence contributions. Furthermore, a lack of anonymity amongst the community could prevent participants from contributing freely to the discussion (Hennink et al., 2011). However, at no point did I find this to be true: on the contrary, when fishers attended these groups, pre-

existing relationships aided the process and they appeared to me to be comfortable sharing their views with each other.

In addition, opportunistic one-on-one key informant (KI) interviews were undertaken in each of the communities. Whilst stakeholders were made aware that I would be interviewing in the area on certain days through the advertising campaign, an opportunistic method was pursued to counteract risks of a biased sample (Richardson, 2005). This approach involved walking around the harbour and the local area, catching fishers either in their fishing huts, in local cafes or as they came off their vessels. Since a purely opportunistic approach such as turning up at ports was haphazard, given that fishers could leave and enter the port at different times depending on the weather, I liaised in advance with fishery associations and IFCA fishery officers to gauge seasonal operating hours and where and when was best to locate fishers for potential interviews. In order to maximize contact with fishers, locations were often visited over a period of several days.

All KI participants held an active stake in the English inshore fishery; were linked to one of the chosen communities; and were identified according to their roles and responsibilities across the English coast. Three stakeholder groups were included: The first were *inshore fishers* who currently owned or skippered vessels measuring 10 metres or under, consistent with the definition of an inshore fisher outlined in section 3.1, who worked out of the specific community. It is also worth noting that the term 'fisher' is intentionally gender neutral in this context as fishers of both genders were interviewed although out of all fishers interviewed, only two were female. The second group were *supportive community representatives* such as fisher association leads (FAL). Whilst the structure and membership of their organisations may vary considerably, the common denominator was that these representatives worked to promote their members in both paid and voluntary roles. These included representatives of both national bodies such as NUTFA and regional community specific fisher associations (FA). Representatives from FLAGs and local market operators were also included. Again, this term was intentionally gender neutral - both male and female representatives were included - although only four of the 17 FAL's interviewed were female and two of the merchants were female. The third group involved representatives from *managerial organisations* responsible for regulation of the fishing industry. This was limited to the ten IFCA Chief Officers who were able to

provide a managerial perspective. The purpose of including the heads of each regional body was to contribute towards a nationwide understanding of the challenges and opportunities, and also to make up for the shortfall of perceptions from MMO. The dominant stakeholder groups were the under-10 metre fishers and the IFCA Chief Fishery Officers.

A total of 112 stakeholders participated (see Table 1), of whom 102 were non-management stakeholders and 10 were IFCA CFOs. From the 102 non-management stakeholders; 88 were inshore fishers, out of which 13 also held the role of FAL and one was a merchant. An additional five stakeholders were FALs but were not active fishers. Four local FLAG coordinators participated as did five local market owners.

Table 2. Sampling plan for stakeholder survey

Target communities	**Inshore fishers**	**Supportive community representatives**	**Fisheries Management**
IFCA 1 – First community	3 (including 3 FAL)		1
IFCA 1 – Second community	4	1 FAL, 1 FLAG coordinator	
IFCA 2	5 (including 1 FAL)		1
IFCA 3 – First community	5		1
IFCA 3 – Second community	7	1 FAL	
IFCA 4 – First community	4 (including	1 FLAG	1

	1 FAL)		
IFCA 4 – Second community	4 (including 1 FAL)	1 FAL, 1 merchant	
IFCA 5 – First community	3 (including 1 FAL)		1
IFCA 5 – Second community	5 (including 1 FAL)		
IFCA 6 – Second community	3 (including 1 FAL)	1 merchant	1
IFCA 6 – Second community	6	1 merchant	
IFCA 7 – First community	4 (including 1 FAL and 1 merchant)		1
IFCA 7 – Second community	1	1 FAL	
IFCA 8 – First community	2	1 FLAG	1
IFCA 8 – Second community	4	1 merchant	
IFCA 8 – Third community	5 (including 1 FAL)		

IFCA 9 – First community	2		1
IFCA 9 – Second community	1	1 FAL, 1 merchant, 1 FLAG	
IFCA 9 – Third community	6		
IFCA 10 – First community	11 (including 1 FAL)		1
IFCA 10 – Second community	3 (including 1 FAL)		

4.2.1.3 Primary data collection preparation

A mixed methods approach was employed, utilising two primary qualitative techniques; focus group discussions and one-on-one semi-structured interviews. In order to ensure that these methods were undertaken in a structured, consistent and systematic fashion, an interview guide with research questions was tested and developed. A semi-structured design representing the middle ground between an unstructured and a structured approach was adopted containing both open-ended and closed questions (see Appendices D, E and F). This allowed the interview guide to retain its structured pre-designed consistent format, whilst giving the researcher space to explore more specific topics of interest if the opportunity presented itself. Questions were designed to contribute both thematically to the research investigation and dynamically by promoting positive interaction with the respondent (Kvale, 1996). The guide sought to examine the following core themes:

- Community culture and networks;
- Challenges facing their fleet;
- Coping strategies used by their fleet;

- Relationships with different stakeholder groups; and
- Managerial interactions with their fleet.

The interview guides for the two main survey populations – IFCA CFOs and fishers – covered the same five themes outlined above. However the questionnaire designed for managers contained additional questions, examining the CFO's experience, constraints faced by the IFCA, the culture of their IFCA, and their identification of target communities (Appendix D). The guide for fishers and their communities contained an additional section examining their fishing practices and fishing backgrounds (Appendix E). The focus group guide was a shortened version of the fishers' interview guide containing seventeen open-ended questions designed to generate narrative data (Appendix F), along with a range of pre-designed prompts.

Consideration was given to the wording and structure of the questions, to avoid leading questions and ensure questions were short, straightforward, and clear (Denscombe, 2003). It was also decided that a standardized but personable approach to interviews and focus groups be adopted to ensure all participants were exposed to a similar interview experience. Scripts and approaches were tested through a piloting phase undertaken in the late summer of 2014 with fishers and association leads from across the South East of England attending a conference. Whilst no major issues were identified with the guides' structures, the following revisions were made:

- Questions estimating changes over time were removed as they interrupted the flow of conversation, and participants found it hard to isolate a specific time period. Discussions regarding historical changes arise anyway without prompting;

- Questions originally separating challenges into environmental, economic and sociological issues were refined to enquire into generic challenges, as participants discussed challenges in a cross-thematic way;

- A question around threats was removed as it appeared to duplicate question about challenges, since both questions received similar responses;

- Questions undertaking a network analysis were removed as they were deemed unnecessary for this study;

- Questions asking participants to prioritise challenges/opportunities were removed as participants found this difficult, and often requested that they could go back and change the order towards the end of the script, which was impracticable; and

- Questions were refined to ensure they were not leading in any way.

4.2.1.4 Data collection

Data collection was conducted in two ways: the first was an ongoing process involving the examination of secondary data sources, such as internet blogs and non-academic publications including Marine Review, FISHupdate, FishEU, Marine Ripple Effect, Fishing News and Horizon. This was used to complement the primary data collected, which was gathered between October 2014 and April 2015 to ensure that the national and European political settings remained the same thus providing a temporal snapshot of the English under-10 metre fleet. These two phases allowed for triangulation, enabling the researcher to address all possible aspects of the topic, enrich the research, achieve a higher degree of credibility and overcome the deficiencies of single method studies (Flick, 2014). This data collection phase involved three different stages.

4.2.1.4.1 Stage one. One-on-one interviews with IFCAs

Each of the ten IFCA CFOs was interviewed on a one-on-one basis in their private offices between October and November 2014. Interviews took between 53 minutes and 2.13 hrs averaging 1.10 hrs. In advance of the interviews, each CFO was provided with an information sheet (Appendix B) and consent sheet (Appendix C). Whilst permission to undertake passive observation of their enforcement and engagement mechanisms was requested, only two agreed to this, and observation has been used to complement analysis but not as part of the main analysis process. Each transcript was sent back to the relevant

CFO for them to review and confirm that I had accurately recorded our conversation. It also gave them the opportunity to edit out anything that they did not feel comfortable sharing.

4.2.1.4.2 Stage two. Fishing communities

Data was collected from the fishing sector and their supportive community representatives from the 21 chosen communities between November 2014 and April 2015. After being introduced by their associated community guardian, I remained in each community for roughly a week. This enabled the fishers to acclimatise to me and become willing to speak openly and frankly with me. This included helping with landings and frequenting local cafes and pubs to get to know them. It was decided that focus group discussions would be the initial method pursued in the fishing communities followed by one-to-one interviews. This was to allow for a range of options to be widely discussed and enable the researcher to understand the target community's norms and values.

Information sheets (Appendix B) and consent forms (Appendix C) were provided to all attendees before the focus groups and one-on-one interviews commenced. These were orally worked through to ensure participants understood the research objectives, how the data will be used and who will have access to the data. If participants were content, they signed the consent form. This document was also orally worked through to ensure participants understood and were willing to take part, before signing. With the participant's permission, interviews were recorded on a digital voice-recording device to allow verbatim transcripts to be produced, thus minimizing validity threats. Only once was permission to record the interview not granted and in this case responses were recorded by hand. Field notes and a record of observations were maintained to capture interpersonal interactions and non-verbal cues (Gubrium and Holstein, 2002). The main themes of each session were summarized once it was finished allowing participants to comment on the researcher's conclusions. This was felt to be preferable to sending the transcripts back in full for them to comment on. If notes were recorded by hand, they were written up as soon as possible to reduce the risk of mistakes, whereas the Dictaphone records were transcribed verbatim during the three months following the data collection period.

4.2.1.4.2.1 Focus groups

Focus groups were used as an in-depth group-interviewing technique to gather data on both the attitudes and experiences of fishers, and observe interactions between participants within specific communities (Morgan and Spainish, 1984; Teddlie and Tashakkori, 2009). This technique also enabled information to be collected from several people in a short period of time. No financial incentives were provided to any participants as it was felt that this could bias the dataset. However, interviews were held at a time and location which was convenient to them and which did not financially disadvantage them. This tended to be the evening.

The focus groups were held at locations suggested by the communities' guardians. These were in private, comfortable and quiet locations, free of distractions and easy for participants to reach, ranging from rooms in the back of pubs to fishmonger's halls. Given the often sensitive nature of the subject matter, this privacy was crucial as it allowed participants to be as open as they wished. Participants were seated in as circular a position as the location allowed to foster interactive group discussions (Hennink et al., 2011). A Dictaphone was used to capture the group discussion as I mainly ran the sessions alone, adopting the role of moderator, and only capturing sparse notes to help facilitate the transcription later. I spent time directly after the event finished writing up notes and transcribing the discussions as soon as possible after the event to ensure that the correct participant was assigned the correct contribution to the dialogue. It was quite common for the FA representative to attempt to dominate sessions. I tried to prevent this through the use of body language together with verbal cues to redirect the discussion to allow for others to contribute. Quieter participants were encouraged to speak through the use of gentle probing and open body language.

The number of participants in the focus groups ranged from two to ten, averaging four participants, and meetings lasted between 52 minutes and 2.37 hrs, averaging 1.25 hrs and 14 out of a potential 21 focus groups were run successfully. Fishers failed to attend the remaining for a variety of reasons. Some failed as the sessions overlapped with long working days and fishers were too tired to attend; others did not take place because, as gatekeepers explained, fishers in their communities avoided such sessions because they

mistrusted scientists. In other communities, one-on-one interviews taken following the focus group attempts revealed that fishers saw no point in attending a focus group as they failed to see how it would be of any benefit to them.

4.2.1.4.2.2 One-on-one interviews

All participants were invited to ascribe a time and location convenient to them (Seidman, 1991). Interviews were predominantly undertaken on the fishers' vessels, but on several occasions upon request, they were held in the privacy of their home. They were usually undertaken on a face-to-face basis, but a telephone interview was offered as an alternative option if necessary. This allowed interviews with fishers who would not otherwise have their views and experiences captured, given their erratic working hours and the limited time I could spend in each community. This was deemed appropriate since researchers have generally found telephone interviews to be an acceptable and valuable method of data collection (Sturges and Hanrahan, 2004).

Whilst initially I considered utilising saturation criteria (Francis et al., 2010) as a guide to how many interviews to conduct in each community (i.e., the point at which the information collected begins to repeat itself), this was rejected and instead I strove to interview as many communities under-10 metre fishers and members of the supporting community such as FLAG coordinators, FAL and market owners as possible. Between two and ten individual interviews, averaging five were held at each location in addition to the focus group. Interviews lasted between 15 minutes and 2.29 hrs, averaging 38.3 minutes. At the end of the interview with these key informants, the main points were summarised back to them so they could confirm the accuracy of what was recorded in the immediate wake of the session.

4.2.1.5 Data analysis

The data collected were subjected to qualitative analysis, from which the research questions were explored and themes identified drawing on local meaning and context. This evolved over the course of the research, and 'light' grounded theory was then used to identify the relevant theory to underpin the findings (Glaser and Strauss, 1967; Glaser,

1978; Strauss and Corbin, 1990, 1998; Charmaz, 2006). Grounded theory allowed for an inductive approach to be pursued through which codes developed from the transcripts enabled themes to emerge from the data rather than from a pre-existing source (Charmaz, 2006; Liamputtong and Ezzy, 2005). The codes used to facilitate the process of thematic analysis were based on the interpretive paradigm described in Section 4.2.1 whereby the views of participants were understood through their own words. Using this approach, code development only stopped at the point of thematic saturation (Glaser and Strauss, 1967) when all the possible categories in the data were identified and so further data would not contribute any more to the understanding of the situation. Questions key to the analytical process included: Does it make sense? Does it answer the research questions? Is the analysis sufficiently interpretative? Is the structure clear and meaningful?

The analysis stage used the computer software package Nvivo 10. The use of computer-assisted qualitative data analysis is particularly helpful because of the speed at which data can be coded and categorized, the ability to coordinate large volumes of data, and the rigour it brings to the analytical process (Seale, 2000). Furthermore, it provides an 'audit trail' for the researcher, in the form of an easily accessible record of the decisions taken during analysis, and all decisions taken with respect to coding remain the researcher's (Morse, 2007). The thematic analysis provided the framework for all other analyses and explanations because it is guided by the research questions and the literature base of the study. Themes were chosen for the contribution they made to a conceptual understanding of this case study. In order to achieve this, certain analytical tasks were followed. Verbatim transcripts of all individual interviews and focus groups were prepared. I felt it important to retain the colloquial style of language and phases used by the participants, in order to hold on to the flavour and nuance of the participant's original expression (Hennink et al., 2011). Transcripts were then anonymized by being provided with a code and any identifiers removed from the text in order to maintain confidentiality. Transcripts were then uploaded into the Nvivo 10 programme system (Robson, 2011) and a process of data familiarization undertaken, whereby each interview transcript was explored in detail. It is through this immersion stage that the unique perspectives of the participants were identified and understood. Drawing on an inductive process, thematic codes arose directly from the transcripts and were developed through reading the transcripts and noting issues raised by the participants, thereby allowing the data to speak for itself (Glaser and Strauss,

1967). In this way, the issues of importance to the participant were captured, which were often different from those anticipated by the researcher. These thematic codes were then systematically categorized into higher level themes based on similar responses across data types. Several cycles of this process allowed for codes to be refined and narrowed. It was decided that frequency of code occurrence would not be included as the number of occurrences does not necessarily equate to the value or importance to be placed on that theme. At this stage, the best fitting theory was identified as resilience theory.

4.2.1.6 Reliability

Reliability refers to the consistency of the data collection processes from which these findings are derived (Robson, 2011). This is a key aspect to the design and implementation of a research study as it determines the level of trust that can be placed in the findings. Whilst reliability largely relates to quantitative research (Robson, 2011), it is also applicable to qualitative research. Consistent data was collected by ensuring that a common approach was adopted throughout the data collection and analysis phase by developing and strictly adhering to a set of principles: participants were recruited and interviewed in a consistent fashion; the interviews were recorded in a uniform manner; participants were checked to ensure they understood the study's purpose; verbatim transcriptions were undertaken retaining colloquial language; and code development remained well-grounded in data and was conducted in a systematic manner, assisted through the use of a code-book which helped maintain coding consistency. Moreover, I was also able to inject my own understanding of the localized context of the under-10 metre fishers through ten years of employment within the field into this research. This allowed me to develop a personal sense of the validity of the information and the reliability of the source of that information. Of course, respondents' perceptions may be distorted by self-interest and positions within the community (Bown et al., 2013). However, whilst it is difficult to appraise the reliability of perceptions because all data will be subjected to various and unknown sources of error and bias, mitigation is possible, for example, by gathering data from multiple sources within each community. Nevertheless, Maxwell (2002) claimed that despite inserting safeguards into both the data collection and data analysis stages, there remains scope for the researcher to introduce bias. Corbin and Strouss (2008) argue that researcher bias is difficult to avoid since researchers bring their

own perspectives, knowledge, and training into the research. However, I tried to mitigate researcher bias by speaking to as many fishers as possible from a wide range of communities. I reflect on this further within Section 4.2.1.8 (Methodological reflections).

4.2.1.7 Validity

Validity is concerned with whether the findings of a study are "really about what they appear to be about" (Robson, 2002, p.87). This meant that key considerations needed to be woven into the design and implementation plan to ensure that trust that can be placed in the findings. Whilst validity largely relates to quantitative research (Robson, 2002), it is still a concept that remain applicable to the qualitative process. Validity of interviews was ensured, either by sending transcripts to interviewees verify their accuracy, as was the case with the IFCA CFOs, or by reading the main points back to the interviewees and confirmed orally by the fishers and other stakeholders partaking in the interviews and focus groups. It was also considered essential to not censor the fisher's words, and their voices have been represented in a way which incorporates the colloquial language (including expletives) used to express their feelings.

4.2.1.8 Ethical considerations

This research obtained full ethical approval by the Newcastle University Research Ethics Committee associated with the School of Geography, Politics and Sociology, who confirmed it adhered to their ethical principles. This meant that the work embodied and upheld the following five ethical responsibilities:

(1) Voluntary participation: This study ensured that respondents were not coerced to participate in any way and were free to withdraw from the study at any point without needing to provide explanation. Whilst some community leaders were more assertive than others, no participants appeared to be coerced into participating by these leaders or subject to any form of peer pressure. In some cases, fishers arrived out of curiosity then felt comfortable enough to leave when they felt that it was not for them. Those who

participated explained that they were doing so for no reward other than being allowed to voice their opinions;

(2) Informed consent: Participants were fully briefed about the study's purpose, what their participation will involve, and what will happen when the research is completed. This was addressed by the provision of an information sheet before commencing both focus groups and individual interviews, which were talked through to ensure respondents understood and to provide them with the opportunity to ask questions or express concerns. In addition to this, the participants were made aware of the time commitments involved and that they would not be financially rewarded. In order to provide evidence that informed consent had been granted, participants were asked to confirm they understood the purpose of the research and their role within it and they voluntarily agreed to participate by signing a consent form. This form was duplicated to provide participants with the option of retaining a copy for their records;

(3) No harm to be done to any participant: Through this study, the potential existed for participants to experience mental harm as they were being asked to explain challenges and frustrations they faced. Measures were taken to ensure that participants did not experience any levels of stress, discomfort or unease as a result of their contribution. Participants were told that they could stop the interview at any point, and they were constantly monitored, so that if they become visibly distressed, interviews were halted and they were given time and space to calm down, and asked if they wished to terminate their interview. This happened on one occasion where the above protocol was followed and a termination of interview was offered: however, after the participant had a chance to recover himself, he insisted on completing the interview;

(4) Anonymity and confidentiality: For the purpose of this study, anonymity means that the respondents and their associated community will not be identified at any time; whilst confidentiality means that the researcher can match names with responses but will ensure that this information cannot be accessed by others through data protection. At all stages of my research, paramount importance was accorded to respondent anonymity and information confidentiality. As Babbie (2007) observes, it is not possible for a typical interview survey to assure total anonymity because certain answers may make the

respondent identifiable to those working within the sector, but measures can be taken, and were taken, to ensure that this risk was minimized as much as possible e.g. by removing identifying locations or business names and replacing them with XX. As outlined in section 4.2.1.1. IFCA districts were labelled sites one to ten and participants were allocated an associated number (e.g. KI1 refers to key informant one). They were then ascribed either an 'F' for fisher, or 'FAL' for a fishers' association lead', or 'M' for a fish merchant, or 'FLAG' for a FLAG lead, or 'SC' for a member of the supportive community. Transcripts were then assigned the appropriate code and any personal identifiers removed from the text. Confidentiality was ensured as the list of the participant's names together with their matching code number was stored in a private, password-protected file accessible only by the researcher. It was decided that the confidentiality would not be broken if a participant spoke of breaching legislation related to the marine and fisheries sphere as this itself was an important finding. However, it was also decided that the agreement would be broken if a participant spoke of committing or planning a non-fishery related crime. All participants were made aware of this in advance; and

(5) Privacy: This research ensured that the privacy of participating respondents was respected in terms of intrusion. Participants were asked if they wished to be contacted after the survey by the researcher and if they answered no, communication stopped there.

4.2.1.9 Methodological reflections and study limitations

Several methodological issues and limitations were encountered which inevitably impacted the data collection process and subsequently the associated analysis, even though they were minimised wherever possible. The main ones encountered were:

(1) Subjectivity and bias: It was important to acknowledge both my presence and background within the process, and to recognize that participants and I inevitably reacted at times to each other's background and characteristics, thus co-constructing the reality of the interview process (Gough, 2003; Kirby and McKenna, 1989). My concerns were twofold: Firstly, I have held previous roles within both an IFCA and the MMO. This could act as a hindrance as fishers may not feel able to trust me and engage in open and honest

dialogue. I was able to minimise this suspicion, being honest about my background and how this had actually acted as a prompt to undertake the research. In many cases, this worked in my favour, as it meant the target fleet saw me as someone who understood the background politics and not 'just another uninformed researcher'. A research diary helped me to reflect on my subjectivity, on how "as a researcher, [I am] influencing the research findings" (Knight, 2002, p.2), ensuring I routinely checked myself and took stock of how I acted and my role in the research process, and subjected these reactions to critical scrutiny (Mason, 1996).

(2) Mistrust of science: In the case of two communities, it was reported back to me that certain individuals evaded interviews and in one case no one attended focus groups as a result of the fisher's mistrust of scientists, though this was found to be the exception rather than the norm.

(3) Aversion to formalities: Within some communities, fishers appeared to have an aversion to formal meetings or have high levels of localized conflict and/or mistrust so would not engage with the focus group setting. In such circumstances, individual interviews were undertaken, and a range of suitable options was explored to find a situation with which they were comfortable.

(4) Interview fatigue: In some locations, the fishers suffered from interview fatigue as they have attracted a great deal of research interest recently. In these locations, this has been exacerbated by the close proximity to university facilities and academic projects. Some respondents in this location complained that they were being asked to attend such groups on a regular basis, yet have not seen any direct development as a result of their participation in the academic studies.

(5) Unsociable working operations: Fishers often keep unsocial working hours, which makes it difficult to coordinate interviews and focus groups. I dealt with this problem by maintaining a flexible interview approach. Whilst focus groups were preferable, on several occasions fishers did not attend pre-arranged meetings as good weather provided them with a window in which to work. In these cases, I arranged for a face-to-face meeting and if that proved impossible, a telephone interview was offered as an alternative. This option

enabled me to interview fishers who would not otherwise have their views represented. At all times I ensured that interviews were held in a location and at a time which suited the interviewees, being sure to fit around their routine.

(6) Embedded fleet depression: Many fisher participants from the target communities were openly distressed at the situation they found themselves in, and they saw me initially as a mechanism to help campaign for their rights. I have had to be very firm as to the remit of this work and that I am here in the capacity of an academic and not a campaigner. I clarified that my findings would be documented as a report to the MMO, IFCA and Defra as well as feeding findings back to their communities. However, I also stated that I did not have any authority over the subsequent use of that information, and could make no promises of changing conditions for the communities. This at times has been very upsetting as many of those I spoke with were gripped by a deep depression and several spoke of contemplating suicide because of their feelings of disempowerment, and their perceptions of an oppressive management culture. The most distressing issue I faced was to manage the expectations of the communities towards the potential outcomes of my research.

(7) Juggling my field work with my paid work: I was awarded a six-month study leave period from my employer to undertake fieldwork, so I was operating within a very tight timeframe. Whilst small grants were won, the work was also largely self-financed which led to resource limitations. If I had more time, I would have liked to include the perspectives of the over-10 metre vessels and to understand the relationship between the over and under-10 metre fleets and examine the roots of their conflict.

(8) Household and gendered dimensions: Researchers have noted that despite their contribution, women are under-represented within SSF-related research (Kleiber et al. 2015). This study focused on fishers and their visible supportive community (merchants, FLAG reps and FALs) and incorporated the few women who populate these roles. Gustavsson and Riley (2018) and Zhao et al. (2013) found that in general, women occupy a less visible and usually unpaid position, but one which is still arguably central to the future of the SSF and help create a resilient environment for their fishing communities. Women support the wellbeing and health of their male-fishing partners through their

labour (Britton 2012; Kilpatrick et al. 2015). They also often support children—often alone, for long periods, as men go out to fish— enabling them the freedom to undertake their fishing relatively freely when the right conditions are available (Gustavsson and Riley, 2018). Women may also pursue their own forms of employment and provide additional income which is not only central to maintaining a household but also to subsidising their partners' fishing, especially in times of low catch or adverse weather (Gustavsson and Riley, 2018). They are also more likely to take on roles such as bookkeeping which again remains largely hidden from public view, certainly in comparison to 'on boat' activities (Gustavsson and Riley, 2018). By remaining focused on the predominantly male domain of the fishers and their supporting community, this study did not pay sufficient attention to the household dimension of English SSF. Under ideal circumstances this is a dimension of the English SFF which this study would have benefitted from, but time constraints - i.e. the short period of time I had to undertake my primary research - and practicality issues - i.e. the issues of identifying the home-based family arrangements of all those interviewed and arranging subsequent interviews with those women who work behind the scenes – made this impossible. This can be considered a limitation of this work, and further research would be useful to investigate the significant position women play in enabling fishers to pursue constructive or destructive coping strategies.

4.3 Theoretical Framework

The main theoretical framework informing this study is human resilience theory, which is drawn largely from two books on the subject: *Resilience: The Governance of Complexity* (2014) by David Chandler[1]; and *The Neo-liberal Subject: Resilience, Adaptation and Vulnerability* (2016) by David Chandler and Julian Reid[2]. These books draw a contrast between two modes of human resilience: modernist and postmodernist. The modernist mode, which I call *'adaptive resilience'*, encapsulates the notion that resilience lies in adapting to external circumstances, whilst the postmodern mode, which I call *'transformative resilience'*, encapsulates the notion that resilience lies in transforming these external circumstances. In what follows, I will explain in more detail what these two modes of resilience mean and imply, and why they are so important in guiding me through

[1] Chandler, D. (2014) *Resilience: The Governance of Complexity.* London: Routledge.
[2] Chandler, D., and Reid, J. (2016) *The Neo-liberal Subject: Resilience Adaptation and Vulnerability.* London: Rowman and Littlefield.

my analysis of small-scale fishers' attitudes towards their circumstances. But before doing so, I note that there is another response to insecurity that Chandler and Reid (2016) mention, which I call '*passive resilience',* because it encapsulates the notion that resilience lies in fatalistically accepting the circumstances that face you. In what follows, I will explain the three modes of human resilience in order of activism, beginning with the least active and ending with the most active: i.e., (1) passive resilience; (2) adaptive resilience; and (3) transformative resilience. But first, a note on socio-ecosystem (SES) resilience, from which human resilience theory originates.

4.3.1 *Socio-ecosystem resilience theory*[3]

The concept of resilience has long been applied to marine social-ecosystems (SES). The classic definition of resilience of an SES is provided by Walker and Salt (2006, p.113): "Resilience is the capacity of this system to absorb change and disturbances, and still retain its basic structure and function – its identity". Typically, resilience is interpreted as the ability to withstand turbulence and maintain steady state stability, under an implied assumption that there is only one equilibrium point (Holling and Gunderson, 2002). The role of natural resource managers is to safeguard ecosystems from destructive forces, and to help restore their equilibrium when such forces threaten to destabilize them. However, this interpretation of SES resilience, which is called '*engineering resilience*', presupposes that the variability of SESs can and should be controlled to maintain a fixed equilibrium point. Critics of this interpretation argue that this artificially circumscribes the natural and valuable volatility of SESs, and recommend instead a different mode of resilience known as '*ecosystem resilience*', which acknowledges that there is no single equilibrium point, and that change is both inevitable and valuable (Folke, 2006). Walker and Salt (2006, p.6, p.8, p.9) criticize engineering resilience approaches for optimization strategies, such as imposing the criterion of maximum sustainable yield (MSY) for species in a marine ecosystem, as illusory:

> 'An optimization approach aims to get a system into some particular 'optimal state', and then hold it there … This approach is sometimes referred to as maximum sustainable yield … paradigm … [But] there is no sustainable 'optimal' state of an ecosystem, a social system, or the world. It is an illusion, a product of the way we look

[3] This section draws on the work of Bown et al. (2013)

> at and model the world … The key to sustainability lies in enhancing the resilience of social-ecological systems, not in optimizing isolated components of the system'.

However, a third interpretation of resilience of SESs has been put forward: '*adaptive resilience*'. Both the first two interpretations presuppose some notion of stability. The engineering resilience interpretation presupposes a single steady state to which the ecosystem returns after turbulence, while the ecological resilience interpretation presupposes several possible steady states. However, in reality, the factors that produce these single or varied stable conditions are constantly changing, so there is no certainty of any particular condition. A third interpretation of resilience is therefore required to encompass the idea of constant change, and this interpretation has been named 'adaptive resilience'. Unlike the previous two interpretations which both embrace the notion of equilibrium, adaptive resilience has a conception of endless adaptation with no 'resolution' – like a tone poem rather than a symphony in classical music (Gallopin, 2006).

Some theorists see a fourth interpretation of SES resilience- transformability. In circumstances where endless adaptation has brought an SES to the brink of dissolution, a qualitative leap into a completely new configuration may become necessary. Folke et al. (2005, p.457) say "transformability is the capacity to create a fundamentally new system when ecological, economic, or social (including political) conditions make the existing system untenable' (see also Walker et al., 2004; Walker and Salt, 2006; Walker et al., 2006b; Folke et al., 2004). This suggests that transformation is an extreme form of adaptation. Pitcher (2005)'s view of transformability is backward rather than forward looking – seeking to transform the ecosystem 'back to the future' – i.e. restoring it to its original condition.

These considerations lead us to consider whether SES resilience is a purely scientific/technical concept, or has normative connotations. Several writers argue that it has an unavoidable ethical dimension (Ascher, 2001) in that we have to determine whether a SES is worth preserving before we can regard its resilience as important to study (Walker et al., 2002). Holling and Gunderson (2002) argue that resilience is not always good; and our objective is therefore, not resilience in itself, but the kind of resilience that meets human goals (Plummer and Armitage, 2007; Carpenter et al., 2001; Walker and

Salt, 2006; Walker et al., 2002; Walker et al., 2004). Gallopin (2006) argues that adaptive resilience has shifted from a biological to an ethical concept. This brings us to human resilience theory.

4.3.2 *Human resilience theory*

Human resilience theory draws on SES resilience theory but applies it to the role played by humans in the social-ecological system. This role is manifested in three alternative (or linked) strategies: (1) passive resilience; (2) adaptive resilience; and (3) transformative resilience.

4.3.2.1 Passive resilience

The passive mode of resilience characterises people who accept their disadvantaged circumstances as a given and carry on as before. At first sight, this response to increasingly straitened circumstances may appear to be a mode of non-resilience or failure, and indeed this is how Chandler and Reid (2016, p.15) characterise it:

> 'Subjects who lack the capacities and capabilities necessary to become resilient are ... interpellated as vulnerable. This interpellation as vulnerable can be applied to individuals – the 'at risk', 'socially excluded' or the marginal – as well as to communities – the 'poor', 'indigenous' or the 'environmentally threatened' – as much as to states themselves- the 'failing', 'failed', 'fragile', 'low income under stress' or badly governed'.

However, passivity can also be a means of surviving, in that it is a coping strategy of hanging on. Passivity can thereby be interpreted as a mode of resilience, albeit an attitude of resignation in the face of challenging present and expected future events which are thought to be inevitable. The notion that we have no power to influence our future is a belief very similar to fatalism or pre-determinism which prescribes that acceptance is more appropriate than futile resistance to inevitability. As Richard Taylor (1962) puts it:

> 'A fatalist cannot do anything about the future. He thinks it is not up to him what is going to happen next year, tomorrow, or the very next moment. He thinks that even his own behaviour is not in the least within his power, any more than the motions of the heavenly bodies ... It would, accordingly, be pointless for him to deliberate about what

he is going to do, for a man deliberates only about such things as he believes are within his power to do and to forego' (Taylor, 1962, p.56).

4.3.2.2 Adaptive resilience

The adaptive mode of resilience characterises people who do not passively accept the adverse circumstances in which they find themselves, but take active steps to adapt to those conditions (note these steps can lead to both destructive and constructive outcomes). Chandler (2014, p.5) refers to this mode of resilience in terms of "responding ('bouncing back') from disaster or crisis"; "a process through which crises make us stronger, more flexible, and more open to new opportunities"; "about how we can act … to minimise the effects of crises". As Chandler notes (2014, p.6), this mode of resilience, which he calls the classical or modernist mode, focuses on "the subject's internal capacity to withstand pressures or stresses which were understood to be externally generated … The etymological roots of classical understandings of resilience are framed in terms of the inner resources and capacities of the autonomous individual … to reflexively engage with a complex world". Adaptive strategists believe it is not possible to exert control over external forces such as globalisation, and that attempts to do so are not only futile but hubristic in that we will end up worse off than if we adapt to it. As both Giddens (1990) and Beck (1992) note, we live in a globalised world which is dislocated and uncertain - a risk society, where it is not possible to eliminate risk but only to negotiate our way around it. This does not mean we are helpless in the face of risk - on the contrary, we can be quite creative in adapting to adverse circumstances – but we have given up trying to change the world, and instead focus on adapting ourselves to the world as it is, just like an ecosystem continuously adapts to itself to climate change.

According to Chandler and Reid (2016), this is not a condition of security or immunity from the perturbations of externality but a condition of perpetual adjustment to those perturbations:

> 'In this sense the resilient subject is a subject that must permanently struggle to accommodate itself to the world. Not a political subject that can conceive of changing the world, its structure and conditions of possibility, with a view to securing itself from the world. But a subject that accepts the disastrousness of the world it lives in as a condition of partaking of that world and which accepts the necessity of the injunction to

> change itself in correspondence with the threats and dangers now presupposed as endemic' (Chandler and Reid, 2016, p.67).

As Chandler and Reid (2016) state, this is adaptation to externality not resistance to it: "The human here is conceived as resilient in-so-far as it adapts to rather than resists the conditions of its suffering in the world. To be [adaptively] resilient is to forego the very power of resistance" (Chandler and Reid, 2016, p. 68). For Chandler, adaptive resilience is thus "a permanent project of self-development, of freeing the subject from their inner limitations … enlarging individual agency understood as the adaptive choice-making capacity of the subject able to actively embrace change" (Chandler and Reid, 2016, p.87, p.88). On this interpretation of adaptive resilience, the role of the neoliberal state is not to protect us from risk, but to better equip us to adapt to it. The UK Cabinet Office (2011, p. 3) stated that "This programme is part of the Government's 'Big Society' commitment to reduce the barriers which prevent people from being able to help themselves and to become more resilient to shocks". For example, in the health sector, this strategy of self-help is very clear – instead of demanding more expenditure on the health service for treatment of illness, adaptive strategists make better lifestyle choices. Indeed, policy-making is not about any particular outcome, but about improving people's capability to make their own adaptive decisions.

4.3.2.3 Transformative resilience

The transformative mode of resilience characterises people who reject the notion of adapting to circumstances, and instead embrace the strategy of changing the source of their stress. It dismisses the adaptive idea that resilience is an internal reform of the individual, in favour of the transformative idea that resilience entails an external reform of the system. The adaptive mode of resilience is regarded as an emasculation of human autonomy, by contrast to the transformative mode which genuinely frees the human subject: "we need to revalorise an idea of the human subject as capable of acting on and transforming the world rather than being cast in a permanent condition of enslavement to it" (Chandler and Reid, 2016, p.1-2). Chandler and Reid claim that adaptive resilience fails to recognize "that 'freedom' and 'choice' are entirely degraded once the world is reduced to the inner life of the individual" (Chandler and Reid, 2016, p.47). Chandler and Reid argue that an adaptive resilient has "an understanding of life as a permanent process of

continual adaptation to threats and dangers that are said to be outside its control … a subject that must permanently struggle to accommodate itself to the world: not a subject that can conceive of changing the world ... but a subject that accepts the dangerousness of the world it lives in as a condition for partaking of that world ... a subject that is called upon to live out a life of perpetual vulnerability ... a world where humans are stripped of their imaginations, and led to live merely adaptive lives" (Chandler and Reid, 2016, p.53, p.153, p.184). It must be noted that this study does not align itself with this assumption and that instead; adaptive strategies are seen as a great strength amongst the inshore fishers, drawing on imagination and innovation to tackle ongoing issues such as changing weather conditions or a variation in fish availability.

Transformative resilience empowers humans to take an imaginative leap to escape their confinement within the current status quo:

> 'imaginative action is what enables human beings to forsake the current courses of their worlds in constitution of new ones through, not the transformation of themselves, but the exercise of agency on their worlds ... The world thus conceived must conform to the image the subject desires of it and not the other way around … subjects do not merely live in order to fit in with and adapt to existing times, or desire the sustainability of the conditions for their living the lives they do. In contrast they resist those conditions, and where successful, overcome them, transforming them in ways that conform with the transformative work their imagination demands of them; new worlds in succession of old and destroyed worlds' (Chandler and Reid, 2016, p.19, p.20).

A transformative resilient is "a subject capable of conceiving the transformation of its world and the power relations it finds itself subject to" (Chandler and Reid, 2016, p.4). Reid says the transformative resilient transcends "its experience of vulnerability, by destroying the very sources of its vulnerability, freeing itself from them, not by living in a state of awareness of their fundamentality to its existence, but by eliminating them, cutting itself off from them" (Chandler and Reid, 2016, p.152, p.153, p.158, p.164). Transformative strategists do not see the solution to problems as lying in individual adaptation to the system that is causing the problems, but in collective action by disadvantaged agents to use their knowledge to change the system and eliminate those problems. Under transformative resilience, "politics returns to 'the people'" (Chandler, 2014, p.51, p.54, p.113), so transformative resilience is essentially a bottom-up strategy "local transformative agency" (Chandler, 2014, p.110) to challenge the top-down policy-

making strategy of elite rule. Chandler said “the problems are in the world, not in our heads … [we need] to remake the world rather than to remake the human” (Chandler and Reid, 2016, p.169). Chandler and Reid portray the transformative resilient as “A subject that sees the intolerability of the world as it is presently arranged and demands the seemingly impossible: the creation of a new one” (Chandler and Reid, 2016, p.173).

As we shall see, all three modes of resilience (passive; adaptive; and transformative) are to be found in the English small-scale fishery, though my interpretation of the adaptive resilience mode is more positive than that of Chandler and Reid (2016). I see this strategy as an ennobling one, and focus on the innovative and resourceful way in which fishers can use their ingenuity to adapt to their circumstances. In my view, adaptation is a pragmatic adjustment to a constantly changing world, often following some significant change to the external conditions brought about by acts of transformative resilience.

4.4 Conclusion

This chapter has outlined the rationale for the chosen methodological design and the qualitative data subsequently collected. It shows how the sites and the participants were selected, together with a description of the data analysis process. It reviewed the reliability and validity of the data gathered and how issues of ethical considerations and methodological process were addressed. It then discussed the selected theoretical framework of resilience together with its subcomponents of passive, adaptive, and transformative resilience. The next chapter is the first of the two large results chapters, wherein the vulnerability of the English SSF is identified.

Chapter 5. Vulnerability

5.1 Introduction

This chapter presents a detailed account of inshore fishers' perceptions of the threats they face. These have been categorised into two broad groupings: external threats, which are perceived to come from outside the fleet; and internal weaknesses, which are perceived to exist within the fleet itself. The chapter uses the words of the key participants to examine how these threats affect their day to day operations.

Many of the external threats facing the English fleet chime with those observed to impact SSFs across the globe, such as reduced access to resources and ocean grabbing (played out through a reduced quota allowance, or being displaced as a consequence of industrial vessel activities, marine industry and the instigation of a conservation focused network of MPAs); environmental degradation (including overfishing); reduced product value as a consequence of operating within an increasingly globalised market; and top-down managerial arrangements in combination with the heightened influence of other stakeholder groups. The internal threats include a general lack of social solidarity preventing grassroots unity (which affects their political strength). Fishers' responses to these challenges may sometimes create a feedback system which perpetuates and contribute to their vulnerable state (Holling and Gunderson, 2002). Furthermore, government interventions designed to rectify certain adverse scenarios may also end up exacerbating these issues, pushing fishers into a more vulnerable situation.

5.2 External Threats

Perceived external threats may be divided into three categories: economic; governmental; and environmental.

5.2.1 *Economic threats*

Respondents perceived seven economic threats.

5.2.1.1 Lack of quota

The most contentious economic issue raised was: '*quotas or lack of it, that is the main challenge*' (KI-F-70). Respondents explained that the monthly allocation provided by the MMO prevented them from generating a viable income: '*£144 a week* [is the] … *maximum you can earn on the quotas allocated ... That's the maximum you can earn if you caught every fish on every quota you are allocated*' (KI-F-48). This in effect removes their ability to fish: '*It's really the quota issues that are the bane of the industry. Because effectively, the under-ten fleet has been banned from fishing'* (KI-F-43), since: '*at the end of the day if you can't catch, land fish, can't catch it in the first place … that's you stuffed*' (KI-F-17). This meant that for many fishers: '*You going to start looking at your economics and start going, 'it's just not economically viable to fish here anymore'*" (KI-IFCA-104). Yet the cuts keep coming: '*they had cut my quotas by 60% ... so I was left with 40%. I said is there anyone here who would be able to survive if their business was cut by 60% because I can't. And now it's gone further than that*' (KI-F-77). Participants identified several reasons for their predicament including the over-10-metre decommissioning scheme, whereby owners kept their vessels' quota thus reducing the amount available to the pool: '*the guys who took decommission should never have been allowed to keep that quota, so that's how you've got an amount of quota in the hands of the few'* (KI-FAL-16). Increased competition for the inshore quota pool was also mentioned, aggravated by the fact that the sector lost access since they were not required to record their landings. This is vividly illustrated by the southwest mackerel fishery:

> '*Mackerel fishing was a lovely fishery. Scottish boats hammered it. They used purse seines and decimated it and finished the fishery. But then they came up with the quota system. However, because the Scottish boats were able to say well look at what we landed, we caught thousands of tonnes down there. So now Cornish handliners don't have a mackerel quota! You cannot catch hand-line Cornish mackerel 'cause we don't have a quota. The Scottish boats that came down here and ruined the fishery hold the quota. So for Cornish boats to catch mackerel on a hand-line means we have to buy the quota from the Scottish companies that ruined it in the first place'* (KI-F-22).

Respondents criticized government interventions, predicting that the landing obligation overlapping the quota system will create 'choke' species, preventing fishers accessing the quota that they have been allocated for other species: '*we are discarding in two trips our whole quota in cod ... And that will shut the fishery in 2016 because of the implementation of the demersal discard rule, which is a European rule which we must follow*' (KI-F-47). Respondents also discussed the capped licence policy which squeezed the fleet further, rendering them less able to access commercially sensitive species: '*the main additional*

problem ... for many boats is that the government, instead of considering reallocating quota with the pertinent quota to pertinent areas, they are content with capping boats and capping licences' (KI-F-43).

Of course, inshore fishers could lease extra quota from quota holders, but leasing was prohibitively expensive: '*I have got an option that I can lease it from somewhere, from someone who might have it and isn't going to catch it … but … that fisherman has to buy that quota, that extra quota, at a cost price and since quotas are becoming less and less and the government is cutting them back, these lease quotas, if you can get your hands on them, they have become so expensive that sometimes you will buy the quota to catch the fish and when you sell the fish it isn't making any more than what its cost you to get the quota*' (KI-F-21). Participants explained that even if they had sourced and secured quota, the leasing system resets itself annually on the 31st December, so inshore fishers risked losing their investment: '*we … leased in a tonne of cod. Then it was down to the weather whether we caught it. If we didn't catch it by the 31 December, then we lost it. Which we done two years ago … that was £700 down the drain*' (KI-F-57). They also risked being penalised if a fishery was closed early: *'We had a meeting with the quota man last year and at the meeting he said we should rent a load of skate. So we did and then three days later that was all shut. So there was three of us down here that had rented six tonne of skate at about £350 per tonne. And we lost it all and got no warning. We might as well have thrown the money in that dock*' (KI-F-69).

This was frustrating for the fishers, since much of the quota being leased was believed to be held outside the industry or by inactive fishers: '*these people that have quota to deal with, they are not even fishermen; they are things like football clubs ... And some of the fishermen who get rid of their boats, well they keep the licences and they call them slipper skippers*' (KI-F-68). Fishers reported that prior to leasing arrangements, POs used to gift surplus quota to inshore vessels, but no longer: '*before they allowed leasing for the under 10s, the excess fish in the over-10 fleet, there was always quite a bit of it, they'd always gift it - "we've got a quite a bit of this, we don't need this and we're not going to use it" - but as soon as they allowed leasing, it created a market that wasn't there … and they weren't prepared to give it anymore … we warned the government at the time*' (KI-FAL-16). Respondents claimed that leasing is now seen as a revenue method for POs: '*fish is currency to them. It's hard money*' (KI-FAL-61). Fishers regard the quota leasing system as

a form of rent-seeking: '*You have this situation where people historically have got these big quotas and then they rent them to the under-ten fleet … It's wrong as it's like paying a rent before you even go out fishing*' (KI-M-67). One respondent said that the leasing system will be the end of the under-10 metre fleet: '*I think the ownership of the quota by individuals will be the death of the family-owned boats and fishing communities throughout the country*' (KI-M-20).

5.2.1.2 Capital barriers

Participants reported high initial capital requirements inhibiting entry into the inshore sector: '*for a newcomer, you couldn't get too much of a start under £50,000*' (KI-F-77), especially since banks were unlike to cover these costs: '*If you go to a bank for that, they won't give it to you. You wouldn't be able to pay it back*' (KI-F-56); '*They will be looking at least £20,000 just to get all the gear and the boat. Let alone the licence'* (KI-F-56). Licences were especially expensive, placing them out of reach of many potential inshore fishers: '*the licence on my boat is thousands of pounds*' (KI-F-I2). This was because a market was created when the government stopped issuing licences so they are now sold to the highest bidder: '*When they decided to not issue them any more they should have said you can hand them back in if you're not going to use them anymore, not sell them ... you can't buy a French fishing licence because they don't sell them over there they just get handed back in. Then someone else has a chance to go fishing'* (KI-F-18). Moreover, fishers must obtain a string of professional maritime certificates before they are legally allowed to skipper fishing boats. Training centres are few and far between so there are travel and subsistence expenses added to course fees: '*you have no training centres up here, like where you go and get your tickets. So I have to go to* [elsewhere] *and the money they cost. You are talking £500 before you have even earned a day's wage ... All of them like first aid, fire-fighting, sea survival and basic health and safety. If you want a bigger* [vessel] *ticket you are talking three grand*' (KI-F-10).

5.2.1.3 Running costs

Participants highlighted the high costs associated with running inshore vessels, for example, prohibitive fuel costs: '*many fishermen don't even make enough to pay their diesel'* (KI-F-68); harbour charges and landing fees: '*we have a lot of fees to pay, which is*

a major grind for us. Every time we go through the lock … and landing fees to pay" (KI-F-6); and bait: '*the baits gone through the roof*' (KI-F-17).

5.2.1.4 Competition from other vessels

Participants explained how the ground they could access was being limited by nomadic over-10 metre vessels, such as the Scottish scalloping fleet that were accused of destroyed the ground they worked: *'When the scallopers come along, they would just wipe the ground clean and it then wouldn't recover for five years. And that would obviously impact on the livelihood of our fishermen*' (KI-M-79). A similar threat comes from over-10 metre potters who operate a large number of pots: '*we can have these bigger boats coming here once a week and dumping 400 pots a week'* (KI-F-65), clearing the ground of stock: '*they just worked the ground to death ... we went back the following winter and it was terrible. It became a free-for-all, with a vessel from the south coast ruining our traditional ground*' (KI-F-65). Respondents also referred to an influx of part-time fishers: '*These new people they are not fishermen and they have full time jobs*' (KI-FAL-2) who often have better equipment than the traditional fishers and can therefore out-compete them: *'The actual fishing communities ... The traditional fishing communities who fished for everything, they are losing out'* (KI-FAL-3).

5.2.1.5 Competition from other marine industries

Respondents said: '*there is too much competition for what is out there – oil, gas, aggregates and dredging*' (KI-FAL-72). The increasing number of offshore wind farm arrays compounded this sense of spatial confinement: '*We are being overrun by wind farms down here. They are taking all our fishing ground*' (KI-F-71). This left fishers feeling dispossessed, excluded from grounds they and their predecessors had fished for centuries: *'That bit of ground assigned to the gravel collectors will literally be taken away and sold and wind farms are taken away for 25 years. You are effectively giving that bit of ground away; you are privatising it. But we were using that. That was our ground. Legally it's not that simple, but we have fished that ground from here for four generations*' (KI-FAL-81). These marine developments left fishers: '*scratting on bits and pieces that are not worth two rows of sheep shit'* (KI-FAL-1).

5.2.1.6 Low prices for product

Respondents reported that the value of their products had not kept up with inflation: '*I can remember when I was fishing as a teenager which is about 45 years ago I would be getting £4 a pound for lobster 45 years ago. Well now we are getting £7 a kilo. It's just a disgrace*' (KI-FAL-38). This poor pricing is occurring in the face of increased costs: '*they can't make enough money from the fish that they're able to catch to fund their businesses and keep their boats going*' (KI-IFCA 109). Respondents attributed this to four factors. First, domestic overfishing as a result of demersal fishers moving increasingly into the potting sector was blamed: '*people have fallen out of fin fish licences and got shell fish licences*' (KI-IFCA-106). This has created a market oversupply: '*the market is over supplied and the reality is in the summer we're just giving it away; you can't sell it in the summer really*' (KI-FAL-16). This drives Malthusian practices: *'They're getting the same price for lobsters now that they did ten years ago basically per kilo, which is why they've got to use more gear in order to maintain a living'* (KI-IFCA-106).

Second, participants said geographical isolation limited their access to market. One said: '*we are restricted … by what we can ship off the island. So the boat goes like three times a week at the moment, so you got to be able to go and catch something and get it sorted and put away so you can put it on that boat. But it doesn't happen cause … the second you catch a load of fish, you find there ain't no freight boat*' (KI-F-34). Another fisher said: '*we aren't in the place to send them abroad as … you don't want to hammer your lorry down the A1 to try and get to Spain. You have to go 20 miles from here before you find a dual carriageway let alone a motorway*' (KI-FAL-72). Many fishers therefore had to funnel all their produce through the nearest market which doesn't guarantee the best price: '*Here we are really just captured by* [one] *market. There is no other option. I mean you just have to leave it and you don't know what you are going to get for it and then at the end of it you get a cheque… There are times in the summer when I get 20p a kilo for mackerel. It's just ludicrous. There are no other options*' (KI-F-55); '*all these local lads take their fish to him, and he knows that you can't take it no-where else ... and he gives you rock bottom prices*' (KI-F-8).

Third, respondents complained that their profit was siphoned off elsewhere in the

production chain: '*plaice you can't get a price for it, but if you go into Tesco or Morrison, supermarkets in general, you see that its £4.87 a kilo. If you land it in … you might get 60p a kilo so you can see the difference … So the middle man is making the money and he certainly isn't doing the fishing*' (KI-FAL-4).

Fourth, local fish buyers rely more on imports because they are more reliable: '*if you don't have a regular supply, which unfortunately because of quotas we don't here, the under ten can't give you a regular supply ... we are getting more and more dependent on imports*' (KI-M-67); and cheaper: '*the trouble is that the Canadian market is … flooding the English supermarkets with cheap lobsters you know five pounds each. Well, that's not doing our local fleet any good at all*' (KI-IFCA-106).

Fifth, direct selling is not a viable option for the SSF: '*there's nowhere else to take it, unless you got a van … then you can go to the markets ... and get more money for your stuff*' (KI-F-8), but this was not feasible for fishers after long working days at sea: '*You're out there long enough let alone having to then drive your stuff to market*' (KI-F-8). Also, direct selling depends on regularity of supply, which SSFs cannot guarantee: '*We have tried various schemes of selling direct to the public which is great on a small scale, but then you only need one week's bad weather and then the ferry don't come and the flights are cancelled and you don't get your orders away to people waiting for their dinner*' (KI-F-37). A volatile market means SSFs can easily lose their brand loyalty: '*the problem with that is that straight away you have lost your support as she* [your direct sell customer] *is going to go to ASDA and find the fish from somewhere else. So trying to hold on to a customer base is really hard*' (KI-F-22). Also, selling '*is a skill set that they don't have'* (KI-IFCA-104).

5.2.1.7 Lack of diversification opportunities

Respondents highlighted the lack of alternative livelihoods available to them on account of their specialist skills: '*if you take away the fishing here, from the people involved in the fishing, there is no other outlook for their skills*' (KI-FAL-99) or their lack of spare time: '*you have to do your day job and set up another business in the same time, it's hard work*' (KI-F-86), despite bureaucrats urged them to diversify: '*they all keep shouting, diversify,*

diversify but … it doesn't work really. It's not a business, it's just pocket money you are getting" (KI-F-86).

5.2.2 *Governmental threats*

Respondents perceived threats both from government in general, and from particular tiers of government.

5.2.2.1 General governmental threats

General tensions between government agencies and fishing were raised: '*I think there has always been a huge tension between the fisheries scientists, the fisheries manager and the exploiter. Always has been, always will be*' (KI-IFCA-105). Tension was attributed by some to the bureaucracy fisher's face: '*We have so much bureaucracy now. It is really stressful*' (KI-FAL-3); '*The paper work I've got for my little boat is enough to fill a study. God knows what the paperwork is for one of those big boats*' (KI-F-93). This was compounded by the large number of agencies involved in their sector: '*The amount of bodies we have to satisfy before we can go out to fish is ridiculous*' (KI-FAL-1). Participants also discussed this in terms of a perception of legislative overkill: '*There are too many rules and regulations. It's just ridiculous*' (KI-F-86). Many regulations were highly complex: '*I mean you've got some of the rules such as catch composition rules, if I told half of the fisherman about it they wouldn't understand it*' (KI-FAL-16). Fishers explained how the number and complexity of rules made it almost impossible to do their jobs without breaking the law: '*I feel like every time we are going to work, we are breaking some law, and we almost certainly are'* (KI-F-57): *'It can make you a criminal if you get it wrong. Yer – it's an arse of a thing to try and understand most of the time. And if you get it wrong you find yourself in court'* (KI-F-30). Fishers felt they were being turned from heroes into villains:

> *'We have turned what I would class as heroes in my own life into villains. Nothing is more stark than when you consider that my grandfather was asked to stay behind in the war effort to continue to work to feed the local community and local population … because of the importance of his work. That was how he was held up during his early years as a fisherman and how important that was. And here we are now, with me with a young family and two boys coming along in the same sort of way of life, but being made*

into a criminal nearly every day I go to sea by the rules they brought in … In 2015, it's arrived at a point where we have totally dissed those fishermen and the men who are prepared to go out there and we have let them down so badly and have turned them almost into criminals to just do their job' (KI-F-21).

Respondents also criticized the lack of coordination between the relevant authorities: '*None of the different organisations talk to each other. If they did it would be fine, but that is not what happens*' (KI-F-85). Fishers complained that decisions are not made in a coordinated way: '*It's not in joined-up writing. They don't have an overview ... They don't look at how latency will affect fishing patterns or how those fishing patterns tie in with discards or how those discards is going to affect that seasonality … One person is given the job of latency and another person is looking at the discard ban and another person is looking into economics*' (KI-M-51).

The rapid turnover of fisheries ministers was criticised: '*We always end up with people who are only in it for a few years and then they are gone again and then you need to train someone else up who disappears within a year or two so there is no continuity*' (KI-F-21). The turnover means incumbents were not inclined to rock the boat: '*the ministers look at the Department of Fisheries as a little stepping stone to somewhere else and really it's a case of, yer we can spend a couple of years here and we'll try not to fuck it up too much but we're also not going to do anything* [significant] *either and then we can be moved on to somewhere else*' (KI-F-22). Some ministers were accused of not understanding the fleet: '*90% of the fishermen's problems is that we have people running the industry that do not understand the fishermen's problems. Our last minister of fisheries couldn't identify a haddock and that was for all the world to see and that doesn't give you any faith*' (KI-F-78).

Some respondents claimed that the government made decisions in abstraction: '*People who make legislation don't think of the unintended consequences*' (KI-M-51); 'they *don't give any consideration to this; they don't think these things through …. I cannot say that they haven't got experience of the sea; it's just that … they haven't thought of the consequences of their actions*' (KI-F-102). One example of this was an SSF fleet being moved out to fish further offshore: '*with the quotas and the conservation zones, XX here is being forced out beyond the six-mile limit to compete with the big boats'* (KI-F-23).

Regulatory bodies were accused of not being accountable: '*This is the thing, who is he accountable to? He isn't accountable to anyone ... No one comes and says that was a bad mistake*' (KI-F-50). This allows them to play '*god, judge and jury*' (KI-FAL-48). They were also condemned for a lack of transparency leaving fishers often unaware as to why regulations were imposed: '*we got a letter from the Environment Agency and they are going to cut us back and they haven't told us why or how or when or whatever on the salmon*' (KI-FAL-2).

Another criticism is that the regulators use complex scientific jargon: *'they always try to baffle you with science*' (KI-F-73). This complexity makes legislation opaque to most inshore fishers, as an IFCA officer admitted:

> '*I think that there is a wealth of legislation that they don't understand. I think it's just a complete language ... that they don't kind of get ... You're talking about some quite complicated ecological concepts and they don't understand how that comes to their business or really affects them ... you're just left with this wealth of acronyms ... and things that people have come up* [with] *to assess things, which are pretty fictitious really... you start talking about European Marine Sites or MCZs [*Marine Conservation Zones] *and ... there's no kind of understanding the context. And there is a lot that people expect them to understand … often it's a case of they misunderstand what is proposed or what is already enforced*' (KI-IFCA-107).

Respondents believed that mistrust existed between their sector and scientists, who in this case ranged from IFCA research officers to CEFAS scientists: '*I think there is a lot of distrust of scientists ... scientists will say sweeping things and don't listen or believe what fishermen tell them and that is a very hard barrier to break down*' (KI-F-35). Respondents claimed scientists contradict fishers, whatever fishers say: '*They don't listen to fishermen. If we say something is black, they will say it is white*' (KI-F-70). Interviewees questioned the validity of marine scientists' findings: '*They don't know anything. They don't go out on the boats. They don't know how to set the gear*' (KI-F-9); '*We're being told that we have fished to destruction but the cod's all over the place*' (KI-F-7). Scientists were accused of using flawed methodologies, because of their need for longitudinal consistency: '*My argument is with the TAC in the North Sea, they do their trawl survey at set times in set places every year and assess the stocks from this"* (KI-F-71). They criticized scientists for drawing broad generalisations from studying a small area: '*There's plenty of fish around but just dipping a net in one area and counting the fish in one box is no fair representation*

of what's happening on the wider ground' (KI-F-30). Respondents explained that the system doesn't take natural cycles of fish stocks into account: '*They don't seem to be able to understand that fish have cycles*' (KI-F-30) - nor the impact of climate change on fish stocks: '*Going back 15 years, if I caught a bass then, it was a rarity. We are actually targeting bass now. So things are moving on. But the scientists in the MMO* [in reference to CEFAS scientists who provide the MMO with scientific advice] *go to the same place every year, never mind that things have changed*' (KI-F-71). A fisher colourfully characterized the scientists' method: '*they have a million-pound job, riding around on shit ground rather than coming out with us on a shit boat but* [traveling to a] *million-pound ground*' (KI-F-30). Scientific data underpinning allocations were reported by an IFCA officer as old and therefore irrelevant: '*the trouble is that the scientific evidence is always a bit out of date. I mean the stuff that I see, from papers I get from the MMO, the analysis is probably five or six years out of date'* (KI-IFCA-106).

This mistrust has discouraged fishers from collaborating with scientists: '*the scientists said to us that they want to work with us as they don't really know what is down there. We need you tell us what is in your area. And we thought no way is we going to do that ... It's full of seahorses and everything ... We catch loads of them out there but we don't breathe a word to anyone and just drop them off in the middle of the channel*' (KI-M-60). This prevents: '*the rich knowledge in the industry to filter into the management making process to its benefit'* (KI-F-21).

5.2.2.2 The European Union

SSF fishers perceived that their fisheries were micro-managed by the EU: '*the problem with the fishing industry is that it is being run by Brussels*' (KI-FAL-72), who dictate government policies: '*the main problem is that the MMO have to do what Brussels tell them to do*' (KI-F-28). A fisher said the CFP has failed his sector: '*as a fisherman, as a person involved in that industry, Europe has been nothing short of a disaster ... The Common Fisheries Policy does not work and has not worked*' (KI-F-21). The fishers gave fish quotas as an example: '*I think quotas are set in Europe. We can't challenge the way they are distributed. They* [the MMO] *don't listen to us as they are in an impossible situation. So they can't do anything. They can't change the system. Not without getting*

challenged' (KI-FAL-61). Another complaint was the strict accessibility rules governing EU grants excluded commercial operations: '*The problem is that there are a lot of funds that will not allow commercial fishing to be funded*' (KI-FLAG-14).

5.2.2.3 Defra

Defra were criticized for their remoteness: *'One of the problems with all these rules being made is that the people who are making them have never been to sea before. They have never seen a fish; they sit behind a desk. They will not come down and speak to us*' (KI-F-68). Defra officials were accused of being disconnected with what happens on the ground: *'People up in London don't realize what they do. They make the decisions and they haven't got a clue what is here and what is going on*' (KI-M-60), risking them being influenced by strong lobbying bodies: '*People who are the policy makers have no experience in fishing, they don't understand how it works, they are being fed information by mainly green lobbyists, environmental groups so they are always being conservationist*' (KI-F-21).

One respondent contrasted the meagre support the English SSF sector received from their government compared to the generous treatment of the French SSF by their government: '*The French government has been spending a vast amount of money on boats and harbours in France for decades. If you go to any harbour in Brittany it is as large as it has ever been and their boats are lovely. They get like 60% off their full cost ... They get so much help compared to us. The politicians … will fight for them. They get help whilst we get crippled. There is a completely different attitude to fishing in France'* (KI-F-31).

5.2.2.4 MMO

Whilst most respondents appeared to blame the quota allocation arrangements on the EU, a few held the MMO responsible, explaining that it had authority to allocate quota in whatever way it wished: '*Quota are allocated in December in the EU and then they are assigned to the various countries and then it is up to the various countries to administer those quotas as they see* fit … *Every national government can allocate its own quota within its own districts to its own will. Our government is the only government in Europe that chose to allocate such a minuscule amount of quota to their inshore fleet*' (KI-F-43).

The MMO was also criticised for the way that their rules were imposed at an England-wide or ICES rectangle level: '*Each area has its own individual problems. You can't just lump us all in together and say well this is what we are going to do as it's good for this bit of the country. That ends up being disastrous for the other part of the country*' (KI-F-37). One respondent cited the universal ban on undulate ray (*Raja undulata*) to illustrate this point: '*Currently we are banned from landing undulate ray, because they are alleged to be endangered, but in the areas where they actually do occur, they are occurring in vast numbers that are actually a pest'* (KI-F-44). These fishers were unaware that this fishery is banned at an international level as undulate ray are on the ICUN list. The MMO was also accused of managing legislation which removed fishers' operational flexibility: '*the UK government reviewed the under-10 metre licensing system and many of the vessels in our district had their licences capped, which meant that they couldn't access other species ... which meant basically the majority are now almost exclusively reliant on shell-fisheries*' (KI-IFCA-108). One fisher said in order to act sustainably he moved away from targeting quota species but was penalized by this legislation for this:

> '*If I went to go and prosecute that fishery, I would have to throw fish over the side as I don't have enough quota for it and therefore as a fisherman and a person who takes a moral stand, I have taken a moral stand to say I will not go and throw fish over the side and pollute a fishing ground, I'm going to keep the nets in store and earn very little during a period when I could go and catch fish and make money. But I've decided not to do it, but now they are going to penalize me because I have decided not to go to sea and pollute the sea bed. I'm now going to be penalized because I haven't got a track record in it and what I'm saying to you is how can we carry on as businessmen, trying to make the right decision, the honorable decision, the moral decision'* (KI-F-21).

The MMO were perceived to lack an understanding of the inshore fleet operations: '*The MMO are not fishermen, they don't really understand*' (KI-F-10) and in some occasions, their own rules: '*You phone up for licensing rules and no one knows anything about it. You end up knowing more about it than they do and that is so wrong*' (KI-M-51). A FLAG administrator illustrated this by his experience of dealing with the MMO team responsible for overseeing his FLAG project: '*Getting what you can and can't claim for wrong. Even the management of administration got the amount wrong. They told us that they would claw back money if we hadn't spent it all by a certain time, but then we looked up the regulations and found that there was no related clause in any of that*' (KI-FLAG-66).

An association lead accused the MMO of poor project management as he experienced them failing to meet their own internal deadlines concerning turning around grant applications:

> '*Our local FLAG complained to the MMO about the length of time they were taking to decide on grant applications. They are meant to decide on this within 8 to 10 weeks, which is long enough. We have had three big successful grant applications. But it took a year to process the grant for one, seven months for another and eight for the third. And this is not just specific to us. All FLAGs have had similar problems'* (KI-FAL-81).

This delay had serious repercussions: '*This has held some projects up for so long that they failed. One was for an educational pack for primary schools. It took so long that the academic year had finished by the time they had made their decision'* (KI-FAL-81). The MMO were also accused of constraining innovation by rejecting proposals by the FLAGs:

> *'He* [a trawler-man] *was looking at fitting a kite sail – I mean this is just so innovative, of fitting a kite sail to his boat, so he could use less fuel. Have you seen them on the tankers? They are basically like beach kites – massive versions of those that basically drag the boat out to the fishing grounds, so you reduce the amount of fuel consumption. He wanted to look at fitting one of those and doing a bit of investigating about it, for one of his fishing boats. And we were like this is a fantastic project. Absolutely fits with the FLAG, reduction of fuel, complete link to fishing really innovative, wow! MMO said no. ineligible. By using the kite, may mean they may get to the fishing ground quicker and if they get to the fishing ground quicker, they will increase fishing effort. And I was like, but they are limited by quota'* (KI-FLAG-14).

The MMO were also accused of unpredictable quota administration arrangements for the inshore fleet: '*it's impossible as you can't draw up a business plan and say for the next five years I'm going to invest in this type of net and prosecute that fishery because it* [quota] *changes on a bloody weekly basis*' (KI-F-22). Participants explained that bans on fishing for particular species were imposed overnight: *'Last year, overnight there was a blanket ban on skate. Overnight, that livelihood for so many fishermen was just wiped out. The rug was just pulled from under their feet. And suddenly there was just nothing overnight ... there's no pre-warning that there's going to be a closure, they just close it*' (KI-M-67). They explained that this places fishers at risk of committing unintentional infractions: '*when I come home from sea, they might have changed it when I was out at sea, so I may have been accidentally fish*[ed] *illegally*' (KI-F-7).

This also makes long-term operational planning difficult:

> '*You could have a quota for whatever for February, then this afternoon get a text message which says by midnight that's totally banned or* [quota] *changed completely. And your plan will have to change completely. You could have your boat set up to catch cod and then get a text message to go and check your internet feed and find out that by tonight at one minute past midnight there is a total ban on it or it's gone from 800 kilo to 100 kilo. There's no warning or that this might happen in a minute. You can't make any plans such like well that will be the quota we will have in July because it could all change come July*' (KI-F-30).

A fisher explained how these sudden changes risk rendering long-term investment in gears worthless: '*we had a boat especially made up for netting then the day after they brought the ray ban in, we had to try and sell it somehow. One of the other boys in the harbour had to do this. Spent £300,000 on setting up the boat and then had to go and sell it. It's something else*' (KI-F-10). This left respondents feeling that they have no idea how to make their businesses financially viable: '*We don't know how to move forward for the best for our futures, for our children's futures, for securing what we are doing*' (KI-F-21), as investments didn't pay off: '*people have taken massive, massive risks ... there are quite a few sob stories, there are some success stories but there are a lot of sad ones and my family sadly we've come out on the rough end of it ... My dad's business went from him being a successful fisherman to going bankrupt. It wasn't his fault that he went bankrupt*' (KI-F-21).

Some respondents believed that this was part of a bigger plan to get rid of the inshore fleet:

> '*There are some cynical older fishermen who are saying that ... what the government have wanted to do all the way along is to set out a series of objectives and policies to basically bankrupt the fleet. And I say no, they wouldn't do that, but the proof of the pudding is in the eating and the situation is as such that that is what is happening'* (KI-F-21).

The argument here is that this would make enforcement easier: '*It's much easier to keep track of the big boats*' (KI-F-52) - and more affordable: *'In terms of the government funding the fisheries, you know if they can wipe us out it will cost them less money to police the fisheries*' (KI-F-76). A solely industrial fleet would also simplify quota

allocation: '*They just want to have three big vessels, there's your quota ... They can control it, track it. Easy. Small boats are a pain in the butt to them*' (KI-F-71).

The MMO were charged with a conflict of interest by holding the roles of law enforcer and of grant assessor (in terms of both EMFF and FLAG applications): *'It's also a worry that we have MMO dealing with the grant. So one day you are looking for application for grant money through the MMO. The same day the same person is telling you that they are going to summons you … It sends such a lot of mixed messages when you are trying to apply for grants and then the same officers which are enforcing are the same ones which are inspecting the vessels for grants. So they have all your information in terms of all your monetary information, and all your business information. And then at the same time they are trying to be independent prosecutors and that doesn't quite work … It's a conflict of interest*' (KI-F-49).

The MMO was also criticized for dismissing SSF fishers' experiential knowledge as less valuable than scientific knowledge: '*the majority of fisherman left school and went straight to sea, we ain't got degrees and all the rest of it ... there's a lot of people* [that] *think "Oh you know, we won't bother listening to them, we'll listen to that scientist because he must know because he's got sundry* [letters] *behind his name"*' (KI-FAL-12). An association lead provided an example which he had witnessed in an MMO consultation meeting:

> '*There has been discussion about putting a quota on brown crab for a while. I attended a consultation meeting where this was discussed, and at the end of the meeting here was the unanimous view that having had this presentation on the introduction of quota for brown crab, thanks but no thanks. We have seen the presentation and we really don't think it will work here and here are our reasons why. And the response from the project manager within the MMO was that, well we will go ahead with it anyway as clearly those attending the meeting just can't and haven't understood. I was like, you know, I really can, and this is massively offensive to everybody … There were many fishermen there with the cumulative experience of hundreds of years at sea, there were trawler guys and people associated with the industry and academics ... but no, we were all incapable of understanding what they were talking about*' (KI-FAL-81).

Some respondents also took issue with how their local MMO office worked with their local SSF fleet: '*They seem to be trying to run some kind of eastern European, totalitarian state. The MMO seem to see themselves as some sort of policeman but they make the rules up as they go along'* (KI-F-29). One community believed that their MMO officers

regarded them as the enemy: *'We are perceived to be the enemy and that comes over very clearly from the MMO. We are the enemy. We are not in a mutual relationship*' (KI-FAL-48).

Enforcement inconsistency was also reported: '*Most of us at some point down here have gone a little bit over* [our monthly quota allocation] *and they'll send you a little note and say your 20 kg over or something. Do that in XX and they'll job you, I mean XX was done for 15kg of fish, prosecuted for 15kg of fish and he got done for £4,000*' (KI-FAL-16). They were also accused of unequal access to meetings: '*If you have a meeting, a quota meeting for instance, as it comes through on the computer, I answer it straight away to book my place. Then they say sorry but there are no places available and I reply but you have only just sent this through and I've answered within ten minutes. And they say "sorry but all the places are booked". And that's honest gospel truth ... the people who get slots are the people in favor with* [the MMO officers]' (KI-F-50).

According to respondents the MMO did whatever it wanted to, regardless of SSFs' views: '*If they want to shut us down they shut us down. They do what they want*' (KI-F-69). One respondent explained how their MMO office didn't explain why regulations were brought in: *'They don't explain why; they just tell you they are doing it. You then just have to follow the rules'* (KI-F-9). Respondents reported losing their trust in the MMO: '*The trust has gone. They have said and done so many things and none of it has come to fruition. This is where the mistrust comes from*' (KI-F-59). One fisher advised his fellows to get everything from the MMO in writing, because oral advice was not to be trusted: *'If you ask them a question, you want to make sure the answer is in writing. Not over the phone. They have messed two or three people up like that before. They told them one thing and it cost them a lot of money. If they say something, they will say so and so but it has to be in writing*' (KI-F-70).

Some fishers explained that their local MMO officer made them feel like criminals: '*They are just looking for something to be wrong all the time. You feel that. If they find something wrong, then they do you for it. But that is the type of people they have got in there now*' (KI-M-60). One interviewee relayed his experience: '*Us and a couple of other boats were boarded by fishery officers, with four police officers in full riot gear with stab vests and dark glasses. Talk about intimidating. What is that about? Enforcing fisheries legislation*

and yet they are dragging policemen about with them' (KI-F-58). One respondent said the MMO refused to assist him when asked: '*I told them that I wanted to change the address on my boat and they couldn't help me. They said I needed the number for the MCA* [Marine and Coastguard Agency], *which I didn't have, so I asked them for the number of the MCA. Which they wouldn't give me. Eventually I found it and spoke to the MCA and they said that all I needed to do was send my registry and my address to the MCA and that my MMO office should have told me that and could fax it for me. They didn't tell me that. They wouldn't. It's just bloody horrible ... they say go away, just go away*' (KI-F-47). Another fisher commented: '*You can turn the other cheek so many times and now they are red hot on both sides*' (KI-FAL-48). In some areas relations between the MMO and the SFF were reported to be very poor: *'their reputation is very low round here. Very low now. It used to be that we really got on well with them. But in recent years, very low*' (KI-FAL-63). On the other hand, some respondents said they found the MMO to be supportive: '*Personally I find them quite helpful. Certainly with things like ... a recent software update ... they were great. I forgot to fill out some forms and they just called me to remind me, and they went out of their way to be helpful it felt*' (KI-F-40); *'They've always been good down here whenever I've been in there with a problem*' (KI-F-17).

5.2.2.5 IFCAs

Respondents criticized IFCAs on six grounds. First, IFCAs were accused of being too subservient to Defra. An IFCA officer explained that IFCAs' work priorities were largely dictated by Defra:

> '*We are very much taken over now by national and international legislation and our programme is dictated to a large degree by Defra. They actually pay a third of our money these days. It used to be entirely funded by local authorities until 2011. In 2011, they turned the Sea Fisheries Committees into the Inshore Fisheries and Conservation Authorities* (IFCAs), *and Defra started funding a third. And then they started influencing our programme, directing really a lot of what we do. So there's a big programme to reassess the management of European Marine Sites. That now takes up a third to half of our resources probably all together and that's directed by Defra. They have said they want that. So although IFCAs were set up to be locally accountable bodies, a lot of our programme is dictated by national government now*' (KI-IFCA-109).

A FAL said that this meant IFCAs were under pressure to follow a national rather than a

local agenda: '*There is a distinct lack of independence within the IFCA system. Although they are supposed to be tailoring things to make them apply to their district, there is still a feeling within their executives that they have to comply with their workload handed down to them. And that is their top priority and everything else is secondary*' (KI-FAL-99). Another IFCA officer said this meant focusing on MPA management: *'Through Defra's change of approach, the IFCA have definitely had to give priority to marine protected areas* [MPAs] *and that's where all our work, or the majority of our work, is focused at the moment*' (KI-IFCA-104). This MPA focus had two effects: first, it hugely increased IFCAs' workloads: '*The workload. It's gone mad and snowballed … it was top-fed from Defra, that's where the pressure came from"* (KI-FAL-99). Second, it meant the IFCAs had to take the blame for introducing MPAs: "*and they had to do the dirty work. So it risked the IFCA's relationships with parts of the fishing fleets*' (KI-FAL-99).

Respondents explained that the IFCAs had also lost autonomy to the MMO: '*They* [the MMO] *are there in the background and you feel like they have the real power. You feel like they are the real bosses'* (KI-FAL-41). The MMO determines the IFCA committee membership by taking charge of the interview process: '*IFCA has no power over the appointment of members, that is in the hands of the MMO ... They advertised the places, they sifted the applications, they ran the interviews and they confirmed the appointments. The IFCA had no power*' (KI-F-40). This was an arrangement which one fisher described as 'outrageous': '*I applied to go on our IFCA committee and guess who you have to do you your interview with, before you get to go on the IFCA committee?* [MMO] *actually pick who go on the IFCA committee and I think that is fucking outrageous. They do the selection and interview for the IFCA ... And I went to do the interview in London and I said look. I ain't no 'yes-man'. I think your organisation stinks and you buggered everything up and there is nothing I can say that is good about you, but I want to represent the fishermen. And I didn't get my job ...* [MMO] *is on the committee, but they have also made sure that anyone else on the committee is presumably in line with their thinking, or else they wouldn't get on'* (KI-F-75). The arrangement was felt to allow discriminatory practices: '*they don't include the right people, because we make waves, because we know what we are on about. They don't want us on them, they don't want the fishermen on them*' (KI-FAL-1). This included fishers who had breached any form of marine legislation: '*You can't get on the committee if you have any fisheries offences against you. So they had four*

fishermen on there and two have been taken out as they were caught breaking these stupid rules. Most fishermen now will have some kind of offence as they have made so many rules and regulations that you can't walk out the door without committing some sort of offence. You can't move without making some sort of offence if they wanted to push it. It's hard to get squeaky clean people on it' (KI-F-102).

The process of appointment set up by the MMO to the IFCA management committees was also condemned by respondents for being overly complex and time-consuming: '*the whole process is incredibly off-putting 'cause they have to submit a detailed application and then maybe have an hour's interview with the MMO, so it's a very formal recruitment and selection process and I think for many who might struggle to complete an application form, that its off-putting*' (KI-IFCA-108). It was seen as particularly challenging for fishers: '*the application can be daunting, if you are not used to applying for jobs. It's hard to put down examples of how you have made a difference in the past. It's really hard actually*' (KI-F-40). Another respondent complained about the arbitrariness of requiring that every four years' committee members must re-apply for reselection: '*I have been on the IFCA since its inception several years ago but they have now decided in their great wisdom that we all have to be sacked and we all need to reapply for our places. Not just me but everyone on all the IFCAs that we have to go. Instead of having a system that if your attendance is there and you continue to your IFCA then your chairman or whoever thought you were doing a good job then you should be allowed to stay … they have just fucking dumped everyone*' (KI-FAL-38).

Second, respondents criticized the IFCAs for the inequitable way their committees were structured. For example, a fisher explained that: '*on a 22-man committee, only two are fishermen. Now if one of them is ill or both of them are ill, then there are no fishermen on the IFCA. So, they can arrive at any bloody decision they like, as there is no experience of fishing*' (KI-F-102). A respondent complained that when fishers stepped down, they were not replaced by other fishers: '*When it was first set up five years ago … we already had four people from the fishing fleet on then, but gradually one of them died, one of them was thrown off and two of them resigned. So there was no fisherman on there whatsoever* (KI-FAL-3). Some respondents felt the presence of local borough councillors on these committees was inappropriate: '*I think the general make-up of the IFCA isn't enhanced by*

the councillors' (KI-FAL-99) and that their spaces should be assigned to maritime experts: '*The committee is largely made up by councillors from the boroughs that pay for the IFCA. As opposed to experts in the field*' (KI-FAL-48). Councillors were accused of being unenthusiastic: '*they are the worst attendees ... One of them hasn't been for a year*' (KI-FAL-99) - and uncommitted: *'They have to be there for half an hour to claim their money, so they stay that long and leave. Bullshit. They have no interest and they only want their money'* (KI-M-51). They were also accused of being ignorant: '*Someone mentioned something about demersal fishing and one of the councillors asked "what does demersal mean?". And I thought well, I can understand anyone in the street might not know, but you have been on this committee for three bloody years surely you could go on line and look at this*' (KI-FAL-99). Another respondent complained that such passive members listened to scientists rather than fishers: '*It seems to me that there is a small group of people who make the decisions and everybody else on there just comes along and nods their head and gives their vote … we do know a little bit about fishing and we do observe what's going on around us. But the scientist who is on the IFCA for maybe three years, they are going to listen to them rather than us*' (KI-FAL-3). Another SSF said: '*Industrial interests make up the dominant force on the committee of the IFCA*' (KI-FAL-48).

Another criticism of the inequity of the IFCA management structure was that in the move from the SFC model to the IFCA model, fishers lost the right to represent their sector and had to sit instead as neutral experts, providing advice for the public good: '*Sea Fisheries Committees used to be representative bodies with so many fishermen … they were there to represent their sector. Well it's not like that now. It's just a balanced bunch of people that can thrash out a decision*' (KI-FAL-99); '*I used to represent the fishermen. But when you were on the IFCA, you don't represent anybody ...The thing is that people need representation*' (KI-FAL-2). Also, the IFCA committee structure entailed an inordinate amount of accompanying paperwork: *'Two, I know, who were on the SFC, have come off now as they said for every meeting, they always get a novel to read. The amount of paper work is horrendous and it is all very well for these other bodies, who have nothing else to do than sit in front of a computer all day, but you can't expect the working fishermen to sit down and put up with all that sort of nonsense*' (KI-FAL-42). The timings of the IFCA committee meetings were seen as a further inequity: '*the meetings tend to be during the day so they're out fishing. So they are forced to choose between going out and fishing for*

the day or giving up and go to this meeting' (KI-IFCA-104). This meant that: "*you end up with a committee full of people who are paid for by the greenies or are retired'* (KI-F-43). One fisher said that evening meetings would work but other participants would block such a move: *'these greenies wouldn't be up for that; it would ruin their night in front of their lentil soup*' (KI-F-43).

Third, respondents criticised some IFCAs for their poor communication methods: '*The way it seems to come across quite a lot is that this is what is going to happen, and they are telling you and if you don't like it tough*' (KI-F-86). Fishery officers were said to be invisible: *'You never see anybody'* (KI-F-94), as were the chief officers: '[the CFO] *never gets off his arse and comes out anymore does he. I said to him when he first started, nobody recognises you, and you should get out much more onto the coast. You can say to someone,* [the CFO] *came down. And they will say XX? Who's that*?' (KI-F-50). Some IFCAs were accused of prioritising paperwork over face-to-face communication: '*they just want to get on with their paperwork. You can't just go and knock on his door*' (KI-F-7); '*one of the difficulties is that they just don't want to talk to people*' (KI-FAL-81): *'I can't phone the office in the morning and ask to speak to him … they would say every time, he is not available, he is in a meeting. Every time... and he will never return your calls*' (KI-F-78); 'Y*ou phone someone and then half the time it's an answer phone and then you wait and you wait but no one will get back to you … people don't bother and lose interest*' (KI-F-87). Other respondents said that written correspondents didn't work either with their IFCA: *'We wrote an email to* [the CFO] *and the enforcement officer at the IFCA with this complaint. Now I sent that a fortnight ago...we hadn't got a reply, even to say we got the email so we rung them up to see. And* [the CFO] *said* [the enforcement officer] *has gone on holiday and I haven't had time to acknowledge this … It's not good manners'* (KI-FAL-1).

Respondents claimed their IFCAs did not explain how they came up with their regulations: '*I don't know how they sit and come up with these ideas*' (KI-F-98). They were also criticised for failing to effectively advertise new regulations: *'have the crab size gone up to 150mm? No one knows … I landed crabs last day and they haven't informed me, so I think I can just keep on landing female crabs 140 mm, but that's how patchy their information is, they're very poor'* (KI-FAL-12). One IFCA was accused of failing to warn fishers about

the imposition of a Marine Conservation Zone (MCZ): '*I only found out about the MCZ on Facebook and it wasn't the IFCA that put it on. That was someone else who put it on. They didn't write to us about it'* (KI-F-98). The opposite complaint was made by one respondent – that the IFCA sent out too many messages: '*The trouble is you get so much shit and maybe out of every 50 emails, you might have one important one ... But that one might be vital*' (KI-FAL-72).

Fourth, some IFCA staffs were criticized for lacking an understanding of the inshore fleet: *'They don't know how the fishermen work, or what they have to do to make a living. It's stupid*' (KI-F-91). For example: '*The fishery officer we work with... he didn't even know the difference between a hen crown and a cock crown, or how to measure a lobster and these are the guys who are supposed to be telling us what to do, governing us, controlling us*' (KI-F-13). Respondents charged IFCAs with putting appearance before substance:

> '*It has always been about looking as if we are doing something. So for IFCA it was more logical to have more permits coming in so it looked like they were doing a real job and it was about looking good as if they were doing something. It was never proven that it would have any kind of benefit. And I can tell you as one who has lived under that regulation what they have achieved is nothing. The rules have been a failure but they won't listen to me. I try to tell them as I see it but they don't want to hear it, because what they are hearing is something that flies in the face of paying their wages and bills. And so what I am saying is that fisheries management is very seldom to do with how we can manage fisheries. It is about* [what]... *ticks the boxes and meets the political criteria that is going on at the time*' (KI-F-21).

IFCAs were accused of being too slow in implementing decisions: *'They are too slow and they don't achieve anything till it is too late'* (KI-F-53). For example, one IFCA was accused of failing to address a sharp rise in potting: '*For the first five years of the IFCA, I attended consultation meeting after consultation meeting. And every port bar none was asking for pot limitation. That's all you heard, pot limitation, pot limitation; there are too many pots at sea'* (K-I-F78). In the end, it became impossible to introduce: '*Everyone is now working a thousand to 3,000 pots so it is hard to bring in a pot limitation. If they had brought that in ten years ago that would have worked*' (KI-F-83).

Some IFCAs were also accused of pursing a one-size-fits-all approach to fisheries management at a national level pushed by the Association of IFCAs: '*There has been a lot*

of undercurrent from the association of IFCAs to have compliance on the coast … Now that doesn't fit for me because, XX IFCA has different problems. And they are not like here' (KI-FAL-99).

Fifth, some IFCAs were criticised for being disingenuous in the way they ran their consultations exercises. For example, fishers condemned the inadequate notice given of forthcoming consultation exercises: '*I didn't even know about the meeting that's on tonight until yesterday*' (KI-F-96) - and ineffective advertising mechanisms: '*We only knew about the meeting tonight cause the harbour master texted us*' (KI-F-98). Respondents alleged that consultations were fixed to achieve the management's preferred outcome: '[IFCA's CFO] *pre-conserves the outcome and then makes the consultation give him that answer ... we were never allowed a free and open discussion on what could be the issues. They merely said choose option one, two or three ... A kid of six could have worked out it was crap, because they were giving you the question and the answer and telling you to tick a box. You only had four choices. We might not be educated, but we are not thick, we can give you an answer, we don't need to fit it into a tick in a box. It was a lash-up from start to finish*' (KI-M-51). Consultations are largely rhetorical and undertaken purely for show: '*It's all already signed and sealed in blood before we hear anything about it ... We are going to the meeting tonight, but it will all be settled already*' (KI-F-92). Such hollow gestures made fishers cynical about the system: '*They put consultation notes out and they take no bloody notice of what you write whatsoever. So consequently, you don't bother. I have filled them in, in the past, and nobody take a blind bit of notice of it. Whatever they think, will go through regardless of what we say ... It sickens you. You are just wasting your time*' (KI-F-102).

Fishers explained how their IFCAs consultation process left them feeling inferior: '*one of the lads stood up and asked something and they said, what the hell do you know? You don't have letters behind your name. You are not a professor or doctor, you are just a fisherman, and what do you know? You come out of their meetings deflated. You feel like you have wasted their time*' (KI-F-92); stupid: '*we are perceived as local bloody idiots. I mean what do we do? We go to sea, and we swear and we definitely smoke too much, don't give a damn and kill anything, and that is how we are portrayed*' (KI-FAL-72); '*They are treating us like imbeciles*' (KI-FAL-1). One fisher said he was ignored because of his fisher status: *'I've only been to two meetings. And nobody took any notice of anything I said*' (KI-FAL-

3). Fishers spoke how this left them feeling dis-empowered: *'I have no choice and no voice'* (KI-F-21); disillusioned: '*The trouble is that over the years and the decades, is that fishermen come to all these meetings and nothing changes. And they are disenchanted*' (KI67); frustrated: *'Cause no matter what you do, you just feel like you are just banging your head against a brick wall*' (KI-F-23); and irritated: *'I'm sick to death of attending meetings and I've been to some in my career. And I'm sick of going to meetings with fisheries management and nothing is achieved*' (KI-F-77).

As a result, fishers reported they had become disengaged from participation processes: *"now we are even in a worst situation than we were before because a lot of good people have just walked away and won't get involved anymore and the whole thing is just moved into complete and utter meltdown*' (KI-F-21); '*There is no effective consultation. Fishermen have apathy and can't be bothered*' (KI-M-67). This apathy was compounded by repeated IFCA consultations leading to consultation fatigue: *'you get punch drunk with consultations*' (KI-M-51).

One respondent claimed his IFCA: '*told lies in court'* (KI-F-102). IFCAs in one case were accused of adopting an assumption of guilt: *'90% they will assume you are in the wrong before they have even seen you. Not the other way around. They assume that you have done something wrong'* (KI-F-87). Some respondents held that IFCAs had a secret goal of banning all inshore fishing: '*We feel that it won't be long …* [before] *they will bring in a total ban on fishing. That's how we feel. They say they just want to stop the trawling at the moment, but it will just open the floodgates. Most of us think that their agenda is to stop us taking anything out of the sea*' (KI-M-60). One fisher explained how they believed the IFCAs engagement methods had changed and this in turn had subsequent consequences: '*We used to have a really good working relationship with the fishery officers, but now we see them as our enemy*' (KI-F-58).

On the other hand, some respondents were very positive about their IFCAs. For example, one respondent reported that his IFCA was very accessible: '*If we wanted to ask them anything there was that option. You could always ring them up and ask them. They are very approachable 'cause we get on with them*' (KI-F-35). Another respondent described the close relationship between his group of fishers and their IFCA: *'We are very fortunate.*

We have a very good young fishery officer who has our interests to heart. And I must say that the chief executive of the local IFCA is a very sensible chap. So from that point of view we get on very well with our local IFCA' (KI-F-44). Another respondent agreed: *'we have an IFCA that is quite pro-fishermen in our area'* (KI-FAL-63). Another respondent commended his IFCA on being pragmatic in not adopting a purely environmentalist approach: *'On the whole, our IFCA, I feel like the chief fishery officers and his team are trying to hold back a flood of environmentalists who are putting enormous pressure on fishermen. Their mantra is that the fishermen are clambering all over the seabed and taking every living thing out of the sea. But our IFCA know that isn't true and they do want to get on with everyone. They have a lot of pressure on them from the environmentalists with the conservation zones, but they seem to take a pragmatic take on it, they do seem to be very pragmatic'* (KI-FAL-41). Another respondent praised his IFCA CEO for his inclusive management: *'I am now on my 4th Chief Officer and this one is the best. He is brilliant … He gets feedback from people on the ground and he deals with it. And he can deal with bureaucracy upstairs. He is good at whatever he does. So it works well now, as the methods and procedures he set up. He is an exemplar. But how you make the others do that, I don't know'* (KI-F-39).

5.2.2.6 Other marine sectors

About recreational fishers, one respondent reported high levels of mistrust: *'There is distrust between the commercial and the recreational sector*' (KI-IFCA-110), which complicated participation mechanisms: '*It's very different to hold a meeting with non-commercial representatives, like hobby fishermen and commercial fishermen. They just don't sit together and consultation isn't particularly constructive*' (KI-IFCA-108). The angling sector was believed to exert greater lobbying power than inshore fishers: '*The sea angling troop is very good at lobbying so they will target the councillor members as they know they need votes*' (KI-F-40). One respondent explained how this was ultimately a numbers game*: 'It is perfectly obvious that there are far more people in the country that go sea angling than participate in the fishing fleet. So if everything is just down to a matter of votes, then everything will go the way of the angling lobby and not the fishing industry*' (KI-M-20). An IFCA officer believed anglers had formed a link with conservationists with the aim of shutting down sections of the inshore fleet: '*I have detected a bit of an alliance*

between certain environmental pressure groups and angling ... They are both after the same thing which is to get gill nets banned' (KI-IFCA-103).

Industrial interests were thought by fishers to be given priority over fishing interests: '*Every other industry, so wind farms, pipelines, whatever, they seem to have a far greater voice than these under 10 metre fishermen*' (KI-M-67). Fishers suspected it came down to economics: '*We got wind farm shit, we got bloody dredgers. They are all things that Defra could do something about. But they are big business and they choose not to*' (KI-F-75). Favouritism was also illustrated by the differential treatment industrial interests received during the MCZ planning stage: '*If you are going to set up marine conservation zones, then you shouldn't be allowed to put wind farms in them. They have nothing to do with marine conservation; they are not going to help marine conservation. Putting all those cables along the sea bed is not going to help marine conservation. They cause problems instead, because of the static and the radiation that comes off them. So why are they allowed in the sea. If they want to make a marine conservation zone, they want to make it not just for fishermen but for everyone. They won't stop the wind farms, just us*' (KI-F-91).

Also, large-scale aggregate dredging was granted permission to operate close to where fishing activity was restricted: *'They* [the MMO] *are trying to stop the little boats fishing, but six miles away they* [the MMO] *are about to licence a gravel extraction project. And it is something like 50 – 60 million cubic metres to be taken ... So they can do all that damage and it don't mean diddly. But then they say to us, sorry fellas, you're damaging the sea bed*' (KI-FAL-63). This makes a farce of the whole marine protection network:

> '*I laugh when the Wildlife Trust says everybody local get behind the conservation zones, it's what we need to save the seas. Then you look at the back of Fishing News and there will be a licence granted for 33.5 million tonnes of aggregate to be dredged ... I find that obscene. I don't care how people sell that, they are dredging everything up with that aggregate. That's spawn; all the things that make up the lower tier of the food chain are in with that aggregate and are going to be destroyed. And that stuff has been there since the ice age at least. I find it sickening. I understand we have to build motorways but for them to wilfully to grant these licences for very large sums of money and then appear to be doing the right thing by imposing* [MPAs on us]' (KI-FAL-99).

POs (overwhelmingly composed of over-10 metre vessels) were also reported to wield excessive power over management bodies: '*They control the power and politicians*' (KI-F-

55). Participants claimed: '*The big organisations who have no interest in the system changing*' (KI-F-23) protect their own interests at the expense of the inshore fleet: '*there is a lot of vested interest involved*' (KI-F-55). One respondent put POs' political strength down to their financial resources and strong lobbying power: '*Well the bigger voices, the people who are bringing in more money, it's always the same isn't it, they have the larger lobby so they're obviously going to have the most say, no one's going to listen to me catching a few hundred herring* [*Clupea harengus*], *when they can listen to someone catching a few thousand tonne of herring, or lobster or whatever it is you're catching*' (KI-F-13). One respondent said the bigger the vessel, the more the clout: '*the bigger the boat, the bigger the power and the more influence you have*' (KI-F-22): '*The POs hold so much power and they don't want to give any of that up*' (KI-F-59).

5.2.3 *Environmental threats*

Respondents reported mutual hostility between fishers and greens: '*Environmentalists don't trust fishermen and fishermen don't trust conservationists*' (KI-IFCA-109). Fishers said they were always blamed by the greens for environmental degradation: '*Soon as the stock decreases they blame it on overfishing*' (KI-F-29). This misleading perception has been championed by the media:

> '*I watched that Hugh* [Fearnley-Whittingstall] *programme* [Hugh's Fish Fight on Channel 4]. *And he goes on about the wasted fish and all that needs to be done. Then the next thing he is on television wanting all these areas shut. And he filmed these areas where the scallop vessels supposedly go and when he went diving, he filmed a sandy bottom. Now everybody knows that scallop dredgers don't work on a sandy bottom. Yet here he was. It was totally false. But then for Jo public, who don't know anything, they are looking at that going crikey, the bottom is totally barren. Look at what the fishermen have done … it gets into people's head ... all the people were like, "all the fishermen must be stopped" and once people get like that, you can't get them back. You struggle to try to get the public back on your team. If people all tow that line, it will kill our job*' (KI-F-97).

Respondents felt that the greens pose an existential threat to their industry: '*Hugh has caused a lot of trouble for us. He has caused untold damage. Him and the greens. Their agenda is to stop it and for just to allow you to catch a few scallops by diving for them and it will only be him that will be able to afford to buy them anyway'* (KI-M-60).

Respondents claim that much of the green lobbies' stance on fishing is political not ecological: '*when you look back on where it has come from, so much of it is political, rather than ecological and good for the environment. They want to be seen to be good for the environment, which basically it seems that kicking fishermen is a good way of getting political points if you like, for looking like you are green, when in actual fact, it's not*' (KI-M-51). A respondent explained how in his opinion the green sector blamed the fishing industry for all marine damage:

> '*The fishing industry tends to be a whipping boy for whatever goes on at sea. So if there are any problems, particularly with fish stocks, it is always because the fishermen are catching too many fish. That is always the only problem … if you take XX, they dump thousands of tonnes of spoil from the dockyard through licences granted by Natural England and the MMO. And through the Norfolk coast, they dig up the sea bed and put in huge wind farms and thousands of tonnes of concrete and destroy fishing grounds, then again in the channel, aggregate dredging takes place, again on a massive scale, again licenced by the MMO. This changes the whole nature of the seabed*' (KI-M-20).

Respondents noted the power of the green lobby: '*the greens have a lot of clout now*' (KI-F-102) – based on its financial backing and middle class support: '*they have a lot of power these greens. They have a lot of money. All middle class and they have nothing to lose*' (KI-M-60). Fishers felt powerless in the face of this: '*The problem is that the fishing industry on its own doesn't have anything like the power of Greenpeace or the Wildlife Trust, or any of these people, or the funds*' (KI-M-20). Greens are perceived to wield much power over the IFCA: *'There is the perception amongst a lot of people that the environmental lobby has a lot of influence over the IFCA*' (KI-FAL-81). Respondents blamed the green lobby for the IFCA's shift in focus to a predominantly green agenda: *'The IFCA agenda is driven by the top which is led by the greens and a green agenda*' (KI-F-21). It is important to note though that when the SFCs changed to IFCAs as a result of the 2009 Act, their portfolios were broadened to include conservation goals. The IFCAs were accused of adopting this conservation agenda wholesale, at the expense of their other responsibilities: '*since the IFCA is come in, the only thing it is fruitful for is the wildlife*' (KI-FAL-1). This shift was blamed on the government's fear of the green lobby: '*they are shit scared of the green vote*' (KI-F-102) and the associated risk of litigation: '*If Greenpeace puts something in, then we will have to prove that we are not doing damage. So it's up to us. And the IFCA has to follow as they are frightened of being sued*' (KI-F-101).

Respondents believed that the roll out of MPAs around the inshore coastal areas was progressively hemming in their fleet: '*They are closing areas now for the future. There is an area just off here, good fishing in the summer, it's local for us, we can get there, we can make a living out of it. But just because of this growth on it, some kind of seaweed, they are going to shut it off* [to fishing]. *Little bit further down the coast, there's an area that they're going to stop people fishing in too. Completely stop it. Why? Because now and again, birds get caught in nets'* (KI-F-7). One respondent likened the MPA programme to land grabbing: '*They just keep taking and taking and taking. They have taken enough. We want them to stop*' (KI-F-92). A fisher explained how these closed areas forced him to fish further offshore into dangerous waters: '*Now they want to close the area down around here for about two or three miles. Now if they close that down then we are going to have to go much further out and ... a lot of times it's not safe to go out that distanc*e' (KI-F-71).

Another environmental issue was the growing number of seals. Some respondents blamed seals for loss of fishing opportunities: '*it's not that the fish aren't there. It's that we can't catch them. You catch them for a couple of days and then the seals catch up with you and then there is no point shooting nets after that. So you go the first day and you get ten boxes and then you go the next day and all you are hauling is heads. There is no point fishing to feed them*' (KI-FAL-99). Seals were also blamed for damaging fishing gear: '*the damage they do to your gear ... they are just ripping the fish from the nets and leaving a big hole in your nets. And it's costing us*' (KI-F-84). Furthermore, respondents claimed that seals are carriers of a parasite which harms their target fish: '*They're also the host for a nematode worm. And cod is the intermediate host and these little worm larvae hatch out inside the cod's gut and migrate out into their flesh. Heavy infestations make the fish unmarketable*' (KI-F-84).

5.3 Internal Weaknesses

Weakness within the under-10 metre fleet itself was discussed by respondents in seven main ways: psychological; unenterprising; educational; social; political; demographic and physical.

5.3.1 *Psychological*

An IFCA manager attributed the lack of fish to unsustainable fleet activities: *'Many stocks have been overfished*' (KI-IFCA-109), which one IFCA officer attributed to the general opportunist nature of the SSF mentality:

> '*What is fishing about? It's about making money. It's not about preserving stocks for the future. There are very few that have that view ... When you say if you keep fishing like this, there is going to be nothing left for your son to do, and the response was "I'm fishing like this, because I never want my son to have to do this", you know ... that it is just a cash cow which you milk until it falls over, then you are not going to be in the game of sustainability. You are going to be in the game of getting rich quick... You know that is seen as the efficient business, but it is completely out of step with nature and nature can't sustain that kind of thrashing ... Call it what it is, its greed*' (KI-IFCA-105).

This respondent believed fishers falsely characterise themselves as victims:

> *'There is a victim status. It isn't fair, it shouldn't be this way, it isn't right ... There is a perception of, it wasn't broken, it didn't need fixing. Bureaucrats then got involved to try and fix it and they have wrecked it. And that is a perception, but they won't entertain the fact that, well, the very fact that bureaucrats had to get involved is that you were fishing in an unsustainable manner and you were driving stocks out of existence. And there the uncomfortable truth is. But that's not what you hear, "no, no there used to be hundreds of lobsters" ... Well yes, and then you fished them all out didn't you?*' (KI-IFCA-105).

This displacement strategy was attributed to fishers' belief that they have an entitlement or prior right to use the sea because they were there first: '*There is this sense of hierarchical ownership of the marine environment, you know, I'm a fisherman, it's mine. But it's not and that's another message that needs to be out there. It belongs to the population. You just happen to be lucky enough to have chosen a profession where you go out and experience it and enjoy it daily" (*KI-IFCA-105). A fisher acknowledged '*There is an element within fishing that don't have a thought about tomorrow and unfortunately they give the rest of the industry a bad name ... I spend a lot of time apologizing for them*' (KI-FAL-16). This selfish trait is compounded by fishers' suspicion of authority: *'Fishermen by their very nature are suspicious of authority because I think all they ever see is bad stuff coming*' (KI-FAL-16); '*The IFCA say no we are the fisheries* [managers] *and we are going to tell you what you need to do. But we don't like it. We don't like being told what to do by someone who is sitting in an office and has never been fishing in their lives*' (KI-FAL-3).

Another psychological trait of fishers was their lack of confidence in public fora. For example, they were reluctant to serve on IFCA committees:

'*I think that the problem you have today, is that there are not the fishermen who are prepared to go forward ... I know they* [IFCA] *are desperate to get more fishermen on board their committee. So desperate that they asked me last year to go back on and I said no, I don't want to go back on. I did come off it at 70, and was quite happy to come off it at 70. So to try and get an 80-year-old back on it, they must be desperate. They are really trying to get fishermen on it. And the fishermen of today are saying no*' (KI-FAL-63).

Respondents explained how fishers felt uncomfortable in formal meetings: *'Fishermen get intimidated by a room full of suits. And when those suits start turning up with their lawyers and start bandying things around in official language, or legalistic language, they are intimidated. Any situation outside of your usual work is going to be intimidating. If you stuck one of those lawyers on the deck of a fishing boat, he is going to be intimidated too. It's just taking people out of the world they work into another one'* (KI-FAL-81). Respondents blamed fishers' lack of experience of formal meetings: *'A lot of them are not used to formal meetings and conducting themselves in a formal situation'* (KI-F-40), which sees them struggle with formal engagement mechanisms: *'We're a section of society that struggles to engage, perhaps in normal methods or perhaps through normal mediums'* (KI-FAL-15). Some respondents were very critical of fellow fishers' failure to engage in public debate: '*The only barriers are internal and because of our own stupidity*' (KI-F-39); '*I find them so short- termism. If they don't want to voice their opinion, and some of them have got some brilliant ideas, they really do. But if they don't go to these meetings then how can they expect for things to go their way?*' (KI-M-51) and then complaining about the outcomes: '*The ones that don't say anything usually shout the loudest against it when it is brought in. Well you were told and you were asked, but we are back to fishermen being their own worst enemy'* (KI-FAL-72). IFCA officers described fishers as having a '*head in the sand'* mentality (KI-IFCA-105); naturally '*loners*' (KI-IFCA-103). A merchant respondent described them as shy*: 'Most fishermen are a real dichotomy and they can be really noisy but at the same time, really shy*' (KI-M-51).

For one respondent, the threats have taken the joy out of inshore fishing: '*Maybe, it's just me that's talking, but this is me, a fisherman who loves the job, who loved the job. It's not becoming a job; it's becoming a chore. It's stressful enough going out there. Never mind with bailiffs on your back. With letters coming through your door. So many letters coming through your door. It's just a never ending circle of shit. One time that shit was sweet. It*

was fun, it was exciting, it was all the things that fishing was, now it's just a fucking cunt of a job ... Fishing is not a happy, happy job any more. There are no winners in this, there are no winners in it any more' (KI-F-7). Excitement has been replaced with a feeling of despair: *'It is so debilitating. I can't express the feeling'* (KI-F-21). An inshore fisher said they could no longer see a future in their sector: *'It's just that there is everything against the under 10s. To be honest, it's a dying fleet. The under tens are a dying fleet'* (KI-F-10).

5.3.2 *Unenterprising*

Inshore fishers were criticised for their lack of enterprise: *'I think that they often aren't sufficiently business-orientated. They operate in a way which is very traditional ... I think as a grouping, they tend to be a little bit inward-looking'* (KI-IFCA-110). This lack of enterprising behaviour was linked to inshore fishers' traditional conservative mind-set, according to one respondent:

> *'They want to fish, they want to sell their product and then they want to go home. And we have not had many entrepreneurs who have seen the opportunity ... there is a traditional mind-set in terms of they know their business ... so they haven't quite woken up to the other opportunities with might exist ... They tend to think more in terms of where can we sell it to so that they can do something with it, rather than what can we do with it. I'm not sure how you get over that, it's just a mind-set really'* (KI-FLAG-82).

However, respondents explained that when they had pursued incentives to add value, they had failed to reap the expected financial rewards as illustrated by the Marine Stewardship Council (MSC) accreditation, which once won was found to bring no remuneration: *'no one will pay a premium for line-caught fish or sustainable MSC'* (KI-F -87).

5.3.3 *Educational*

Respondents explained that many fishers took up fishing as a consequence of an inadequate education: '*not many of them are well educated. And that is why many of them ended up in fishing, as they are not very well educated and didn't feel like they had an alternative*' (KI-M-51). This restricted some fisher's ability to fulfil managerial paperwork requirements: '*He can hardly read and that is the biggest problem with a lot of fishermen who are sort of 50 and over, and they went into fishing, 'cause they couldn't do a lot more. I mean he fished all his life but I used to do all the writing for them*' (KI-FAL-2). Older fishers also reported struggling with new electronic communication requirements: '*MMO*

come out with electronic licence changes. That's all done on the computer. Strangely enough, an old bastard like me never learned how to use a computer. I have done it now but I have to try very hard to do it, I find it very hard' (KI-F-75). This risked communications being easily missed: *'They have websites and things and they do sometimes put these consultations on their websites but if you're not computer savvy, and I don't always follow their websites, you may not even see these consultations … if you miss it on the websites then you don't get to have your opinion to have your say, so things get passed without you even realizing it*' (KI-F-13). Lack of relevant educational skills also prevented fishers from accessing funding to facilitate diversification: '*we keep getting told about these pots of money from Brussels, but we can't see where the angle is to get at them … all these people … seem to know where these pots of money are. And we are always getting told, "Oh, here is this money for fishermen", but where, where do we find them?*" (KI-F-65).

5.3.4 *Social*

One IFCA respondent ascribed the infighting that takes place between community fleet members as innate territorial rivalry: "*I think that human nature comes into it and there's going to be some people who will manifest distrust or even worst, who are if you like, threatening their territory in some way. So it is a bit of a problem and I think that will never go away as that's what a lot of people are like*" (KI-IFCA-110). Another IFCA respondent attributed lack of social solidarity to fishers' competitive environment: "*I think the problem with these communities is that they're not communities. They are different parts of the communities ... They are essentially, very often, a lot of people competing with one another. So they cooperate only where there is advantage"* (KI-IFCA-111). There was a lack of trust between fishers: "*I don't think they trust each other. I don't think they trust each other at all. They are all fighting for their piece of sea and they're all fighting for their interests within that piece of sea*" (KI-IFCA-104). A fisher participant explained that for some communities, this disunity is a recent phenomenon: *"the fishermen were a close-knit community and I don't think it is that way anymore*" (KI-F-93).

An IFCA officer attributed fishers' lack of social solidarity to their innate individualism and self-reliance:

'*They tend to be very individualistic. They tend not to show willingness for example to*

get together as a group and maybe set up fishing cooperatives … I think that it's ingrained. I think the part of the country that we're in, it's quite remote. I think it goes back in people's genes. You know, down the decades and the generations, where they've had to be very independent, they've had to go out and do their own thing really to keep head above water. To get bread and fish in their families' mouths so to speak and therefore it's a little bit against the grain for them to think in terms of, oh yer, well if I was to link up with him next door and him in the next port, we could maybe set up something that would give us greater strength moving forward. That's not really in their make-up to do that' (KI-IFCA-110).

This self-reliance was linked to competitiveness within the inshore fleet: '*Fishermen aren't like a lot of people in a lot of different industries, in that they don't stick together. In other industries people stick together and share things. But in fishing, they all think that they are in competition together*' (KI-F-68). A fisher respondent reported that a lack of unity across their community prevented the establishment of a FA: *'It would be a help. But they wouldn't agree here. Fishermen wouldn't agree here'* (KI-F-77). Another respondent said he had no desire to join a FA: *'I've never wanted to, never, not once. I always just keep meself to meself. I have never even thought about joining any groups'* (KI-F-95). Where FAs did exist, they were often moribund: 'There *is a little association here that might be disbanded as they don't have any meetings. It's physically just a waste of time now'* (KI-F-89) - or fractious, which made it difficult to act as a united entity: '*As soon as somebody falls out with somebody else, it's like a school playground here. So we are not totally united and it's not a good thing … lack of cohesion will kill them in the end*' (KI-F-39). Another respondent blamed free-riders for undermining the solidarity of FAs:

'Say we had four separate buyers and they wanted your product. So say instead of you having hundred and twenty pounds a tonne, someone else would say well I'll give you £125. And it was a healthy competition. But what's happened now is the buyers have all got their heads together and said, well, we'll give you £90 a tonne take it or leave it ... There isn't anything we can do about this, because you see you will always get the greedy person. You can say right we'll all stick together and say no, you are not having them at that price. But there is always the greedy person who will say, yep, I'll take the £90' (KI-FAL-2).

Such local divisions left inshore fishers vulnerable: '*That's their weakness. As they don't stick together and they don't have a single voice, so they don't have a voice. And that's the trouble and that is why their quota has been allowed to be decimated. And that is why with the wind farms, whilst I wouldn't say they run roughshod over the fishermen, they put them exactly where they want them*' (KI-M-67).

Participants also noted that mutual mistrust prevented collaborations between neighbouring communities. One respondent said that this driven by mutual hatred due to past feuds: '*when* XX *used to go to* [their neighbouring community], *they used to stone them. You laugh but it's true. There was a lot of rivalry. We all wore different coloured jumpers and you didn't wear that colour in that town*' (KI-F-64) - as well as more recent issues: '*we had a gentleman's agreement and that has just gone out the window with these ... guys*' (KI-F-64). A respondent explained how ill feelings were stoked when their community saw other areas benefiting from grant schemes and that benefits were not fairly shared out: '*£9 million pounds of European money has just been allocated to XX ... but we don't really get anything of that here even though we helped secure that funding. Any kind of funding goes elsewhere ... We have to fight tooth and nail for scraps*' (KI-F-83).

Some inshore fishers expressed disappointment at the lack of local support for their cause: *'We don't feel supported'* (KI-F-13). Respondents said some towns and their tourist visitors did not appreciate their local fishing fleets: '*tourists don't come down*' (KI-F-70). Respondents felt that the local community did not fully understand what blows they had suffered: '*You get the council or the locals getting up in arms 'cause a factory is shutting or a shop is shutting, but that wind farm put ten boats out of business, with two crew on each boat. Plus, all the shore side services and the crab boilers and pickers. And the number of people that that industry supported. Nothing. They don't see it. You ain't got a bloody great big factory with 50 obvious people working in it. But it's just as destructive. This is just as disastrous. They don't see us*' (KI-FAL-72).

5.3.5 *Political*

Participants also spoke of their political weakness as a result of a failure to unify nationally: '*we just can't seem to get people to stand together*' (KI-F-59), blaming differing agendas for presenting a chaotic grass-roots voice: '*Different sections of the fleet have different agendas so the industry has never been united. It's made up of different individuals and different types of fishing*' (KI-M-20). NUTFA was established to represent the inshore fleet at a national level, but they were accused of failing to represent everyone in the sector: '*Not everybody's a member of it. They never have the full voice so their weaknesses will be that they are not unified in their approach*' (KI-IFCA-104). NUTFA was accused of pursuing a biased focus, concentrating on the quota crisis: '*they have never had a presence here. We never hear from them ... They are more white fish. Their main*

*interest is more quota, so they are not interested in boats that go for shellfish. They have a specific issue and we don't play part of tha*t' (KI-FAL-81). NUTFA were also accused of having a geographical bias towards the south east at the expense of the rest of the country: '*That's why I got out of NUTFA … they concentrate on the south east. And they have got the worst problems down there in terms of quota, but they are incapable of representing the rest of the country effectively and efficiently*' (KI-FAL-99). Respondents also explained how decisions were made without members' support such as NUTFA's controversial alliance with Greenpeace: *'I have the odd chat with NUTFA but that Greenpeace thing worried me. I wouldn't trust tree huggers as far as I could throw them'* (KI-FAL-72). Respondents regarded NUTFA as politically weak: *'I've spoken to other people and they have all said that they are so lightweight that they are not worth bothering with*' (KI-F-73). Some respondents said they had withdrawn from NUTFA: *'I used to belong to NUTFA, but I thought they were a waste of time so not any more'* (KI-F-54). One fisher observed '*it has been noted how few members NUTFA actually have on their books*', yet despite this, NUTFA were still: '*treated as the voice of the under 10 metre fishermen'* (KI-F-44).

Another national fishermen's lobbying organisations is NFFO, but according to respondents, they are predominantly focused on the concerns of the over-10 metre fleet: '*The NFFO supposedly represents the whole of the fleet but they don't, their money comes from the big boats ... they care about the people that put the money in which is predominantly foreign interests. If 30% of the UK quota is held by one vessel and that vessel is in the NFFO, and he pays his percentage to the NFFO, are they going to care about him* [inshore fisher]*? No, they're not ... its business at the end of the day isn't it, it doesn't come to morals or the individuals, it's all down to business*' (KI-FAL-16). Respondents complained that the NFFO was not genuinely interested in representing the under-10 metre sector: '*Because we just feel that they weren't doing nothing for us. They just bypass the under-10 metre fleet*' (KI-F-47); *'they are not the inshore fisheries friend; they really aren't*' (KI-FAL-63). Several fishers said they had left the NFFO: '*we used to be in the NFFO years and then they didn't want the under 10s in there so we left*' (KI-F-96).

Inshore fishers reported how this all made them politically powerless: '*the smaller you are, the more vulnerable you are, the less kick you have*' (KI-F-88) and insignificant: '*there are very few votes in fishing … so it's not really seen as a big issue*' (KI-IFCA-104). This

meant: '*them ministers up there don't listen to us*' (KI-F-7). A merchant respondent said this left them with no one fighting their corner within the political sphere: In '*our government, not one of them would stick their head above the parapet and get that for us ... no one is interested in us and we don't have anyone fighting for us. We are just forgotten. The fishing industry is forgotten*' (KI-M-60). A fisher respondent explained how this left him feeling electorally unimportant: '*Sometimes, I feel like a fucking piece of seaweed, I get treated like a piece of fucking seaweed. Well, if I'd been an important piece of seaweed, like a lord or a farmer, I'd get looked after. There's not many lords or fucking farmers round here. Fishermen aren't landlords … It's just fucking shit*' (KI-F-7). Another respondent remarked that: '*the only marine mammal that doesn't have a protection order on it is a fisherman. We are the only marine mammal which doesn't have legislation protecting us. We are an endangered bloody species*" (KI-FAL-72).

5.3.6 *Demographic*

Another internal weakness is demographic, the ageing profile of the inshore fleet: "*The average age of skippers is high and there doesn't seem to be a lot of second generation fishermen coming through ... the age structure of the industry. It's becoming an aged industry*" (KI-IFCA-108). Participants spoke with sadness of the reality of their community coming to an end: "*One of the big fears of the under tens is that, we have ten potters working out of here and six of us are coming to the end of our career. I'm 65 at the end of this month*' (KI-F-77).

This was attributed to two factors: firstly, a lack of interest in youngsters joining the inshore sector: '*I don't think there will be any more fishermen after my generation. What's to attract them?*' (KI-F-59). Youngsters were deterred from joining the sector as it was difficult to draw a living from it: '*Relatively few people are coming into the industry now, which is understandable because it's so difficult to make a living from it*' (KI-IFCA-109). It also demands unsocial hours with high levels of time-consuming bureaucracy: '*Who wants to work unsociable hours, where you don't know if you are going to get paid at the end of the month and then you are up against a load of red tape all the time*' (KI-M-67). Moreover, these hours are unpredictable: '*with a decent job ashore you got set hours. Monday to Friday. They could tell you in six weeks' time when they got days off. Whereas in the sea it's 24/7, especially in the winter as the weather dictates everything. So you*

could be inshore today, tomorrow, Friday and then even if you have plans over the weekend, if the forecast for Monday and Tuesday is bad, everything has to change and you have to go out to sea. You have to work the weekend' (KI-F-90).

Instead, potential young skippers entered more reliable marine sectors: '*I know some of the younger fishermen who now are skippers on the wind farm boats as they can earn a regular salary, a very good salary of £40,000 every year. They don't want to do it. It's very boring, just running people back and forwards to the wind farms to do maintenance and stuff. They would rather be fishing, but with fishing they don't know if they are going to get an income one month to another ... So we have no younger people coming in*' (KI-M-68). Crews were also hard to source: '*Crews have gone to the wind farms. Those who can have gone to the wind farms. All the young ones*' (KI-F-70). Those who do join the fishing industry are often quickly disillusioned: '*It's just there are no young people coming into it and the ones that we do have coming in have watched deadliest catch trawler men and think they can make a fortune. Then they get their wages and they get such a shock that they don't come back*' (KI-F-6).

5.3.7 *Physical*

The final internal weakness of the inshore fleet is physical – its geographical logical reach is restricted by the size of its vessels (although this is less consequential for the super-under-10s): '*A small boat is not nomadic; it can't travel like a larger boat. A larger boat will chase the fish. It will work out of one port and chase the fish in another, whereas an under-ten, he will work out of his own port and sleep in his own bed at night. He will just work days and that restricts him to twenty miles within his port. So how they work is the fact that they can change overnight to a different method of fishing*' (KI-FAL-63). Geographical limitation is a barrier to diversification: '*The downside of our fleet here is that there isn't any room for diversification. It is a very strong shellfish ground and there isn't a lot of else for them to catch. You got crabs and lobsters*. *The velvets boomed ten years ago, and like a swarm ... but they seem to have moved on ... We have looked at mussels* [*Mytilus edulis*], *but the North Sea is not very kind and we get battered quite a lot. There are a few prawn* [*Nephrops norvegicus*] *and squid* [*Loligo vulgaris*] *but there are not enough and difficult to catch and very seasonal. So we are stuck with the crab and*

lobster really' (KI-M-79). It also meant that they were particularly vulnerable to spatial restrictions: "*it's the little boats that suffer … the bigger boats, they can steam 50, 60 miles where we can't"* (KI-F-95). This was illustrated by the installation of a network of MPAs: *"Because with MPAs, you just move somewhere else, you know, and an inshore fleet can't do that"* (KI-IFCA-107).

5.4 Conclusion

In contributing to the growing literature on the vulnerability of SSF communities around the world, this chapter discusses two categories of vulnerability through the eyes of the key informants: external threats, which come from outside the fleet; and internal weaknesses, which exist within the fleet itself. The most serious external threats included capital barriers; displacement and access issues; blunt fisheries measures which restricted the flexibility of the small-scale fleet; and the top-down arrangements for decision-making used by government agencies. Whilst fishers reported a wide array of external stressors, the thread which ran through the majority of the responses was how inadequate the participation mechanisms within the decision-making process were, which undermined the notion of a democratic process, creating an imbalance of power, leading to management measures which were inappropriate for their particular circumstances. Other key challenges such as inadequate quota were a symptom of an ineffective participatory infrastructure, rather than the primary cause of discontent. These unsatisfactory participative arrangements aggravated internal challenges such as mistrust which already exists at a grassroots level, and this in turn further undermined fishers' capacity to unite and challenge decisions which harm their livelihoods. In the next chapter, we will examine what strategies fishers have adopted to deal with these threats and how such strategies of resilience are not always sustainable.

Chapter 6. Resilience

This second data chapter examines respondents' responses to the vulnerabilities outlined in the previous data chapter, dividing them into three sets: (1) passive resilience; (2) adaptive resilience; and (3) transformative resilience.

6.1 Passive Resilience

6.1.1 *Introduction*

At first sight it may appear that passive resilience is a pessimistic response, in that it is not so much a form of resilience as an admission of defeat or lack of resilience – by contrast to adaptive and transformative strategies, both of which are proactive responses: adaptive resilience being a determination to adapt to the straightened circumstances by seizing whatever opportunities present themselves; and transformative resilience being a campaign to overturn the straightened circumstances and create a proud new future for SSF. However, this narrow interpretation is not representative of the breadth of passive strategies observed by this study and many passive strategies were in fact quite positive, indicating that fishers had not surrendered to untenable external circumstance but instead continued to work as they always have in the face of adversity. That said, not all of the strategies evoked were positive ones and accordingly, this section divides into two parts: (1) destructive passive coping strategies; and (2) constructive passive coping strategies.

6.1.2 *Destructive passive strategies*

Fishers reported carrying on their operations but stopping engaging with management or their associations: '*I never go to the meetings. I just don't want to go any more as it is a waste of time. It just feels like you are wasting your time. I just think you just need to accept what they come up with and just grin and bear it. I am not interested in what goes on in those meetings anymore … I think most of the times the rules come out and you just have to accept that*' (KI-F-89) - preferring to spend this time fishing instead: '*All it will be is that some people are more prepared to sit down in a room and talk shit for hours than others. I don't want to do that, mate. I want to go fishing. 'Cause we can't be arsed, mate. We just want to get on and fish. Well, the trouble is you know, like I said, you just want to*

go fishing. You don't want to be pissing about with having things come down interfering with what you are trying to do. In the summer I can be working 14 hours a day' (KI-F-34).

6.1.3 *Constructive passive strategies*

Passive resilients explained that they were averse to adapting to new conditions (adaptive resilience) for a range of reasons, such as a commitment to sustainable methods: '*What they don't realize is that small boats like us are the best conservation you can get. The herring* [*Clupea harengus*] *fishing here has been going on for over 500 years, there's nothing more sustainable than that. The lobster fishing here has been going on for hundreds of years, we don't catch that much*' (KI-F-13). Furthermore, some fishers claimed that their operations enhanced local wildlife: *'That's like our mussels. We have been doing mussels for eight years. And the amount of birds that we feed and more or less keep. There are 300 oyster catchers every day. All natural. They know us. These conservationists don't really know what they are doing, as if it weren't for fishermen, half these birds won't even be here*' (KI-F-74).

Other passive resilients explained that they sustain themselves through the personal pride they drew from their profession:

> *'It's survived historically by men living in those areas, being prepared to go out in boats to catch the fish and bring it in and feed the community. So when we use the word "industry" we lose sight of what we are. We are a food-producing sector full of what I consider to be very brave individuals who pit themselves against the elements and all that the weather can throw at them and come up with a product which is wonderful, a wonderful source of food ... You have to have a lot of guile, a lot of skill, a lot of bravery and a lot of intelligence to survive the ocean and produce a catch of fish that will cover all the costs of the day and the business and provide for your family*' (KI-F-21).

Fishers saw their work as a way of life: '*I have always said that the thing about fishing is that it ain't a job, it is a way of life. Not waxing lyrical about the old boy in his sou'wester and his boots and us all sitting around singing sea shanties, with a small boy on his knee ... but it is a way of life*' (KI-FAL-72). Indeed, they could not see themselves doing anything else: '*It's not just a job, it's a way of life. That's why we are still here. There were 15 boats here at one stage and when the fishing is good everyone comes out of the woodwork. But this is a way of life for us ... This is what we have done. We don't know how to do anything else*' (KI-F-58). This was a job they did as an act of love: *'We must love our*

jobs and we must love being at sea' (KI-FAL-41) and this love affair keeps driving them onwards: '*It's getting harder and harder, I honestly think is it really worth staying in the industry the way it's going and I love the job, that's the only thing that keep me here'* (KI-F-19). For some there was never any question of doing anything else: '*I don't think I would ever do anything else really. My mother always told me it was a waste of a grammar school education, going to sea. Perhaps she's right but I wouldn't change'* (KI-FAL-72). A fisher explained that he was aware that there were easier ways to make a living but to him other jobs were never an option: '*I like doing it and that's the trouble. Anybody that's fishing, they don't do it because they've got to do it, they do it because they want to do it. It ain't the easiest thing in the world to try and get down there and earn a fiver ... You do it 'cause you want to do it. You're not doing it because you're making a fortune. It's a way of life*' (KI-F-34).

Some respondents described fishing as an addiction: '*Fishing is a very difficult thing actually to give up. It's like a drug in many ways, because it's like an adventure. It's a boy's adventure and once you are committed to it and your life is given over to it, everything you do revolves around it and it's almost impossible to give it up, because you come to shore and your next moments are that you are looking at the weather planning when you can get back out there again*' (KI-F-21). Fishers said what drove them was not money but '*buzz*' and '*street cred'*: '*You see it isn't money that drives us. It's the buzz. Yer, we are there for money but we are also there for that buzz. And if you don't like that buzz then you won't go out fishing. As there are some times when you are dog-tired and fuck all is going right and you can't give in because you have dragged your crew out on a Saturday and you have to prove yourself. It's about street cred and if you ain't got that drive in you; you will never make a skipper. You won't. I wouldn't have me life another way*' (KI-F-77). One respondent said fishing made him feel like a rock star: '*It's the rock style lifestyle ain't it! Getting up at two in the morning, six days a week. I love it as a job*' (KI-F-10).

The optimism of passive resilients was also founded in the specific ecological conditions of their target grounds: '*we are lucky here as mainly crabs and lobsters live here and there isn't a quota for that ... I think that we have been lucky by the fact that we never have relied on fish or pressure stocks*' (KI-FAL-72). Geography also afforded others access even when others were unable to work. For example, a respondent said he was based in a sheltered bay which meant that when other target grounds were inaccessible because of

bad weather, he could continue to prosecute his local grounds: '*I mean like today with the weather as bad as it was, I slid out this morning and hauled some gear closer to bring ashore, where I know those guys in … wouldn't even contemplate going to sea today, so you can sneak a day in here where the others won't*' (KI-FAL-12).

Another respondent reported that in their area there was no threat of nomadic fleets: *'at the moment we are not under pressure from scallopers and trawlers'* (KI-M-79): because management had put measures in place to protect their local small-scale fleet's access: *'I see this bit of sea protected pretty well round here. Especially our bit of sea. We have a no-trawler ban to stop trawlers working across our grounds. This has been successful*' (KI-F-64). For example: '*the Lyme Regis boats are right in the middle of a 60m closed area, so if they're trawling, they've got to travel a long way offshore before they can start fishing'* (KI-IFCA-104). One respondent explained how closed areas benefited their static gear fishery both in terms of increasing productivity: "*The upside is as because everything is so stringent, that surely the stocks are replenishing and that there has been a restock of the sea*' (KI-M-67) and protecting their fishing grounds from more destructive vessels: 'S*o far it has been all the stuff they have done … Like where they have closed areas. It's all been really positive for us*' (KI-F-44). Another geographical advantage was a lack of sensitive ecosystems so they had not been subject to any conservation regulations: '*We are fortunate as we don't have any eel grass* [*Zostera marina*] *here and we don't have much contact with the environment groups*' (KI-FAL-42). Some communities reported an influx into their fleet: '*you've got some young people going into the business which most places are finding it difficult to get, but that's mainly because it's a shit way of life*' (KI-FAL-26). One respondent said that in his community, the number of young recruits had increased: '*There are certainly more youngsters around than there used to be, since ten years ago*' (KI-F-27).

Another possible factor explaining the persistence of barely profitable fishing is the psychic gratification of being admired by tourists and sightseers:

> *'It has a big effect on tourism. You see the tourism posters for XX and it's all based around pretty fishing boats, pulled up on* [beaches in] *pretty fishing ports. And people do like to come and watch it and they do like to come and see what's happening with the industry. When the boats land up here on the beach and are winched up the beach and unloaded, there are a lot of people who are watching that. That's the reason why there are big viewing platforms around the harbour here. So that people can see into*

the XX fish basin. I mean, the days have gone when you are allowed to stroll around a fish quay anymore because it's just too dangerous. But there are viewing platforms where people can stand and watch the boats and they are always really busy. I mean you've only got to have a boat refitting alongside the wall here and there will be holiday makers hanging over the wall here, talking to the fishermen and asking them what they're doing ... I think the theatre of the fish market more than anything. You get a lot of film crews coming down and requests from people to try and see it. They now do fish market tours which have made it onto the Observer *list of top ten things to do in the area ... come and do a market tour of XX … if you have never seen it, it's exciting. It is different and it's not something that everyone is used to ... it's part of the industry that people don't really see. Everyone sees fishing boats going out and bobbing around and they are all wearing yellow sou'westers and catching fish'* (KI-IFCA-105).

6.2 Adaptive Resilience

6.2.1 *Introduction*

Participants expressing the adaptive mode of resilience actively searched for new ways in which to take advantage of the situation which confronted them. Adaptive resilient fishers adapt to changing circumstances by changing the way they operate, including their mind-sets, to embrace the new realities and adopt innovative strategies to exploit any opportunities that presented themselves. Unlike transformative resilients, adaptive resilients do not fight the new realities, but constantly adjust to them. The ways in which adaptive resilient fishers adjust to changing circumstances are many and varied. That said, not all of the strategies evoked were positive and accordingly, this section divides into two parts: Firstly, constructive adaptive coping strategies are discussed. This section contains seven broad categories: operational flexibility; reducing overheads; quota tactics; marketing strategies; future proofing; inter-sectoral diversification and fisheries local action groups. Secondly destructive adaptive coping strategies are discussed within the context of two categories; operational flexibility and reducing overheads. Unlike destructive passive coping strategies which were connected to fisher's disengagement with both their associations and external groups, here destructive adaptive strategies were solely related to how operational arrangements were pursued.

6.2.2 *Constructive adaptive coping strategies*

6.2.2.1 *Operational flexibility*

Operational flexibility was said by respondents to be embedded in the very being of an inshore fisher: ‘[the fishers] *have done it so many times through the centuries*' (KI-IFCA-106). An IFCA officer said SSFs had a pronounced capacity for innovation and adaptability: *'they are very flexible, so they have developed the ability to be pretty multifunctional and to capitalize on opportunities'* (KI-IFCA-107). One respondent saw this as the key to their survival: *'I think there are more intelligent fishermen who are innovative and see opportunities and grasp them. I think it has always been an industry that has to change with the times, and some people don't like change, but I think that if you are going to succeed you have to'* (KI-F-40). Another IFCA officer explained how he admired the fleet's determination: *'I think their sheer courage and bravery and determination in getting out there, in what I think is still the most risky occupation bar maybe one or two that anyone can do anywhere, just fills me with admiration all the time. Their resilience, their ability to overcome setbacks and really just to keep going in the face often of disaster'* (KI-IFCA-110).

This versatility was illustrated in several ways, such as inshore fishers adapting with the seasons: *"you can jump from one fishery to another and in an ideal world you would do one fishery in the summer and another fishery in the winter. You would work the seasons*' (KI-FAL-63). This elasticity allowed them to operate all-year round despite their geographical restrictions. Operational flexibility was also used to survive quota pinch points by moving to targeting non-quota species when allocations where low: '*The one reason we're probably more successful down here with the small boats is that quite a lot of the fish we catch aren't on quota ... like red mullet* [*Mullus surmuletus*]' (KI-F-29). Another example is the shift from fin-fish to shell-fish: '*there are several who had trawlers and changed over to pots, just because of the restrictions the MMO was putting on us*' (KI-F-97). Some communities illustrated great foresight and acted early: '*They transferred from white fish to shellfish very quickly when they saw that there was going to be a problem. XX just up the road has only just started to realize that you can convert to potting and they are starting to move across but they are 10 years behind us'* (KI-FAL-81).

Interestingly, some inshore fishers made this shift for moral as well as economic reasons: '*for the last ten or twelve year, I've been at the lobster pots. But the previous five years to that, I owned my own trawler. But due to the quota restrictions by the MMO or Defra as it was then, I personally felt that it was better to get out of it as I thought it was going to lead*

down the line of having to go illegal. And I wasn't really prepared to do that as I try to lead an honest life. So I thought going to the lobster pots was a better venture as we could do things legally' (KI-F-97). However, fishers were aware that this shift may be a temporary win because quotas may be imposed on shell-fish: '*We are lucky here as mainly crabs and lobsters and there isn't a quota for that. But how bloody long is that going to last?*' (KI-FAL-72). Moreover, an IFCA officer explained that this adaptive strategy may have reduced fishers' future options: *'The under-10 metre fleet is quite strong in its ability to change methodologies on the hoof. But it's also a bit of an Achilles heel as … they have been more and more painted into a corner*' (KI-IFCA-103). This was because of the government's license capping policy, whereby those who temporarily shifted their operations from fin-fish to shell-fish risked forfeiting their fin-fish licenses, leaving them exclusively reliant on shell-fish: *'A few years back, the UK government reviewed the under-10 metre licensing system and many of the vessels in our district had their licenses capped, which meant that they couldn't access other species or lost any sort of level of access to species which meant basically the majority are now almost exclusively reliant on shell-fisheries'* (KI-IFCA-108). This has put greater pressure on shell-fish stocks: *'as people have fallen out of fin fish licenses and got shell fish licenses, there is an awful lot more effort on smaller grounds'* (KI-IFCA-105).

One of the most successful forms of adaptive resilience was illustrated by over-10 metre vessels taking advantage of decommissioning schemes to move into the inshore fleet as super-under tens when regulations made their sectors uncomfortable: '*the super under-10s could just go and buy 700 pots and wipe out small-scale activities*' (KI-IFCA-111).

Experiment is a classic feature of adaptive behavior, and several respondents referred to inshore fishers' willingness to experiment with new fishing techniques: '*Every year, you might just try something a little bit different and you might just find it works just a little bit better than how you used to do it. You keep testing your working practices*' (KI-FAL-99).

6.2.2.2 *Reducing overheads*

Many respondents spoke of the importance of reducing their overheads. One method discussed was family members collaborating to share jobs out amongst themselves that

they might otherwise have to outsource, such as accounting: '*my husband does all the wheeling and dealing and I do the paper work*' (KI-FAL-1). In one case, fishers were able to solicit free legal advice from family members: '*My daughter and nephew are … lawyers, making sure that* [lawyers] *are not shafting us ... they are working on this for fre*e' (KI-FAL-61). Another respondent explained how they were able to cut costs by sharing skills across their community: *'Being able to help each other, because not everyone has the same strengths. So I'm good with engines and the next boat is useless with engines but he's good with electrics, so yer, we help each other and it keeps the costs down … There is another fishing cooperative in XX and we do try to all work together … work together to keep the costs down*' (KI-F-6).

Other fishers explained that they were able to bring costs down by targeting species which had low cost gear: *'a whelk* [*Buccinum undatum*] *pot is fantastic- it's the only thing that will catch a whelk. It's a light weight pot, it don't cost much to make. They are cheap as the trawlers throw them around out there and smash them up so they need to be cheap'* (KI-F-53).

Elsewhere, fishers capitalized on opportunities developed by others. For example, a respondent drew on initiatives run by his FA to reduce his overheads: *'The association used to buy the fuel in so if you were in it then you got it a little cheaper*' (KI-F-98). Another respondent said that a grant had enabled him to set up a processing business for crab meat: '*direct market isn't really available to us, no, so you gotta try and make the best of what we are catching as possible. So we process all our own crab meat, so we don't send any crab meat away. But to be fair we set that up with the help of a grant, so we got a small processor out the back of the house. That's my missus' job and that all goes locally. So we do shift all our crab meat locally which is good. So local hotels and restaurants and local people. So we got quite a nice little business going on there. And we sell direct too to people coming on holiday. You do build up a little bit of local trade*' (KI-F-37).

6.2.2.3 *Quota tactics*

Some fishers interviewed outlined the strategies they drew on when quota allocations were unfavorable such as engaging with the quota leasing arrangements: '*I have got an option*

that I can lease it from somewhere, from someone who might have it and isn't going to catch it, which is a good thing, cause it means that that fish doesn't have to be thrown away' (KI-F-21). A quota holder defended his leasing out of quota as enabling adaptive fishers to continue fishing:

> '*If they can't go fishing, then we can't have a fish market. So I am not doing it for altruistic reasons, I'm doing it to try and keep everyone in business...Personally we don't run quota to make money. We run it for access to the fish ... There is no profit on it whatsoever. In fact, quite often, cause I feel mean doing it, we end up ... subsidizing them. But if I don't give quota to these fishermen ... the whole of the fleet will stop*' (KI-M-51).

6.2.2.4 *Marketing strategies*

Respondents explained how they had adapted their marketing strategies to take advantage of different market opportunities. Some shipped their produce abroad, thus benefiting from the strong prices offered on the continent: '*They have an export market. But it hasn't really been dented by the EU financial crisis; there haven't been any hiccups from that. They still want to buy the live animals. Chances are, if you go to a restaurant in Paris, you will be eating* [our community's] *lobster'* (KI-FLAG-82). A participant explained how this strategy was possible due to their close proximity to international markets: *'France is only 32 miles from here. The fish goes down to Dover and we are only 18 miles from Dover and that is where the ferry goes from. So the lorry goes round and picks up the fish and runs over to France and can be fresh on the market in the morning. So we are lucky here'* (KI-FAL-63). Others reported taking advantage of their close proximity to London and the high prices they received from its market: 'A *lot of it gets exported straight into the London restaurants*' (KI-F-83). For others, the opposite strategy was adopted – selling their produce directly to their local market: '*selling fish more locally, like directly through the local restaurants rather than it having to go to a market a fair distance away*' (KI-FLAG-5). One participant explained they were able to access the best market by a scheme run by their FA getting the community to share the cost of a van: '*We share a vehicle that takes the fish down to XX ... we try to get the costs as low as possible but get the best prices back for the goods that they are selling*' (KI-F-6).

These marketing strategies exploited the unique advantages of inshore fishing to create a niche market: '*I think there are some people who are very good businessmen and they*

work a lot on developing unique selling points for their products and have developed quite a bespoke market's (KI-IFCA-107). They promote the freshness of their products: '*The inshore sector brings in their fish daily straight to the market … in our case, we fish it today and people eat it in the evening and that is where the strengths of the under-10s lie … that we are harvesting daily th*e *best quality seafood that you can buy. It's alive and it's fresh*' (KI-F-21). Fish quality was critical: *'what you have to try and do is make sure that what you are selling is good. So the prawns are good and the fish is clean and it's a good size*' (KI-FAL-4).

Fishers reported that they also capitalized on their superior environmental credentials as part of this niche marketing by promoting their sustainable practices, for example: '*the Cornish handliners, they fish using hurdy-gurdies and catch in a sustainable way. And they market their fish, they have little labels that say hand-lined caught in Cornwall. And you can add a premium for that. You get more money for it*' (KI-IFCA-106). Also, respondents asserted that the inshore waters are clean, which meant their produce was of higher quality than that sourced elsewhere: '*putting it bluntly, 'cause our waters are so clean and clear and there's no environmental issues here as well with it*' (KI-IFCA-106).

Local branding was also used to create a high value product: *'at the moment we've got XX kippers, which I think are quite well known, if you go to XX there is a famous smokehouse there, where the fish are brought in and smoked'* (KI-IFCA-110). This form of bespoke marketing means that low quantities may be more valuable than large quantities. In some cases, this involved locally arranged fish-focused food festivals: *'like the crab and lobster festival. That got a grant. So that is promoting the fishing industry*' (KI-F-64). An added advantage of this strategy is that fishers can afford to land less as the value of their catch has been increased: '*They have to use less efficient gear now, with big square mesh panels in, larger mesh, cod ends so they are not catching the bulk. But what they are catching is of a better quality. Their overall income* [has increased] *… they are landing less than half of what they were landing 20 years ago but they are making more on it … the quality has increased but the quantity has decreased*' (KI-FAL-99).

6.2.2.5 *Future proofing*

Participants were motivated to act sustainably to ensure the longevity of their sector: '*It's great to catch lots but if you don't look after the future then it is going to run out and we want this to carry on for a long, long time*' (KI-M-79). This saw some fishers actively embracing environmental regulations: '*There is total agreement with minimal landing sizes; you won't find any arguments from fishermen*' (KI-F-23), as these rules are guarantees of sustainability: '*we put the little lobsters back, they grow and then we catch them when they are the right size. The whole system works lovely'* (KI-F-97). Respondents admitted that their environmental stewardship mind-set is a recent phenomenon: '*More recently, the people are much more aware of that they have to look after what they got so they are not so blasé about what they are landing and landing stuff they shouldn't be landing. They are more aware about how to look after stuff*' (KI-F-37). An IFCA officer said this reflects the increasing environmental awareness that has occurred in society as a whole: '*The increased awareness of environmental issues in society … a lot of the industry ... readily embraces. They realise that conservation of stocks clearly is a major aspiration to ensure the long-term success of fishing activity* (KI-IFCA-110). Fishers said peer pressure kept them up to the environmental mark: '*I don't know anyone who lands anything undersized and sells it under the counter. You wouldn't want to as it's embarrassing to be found out and everybody would look at you and think – you're catching my next year's lobsters'* (KI-F-22). A participant claimed that this change of heart has left fishers in a very positive place: *'I think inshore we have quite a nice little fishery which is in good order really. Catches have gone up over the last four years, compared to the last ten years. So catches are actually better now than they were ... shell-fishing wise, with all the research done it looks like it has a good future. We have been working with our local sort of sea fisheries on a tagging scheme and catches have been monitored. And the juveniles caught are put back so everything is pointing to a decent fishery there for the shellfish' (*KI-F-37).

An IFCA officer claimed that younger fishers were more actively embracing environmental conservation than were older fishers:

> '*I think one of the good things that has happened in recent years, is that fishermen coming in as new fishermen, basically anyone under the age of 30, has had an education in which the environment is part of the curriculum … those people will have gone through. If you look at my cohort, people that are in their 50s, 60s, 70s, they didn't*

have the benefit of that … the younger fishermen ... he is very aware of the marine environment surrounding him and he is also very aware that he has to carry his activities out in a manner that is not damaging the marine environment … Fantastic' (KI-IFCA-103).

6.2.2.6 *Inter-sectoral diversification*

Inter-sectoral diversification means diversifying into non-fishing activities to supplement fisheries income. Participants who embraced this strategy said they did so because of the inconsistent nature of their industry: '*if you go to XX there are full-time fishermen who fish 12 months a year. We don't do that, because we are shellfish-centred and the shellfish feed, and you can catch them for seven, eight months of the year and that's it. You don't catch them in the winter and weather conditions are so bad here throughout the winter … It's definitely not a full time occupation; you've got to have another string to your bow'* (KI-IFCA-106). Some fishers referred to their fishing activities as only a part of a wider 'business portfolio': *'fishermen nowadays are not just fishermen. It is part of a business portfolio. There are very few single trick ponies any more. Most of them have several lines in the fire of which fishing is just one'* (KI-F-105).

One respondent reported diversifying into agriculture: *'my husband and my son fish through the winter and sometimes the summer. But he is also a farm contractor. You see we have to do two sorts of jobs to keep the income coming in'* (KI-FAL-1). Housing maintenance provided supplementary income for others: '*Some of us do a bit of painting and decorating in the winter*' (KI-F-11). Another was able to draw on his education in engineering: '*over the winter I am a tutor and a software engineer. You have a balanced approach to it - you need to have many strings to your bow. If the weather is nice and you go out fishing you do, if it isn't, you do your other job. You have to be adaptable*' (KI-F-35). Some took advantage of local tourism opportunities: *'so I* [fish] *during the winter then in the summer take passengers out, as in the summer the crab gear drops off and so you have to find different types of business'* (KI-F-10). Several fishers also took on survey work on behalf of management bodies: '*we hired their boats to go and survey those areas'* (KI-IFCA-111).

6.2.2.7 *Fisheries local action groups*

Fishers also engaged with the government-funded FLAG schemes as a mechanism to facilitate their adaptive capacity. For example, communities applied for FLAG funding to support diversification: *'through that over a million pounds' worth of funds have been accessed for a range of coastal projects. Some of those supporting diversification in other areas and that has been quite positive and we've played quite an active role in that programme*' (KI-IFCA-108). A respondent explained how FLAG grant money provided their community with easier access to the sea: *'so improvements in infrastructure will ensure long-term access to the sea. The fishermen themselves say it has a direct impact on their daily existence'* (KI-F-37). Another participant spoke of FLAG funds supporting a fish festival: *'you had the crab and lobster festivals. That got a grant. So that is promoting the fishing industry'* (KI-F-64). One participant explained how his local FLAG was involved in an experimental approach to recruiting crew:

> '*The FLAG is trying to help with that with its programme, Net to Plate, where it is going into the schools. The fishermen themselves would say most kids these days would never even think about going out into the boats … if they are not born into it, they won't do it. But the idea is at least to try and raise some interest to … put some future proofing into the sector … Something may come of it. But it's not the normal or natural way of how it would happen*' (KI-F-37).

Another fisher reported how a FLAG grant enabled his community to set up a cooperative organisation for training fishermen:

> *'I was involved in the FLAG from the inception on the board as a director, as we started to argue the case that fishing had changed, it had gone downhill. That European money might help us to put it back. And this area was awarded, 1.35 million. With this we started the cooperative up, bought the land and the office on it, so we can now hold all the training on it for fishermen ... we have the fuel, the ice and we are landing our own boats now ... We've got two chillers downstairs which are part of this office ... We have issued something like 300 mandatory certificates for people who are just coming into the industry and didn't have any certificates ... we have just finished two courses here last week and we are just about to start on two more other courses, as there is a continuing demand. And I think we have done very well'* (KI-FAL-4).

As well as providing funding, the FLAG scheme provided guidance and expertise: *'we know that through North Devon Plus, through other sources of funding and other opportunities, they in turn can draw down help and advice, whether that be business advice or advice on their legal structure if they want to form a group'* (KI-FLAG-14). One participant spoke of how an understanding of the way grants could be identified and won

was particularly crucial: '*That last IFCA meeting, there was a Tory council MP for North Norfolk and she was going on about grants for fishermen. Because we keep getting told about these pots of money from Brussels, but we can't see where the angle is to get at them. Or where they are ... You need a person who is used to doing that kind of thing. You need to employ somebody to find these pots*' (KI-F-64).

6.2.3 *Destructive adaptive coping strategies*

6.2.3.1 *Operational flexibility*

Some respondents reported moving to illegal operations in the face of tightened quota restrictions. For example, one respondent explained that faced with the prospect of not being able to pay his crew's wages, he ignored quota restrictions: '*I know if I get caught, I'll get hung out to dry. So what do you do? Do you chance it? Sometimes yes, 'cause you have to. If you don't bring the next two or three boxes up, what happens then? Your crew get nay wages. What happens then? They don't come back'* (KI-F-7). Another respondent admitted he breached regulations to avoid falling into debt: *'I have broken laws, cause of the stupid regulations that they have put us under … when you are running a boat, and you need 100 boxes of fish to give the crew a wage and they turn round to you and say you can only catch 50 boxes what do you do? Do you lose your boat, do you tie up and go into debt?'* (KI-F-78). Likewise, KI-F-21 said: '*I've fished illegally as there was no other way of fishing to make my business work*'.

6.2.3.2 *Reducing overheads*

Some fishers reported that when faced with non-financially viable operations, they moved to dangerous lone working arrangements: '*I fish alone most of the time. This has changed because of the lack of quota to pay crew*' (KI-F-71). This was deemed to be a health and safety issue: '*it's quite hair-raising when you're on your own I will say'* (KI-F-18).

6.3 Transformative Resilience

6.3.1 *Introduction*

In contrast to both passive resilience, which entails resignedly putting up with increasingly difficult circumstances, and adaptive resilience, which entails actively seeking ways in which to get round those circumstances and exploit new opportunities wherever they may be found, transformative resilience entails a refusal to accept those circumstances and instead pro-actively seeks to change them. In other words, transformative resilience is an avowal not to work within the existing system but to challenge it and either overturn it or at least modify it. We can distinguish between two kinds of transformative resilience: radical and moderate. Radical transformative resilience seeks to overturn the system; moderate transformative resilience seeks to modify the system. Respondents provided examples of both transformative actions and transformative aspirations. For reasons of space, I have concentrated more on the former, on grounds that actions speak louder than words. However, I recognise the importance of aspirations since without aspirations there would be no actions, and so I have briefly mentioned the most important aspirations that arose from the analysis of the interview transcripts.

6.3.2 *Radical transformative resilience*

Five forms of radical transformative resilience were expressed by respondents: self-governance; quota management; fishers' organisations; fisher attitudes; and management attitudes.

6.3.2.1 Self-governance

Respondents reported that leaving the EU would be the ultimate way of reclaiming control over the rules which dictate their operations, providing Defra with total autonomy: '*you need to pull out of Europe don't you? ... As they will never reform it, you can only pull out of it*' (KI-FAL-61). The campaign to leave the CFP was long-running: '*We asked time and time again as British fishermen, can we not get out of the Common Fisheries Policy and bring fishing back into the hands of the British fishermen? Back into the hands of the British people, back into our own?'* (KI-F-21).

Another form of self-governance was illustrated by the pursuit of community self-rule:

'*Quite frankly we don't need them* [the IFCA]. *We are self-regulating. They are living in the past, a lot of them, and these people on it. In the past the young lads knew to throw the small lobsters back. They never kept them. They voluntarily v-notched berried hens and threw them back. They would never keep a small crab. They do look after their own fishery so it was self-regulation. So all what this IFCA come up with is this stupid bit of plastic to put on a pot to justify their existence. It did nay good to the fishery. It didn't conserve anything. It made no difference'* (KI-F-102).

In the face of such perceived ineptitude, one respondent explained that in their area, they imposed their own rules to avoid management's inevitably draconian regulations: '*We proposed our own* [MPAs]. *We were quite ground-breaking and jumped the gun ... and we're like, we will give you this and we won't do that and this. So we were ... left alone as we gave them more than they wanted so they were happy for us to work it all out'* (KI-F-36).

A FA lead explained that his community also self-imposed their own grass-roots management system:

'W*e don't want outside governments so we made it happen that we have got together and we have made ourselves agree even though we sit on different sides of the table. We have made ourselves agree on what we have brought in and successfully achieved that as we don't want other people bringing in things … We've brought in a whole load of voluntary measures for v-notching and extended carapace landing sizes for lobsters. Oh, I mean there is a whole raft of things. Closed seasons in the winter. So we are doing our bit … We have put forward, I think it's eleven measures at the moment which are voluntary. Even like banning the sand eel fishery to help the sea bird colony and so on*' (KI-FAL-38).

Another FA lead explained how his community self-policed the rules they agreed to adhere to: '*We have some very rare birds off here and some of the environmentalists would like a total ban on netting off there, where you get those rare birds in the winter. Whereas we have drawn up a code of conduct with the IFCA and so the fishermen shoot their nets and haul their nets in the dark and if anyone catches birds they let the others know and they don't shoot again in that area*' (KI-FAL-26). Respondents claimed they were best placed to do so since they were personally involved: *'We're the best stock managers because we want the fish next year and the year after'* (KI-F-13).

6.3.2.2 Quota management

Many respondents called for a radical transformation of the quota system, presenting a broad range of solutions. One suggested how it should be allocated according to the sustainability of the fisher's method of fishing, drawing parallels with road tax:

> *'I think the ideal world would be that you give everyone a nominal track record and everything else is held by the pool and if you want more, you lease it at a nominal price ... and the amount of money you pay to lease* [depends on your gear] ... *if you are a chain beam trawler that does damage to the seabed - it's like a road tax, if you have a gas guzzler, then you pay more road tax - so it should be the same. If the type of method you use for fishing is like a dust pan and brush method and you don't do any damage to the sea floor, then you would get a better rate of leasing that if you used a chain matt ... If you do a better type of fishing then you get a better rate of leasing from the pool'* (KI-FAL-63).

Another suggestion was that the original inshore fleet (a definition which did not include the super-under ten vessels) be removed altogether from the quota system and be managed by effort control instead: *'the best way to solve it is to take the genuine under 10s out of quota altogether and run the inshore vessels on effort limits'* (KI-F-43).

An idea that gained more support was to overturn the current unfair quota distribution arrangements by renationalisation: *'the quota should be a national resource and should be owned by the government and the people of the country'* (KI-M-20), which would allow for it to be redistributed more equitably between the over-10 metre sector and the under-10 metre sector: *'you need to get all the quota back in one pot and then have it shared out again in a fair way'* (KI-M-67). Fishing communities in the south east worked with NUTFA to pressure the government to reassign quota, and they aligned themselves with Defra to fight the POs' challenge to the government's allocation of surplus quota from the over-10 metre sector to the under-10 metre sector. '*The government got taken to court and they won the day … And the government would have lost the day, but for NUTFA and Greenpeace. And Greenpeace was the bank balance. They bankrolled the barrister and it was a very good case. And it was the people that owned quota, they got it by the back door. And you can see how the system is so flawed up to date and I am amazed that the judicial review didn't just throw it all up in the air. But the government won the day, they won the day*' (KI-FAL-63). However, despite winning the legal right to realign quota, a respondent recall how their transformative attempts ultimately fell flat since Defra have failed to act on the legal ruling: '*Nothing happened with the judicial review. They backed*

down. They were making noises about taking quota off the big boats. Their excess quota, but they backed down. The government backed down. I just can't get my head round it' (KI-F-58). One participant attributed this failure to economic factors: '*They won't do anything about it. Because its big business*' (KI-FAL-63).

Another radical idea which gained momentum was to decentralise quota management. A respondent explained how they enthusiastically engaged with the MMO in 2014, spearheading a trial to examine the feasibility of communities managing their own quota known as the 'Catch Quota Management Scheme' with a view to reclaim the power of quota allocation: *'We… had the community quota project ... we had everybody, and we had 50-odd fishermen down the boat house. We'd all come round and I explained to them what was happening and everyone put their names down for it and we submitted it to the ministry*' (KI-FAL-63). However, a fisher explained that this initiative was thwarted by the rules governing the way quota track record is recorded (i.e. related to the vessel not the licence held by the fisher): '*When crunch come to crunch, it turned out that you could only set up the system on your previous track record. Because with the under-10s ... there is so much buying and selling, probably 20% of the boats every year changes hands ... So out of the 50-odd boats, we only wound up with about a dozen, ten of them that actually were able to join the community project, because they had enough track records'* (KI-FAL-63).

A respondent explained that Defra seemed sympathetic to the idea of community-management of quota:

> '*We had a meeting with the MMO here from Newcastle and said that we perhaps would do a better job if we handled it ourselves from here and they said well how would you do that? and we said a community quota ... But it would depend on what we could get allocated in terms of quota. We would manage it better but we would also work with the POs ... I think that one way forward would be if we could manage it ourselves and I think that they would give it to us. We met with their quota manager from MMO just a matter of five or six weeks ago and we went through it, and I said this drip-feed that comes in from the MMO every week - this and this is what you can catch and license variations and what have you - we can do a better job of that. They said, "Ah, well what you're after, you see is, what you are talking about is a situation like the POs". I think that I could get quota from the PO which would top up what quota we got from the MMO. Now it's what else we can get, by taking their work away from them. Because I think Defra want that. I think Defra want the industry to take the work on themselves cause of the current cost to them. There is also the argument that it hasn't been done all that well by themselves. So they are looking for solutions and for people that could drive it and I said we could do that*' (KI-FAL-4).

Some respondents wanted to establish an inshore fisher-run PO to operate at national level and obtain the same benefits as the over-10 metre industrial POs:

> *'If we get an inshore PO then … very quickly that PO will be stronger than any other PO - by definition* [because] *... 70-odd % of the fisherman will be in it so that way everybody feels empowered ... the only way things are going to change from them all being together and being strong enough to actually combat those who have got the money at the moment ... We're a long way down the route towards that: I think at the end of this week we should have a recognised body that will be a new company, that will be an inshore PO ostensibly and then we've got to recruit members, once we've recruited members we then become a recognised PO which will give us grant funding from the EU to actually establish that as a recognised entity. But so much depends on people signing up to it; if they don't sign up to it then we can't do it, I think we need 1,000 members, and it's only going to cost them £1 to join, to put their name to that paper, so then they become part of the body*' (KI-FAL-16).

Advocates of the inshore PO saw this proposal as a potential game-changer for the inshore fleet: '*There is talk of them forming a PO, which would be a very good thing as that would give them a bit of political clout. I would regard it as a matter of urgency and I think it is the one and only chance to protect what I would call the small boat fleet. It needs protection because in the end it is likely that its quotas will get swallowed up by the larger vessels*' (KI-M-20). However, such a PO needed to be given sufficient quota by the government: '*to make that PO work, the government, the ministry have got to put fish into that quota. Don't rely on their track records ... I would like to see the inshore PO set up, but in order for it to work the government must put up enough fish in there to make it work. And you got a notional figure which will allow it to work, but this figure must come off of everybody'* (KI-FAL-63).

6.3.2.3 Fishers' organisations

Respondents explained that they were only able to articulate and pursue such radical reforms by joining or forming collaborative arrangements: *'You are no good as single people. You can't fight anything on your ow*n' (KI-F-78). Two main mechanisms were discussed, one national and the other local. The national route was to join a strong national lobbying power. Some respondents affiliated themselves with NUTFA: '*At the moment most of the under-10 metre boats belong to NUTFA*' (KI-M-20). Others aligned themselves with the NFFO: *'We're all members of the National Federation of Fishermen's Organisations* [NFFO] *which is a national body and they represent people of all walks of life in the British Isles'* (KI-FAL-12). Participants told of how this body had supported

them fighting to transform their situations: *'I've only been a member of the NFFO for a couple of years ... and they've been excellent with us especially with this herring* [*Clupea harengus*] *and drift net ban they represented us very well ... we're lucky with the NFFO. I went to Brussels and the NFFO were there, Barrie Deas did a wonderful talk full of information, he'd done his research and it's thanks to people like that that we actually have a voice. It's my argument that it's people like Barrie Deas that support us, they're the sort of people we need because he has a passion for the industry. Yes, and the knowledge*' (KI-F-11).

The second mechanism was to form a local fishing council or fishing association (FA) to gain a local lobby: '*A voice which can stand up for you. To view your concerns ... you need local guys as you need people standing up for you*' (KI-F-97). Many respondents said they were better off as members of their local FA than acting in isolation: '*being part of the association helps people realise that whilst everyone out there is ... a direct competitor, in that they are all chasing the same crabs, they have more in common with their direct competitors than those other users of the sea who are not connected to fishing but are very interested in the fishing grounds'* (KI-FAL-81). Once established, FAs enable communities to mobilize against common threats: '*if we want to remonstrate about some idea that the government has got, we will use the association'* (KI-M-51). Fishing associations pursue transformative change by representing their community at meetings - including conferences abroad: '*We also promote our industry ... we attend conferences and lend support at Brussels conferences*' (KI-FAL-81). They responded to consultation exercises more effectively than individual fishers can: '*We reply to consultations and represent fishermen at meetings. We deal with the harbour authorities and represent the fishermen really. They need a focal point*' (KI-FAL-41). One respondent explained that his FA convinced his IFCA to grant them the power to make its own byelaws: *'As a fishermen's association we can make our own byelaws. We are the only ones in the country that can. Because we look after our own affairs they use us as an example to other places ... At the moment we have control over our own sort of thing*' (KI-F-37).

Another respondent claimed his FA had the power to reject proposed byelaws:

> *'We can as an association ... say that is not going to pass with us. We are not going to be happy with that and ultimately it is very hard for them to enforce so if they don't*

have our backing, it is not going to be feasible ... We had a meeting just before Christmas and there were a few byelaws proposed ... but we rejected them as we didn't think they were necessary. It was a pot limit and they were hoping to bring a law of a maximum landing size of lobster as well. But it was decided that it wasn't really needed round here and the size they proposed was so small that it wouldn't work here, and everyone round here is really keen on the v-notching and the IFCA guys actually said that they could prove beyond any doubt that there was a sustainable lobster fishery here, so we chucked the byelaws out' (KI-F-35).

An IFCA officer confirmed that on some issues, his FA's views were decisive: *'I tried to introduce a byelaw, which would tighten things up a little bit and they rejected it. "Oh no, we don't need it. Everything's working perfectly. Why bring a byelaw in when it's not necessary?". So I said "Well, fine"'* (KI-IFCA-106). Another FA was reported as instructing their IFCAs when managerial intervention was required: *'*[they] *got in touch with concerns about scallop dredging taking place in the district. As a result of that we made an amendment to require people who want to do that in the district in the future to get a permit from us under our new byelaws'* (KI-IFCA-110).

Some FAs exhibited considerable innovatory skills in their mission to transform an external threat. For example, when faced with a lack of control over escalating fuel costs, one FA bypassed fuel suppliers by creating a community-based fuel company. The head of this FA described how he positioned his community to take a leading part in negotiations with a telecommunication developer with an intention of using part of their compensation money to set up their own fuel company to supply themselves and fellow harbour users with cheaper diesel on the quayside:

'The fuel company was set up by the fishermen. It is owned by the fishermen. You can only be a shareholder in the fuel company while you're a member of the XX fisherman's association, that's the way we have the business set up. But the fishermen they received every year, whatever the profits, the dividends ... the glue that holds our association together is our company, our fuel company. The way that that came in was about 14 years ago, they were running a telephone cable … across to Belgium. Anyway they wanted us to not fish an area across the XX. So we said yes, our boats will keep clear of that but it will cost you. So we negotiated with them that we wanted a block sum, ten grand I think it was at the time. And they said too much, too much. So we haggled like you do and they wound up. And they said they would get it in within a week. But of course we know the ground and it is hard chalk and flint. Whilst the chalk is soft, the flint is a killer and so we said "No you won't". And they said "Yes we will". And I think it was about £1,700 a week we negotiated. Well a year later, they were still trying to put this telegraph line in, so needless to say we came out of it alright. So what we said to our chaps was that you can't have all the money. We're going to put 25%,

'cause we were desperate for a fuel company for fuel, 'cause we were having to buy the fuel from the barge down the harbour or I used to get a tanker in when I was fishing, me and my brother and a couple of the other boats, we'd get a tanker on the quay but it was expensive buying the diesel that way. So we said to the lads, we're setting up our own fuel company and we'll have a tank on the quay 'cause at the time they had just set up the new lifeboat house on the harbour. And where the old one was, that I pointed out, that blue shed was the old lifeboat, where the inshore boat was and that became vacant and we thought we would put a tank in there and set up a self-service system. So anyway we was going. We wanted to set it up with the pilot company. We asked the pilot company to come in with us 50:50, but I don't think they thought we were up for it, so they said no, but what they did do is they lent us the money, they lent us £20,000. So we said to our blokes, right, 25% of this money from the telephone cable has got to be used for the fuel company, setting up fuel services and you can have the rest and share it up between you. So we set up the fuel company, successful after the first year or two' (KI-FAL-63).

The local IFCA CFO praised the efforts of the FA for this work: *'they are bloody clever and they have used the model of all the fishermen own the company that provides the fuel in the harbour and it is that company which provides the backbone behind their association, which is then the glue'* (KI-IFCA-107).

Another FA set up a not-for-profit consultancy organisation to negotiate their own compensation deals with wind farm companies rather than be dependent on private sector consultancy companies:

'When we negotiate settlements for the fishing fleet, we add our % on, just as any consultant would do. But then again we do things slightly differently. There are consultants all around the country that will negotiate disruption payments for fishermen but they are usually then taking 10% of the payment for themselves. We don't do that, we add a fee on top of what the fishermen receive and bill the developer for that. 'Cause we make life a lot easier for the developer. By dealing with us, they are speaking to just one person, instead of 70. Their lawyers don't have to get round 70 boats to get 70 agreements signed. It saves them a fortune just by dealing with us directly. So we bill them, rather than the fishermen. So the fishermen get everything as they are our members, so we are acting on behalf of them ... we are a not-for-profit company, so it gives us a little bit of freedom. For starters it makes us efficient, so we cover our costs and that's all we need to do. We don't need to turn a profit and we aren't beholden to stakeholders. We simply need to pay our costs. Then any surplus we have gets ploughed back into the fun stuff, which is where the tagging programme comes from. And that's how we have a boat and a crew. So that is how we operate. There is a lot of freedom' (KI-FAL-81).

Another example of innovation involved a FAL playing politics with local political parties and the press in his campaign against the siting of a wind farm:

'We had a bit of trouble with [a wind farm] *a while back and I went to our MP. Now he's a Lib Dem and they love wind farms so he didn't really do anything. Now I thought I would have a bit of fun here, so got in contact with UKIP ... I happen to let slip at a council meeting to a Conservative councillor, that UKIP were being very helpful and that the Lib Dem MP had done nothing. Next thing I know; we have the Conservative chap on the phone. Is there anything I can do? I can come down and speak with you? So she got stuck in and had a bit of a go. Even though she didn't achieve a lot. She called us up the morning she was meant to come down and said something had cropped up and she couldn't make it. I said no trouble as we got a meeting with the chap from the* Telegraph*. He's come up from London with a photographer. So I said I had double booked anyway. So it's good you are postponing. So I hung up the phone and counted down on my fingers. Strangely enough her other appointment was cancelled not ten minutes later. But what amused me was the fact that I engineered both Conservatives and UKIP to get involved, still didn't hear anything from the Lib Dem. Then a couple of days later, some chap was upsetting someone from the lifeboat. Now I know the local paper quite well and had a chat to them about this issue. And they asked about the* [windfarm] *thing, and I explained about the Conservative lady coming down. I then asked if they had* [Liberal Democrats MP's] *number and they said why? And I said that he was the only one who hadn't offered us any help. You could always put this in your paper and that he should remember there is a General Election coming up. And he said would you like me to do a bit of stirring? I said, I couldn't possibly comment. I am just trying to help the poor old press. Then a week later, the phone went, and it was the* [Liberal Democrats MP's] *personal secretary! Oh hello, I am sorry I haven't been in touch sooner, but the* [Liberal Democrats MP] *has been on holiday for the previous two weeks. I know that he had been home for a week as this is XX and you can't do anything round here without anyone knowing. Now call me an old cynic. Now I wonder if the newspaper hadn't rung up if he would have ever have contacted me. No. Now this is why you need to be able to play politics whereas some of the local lads may not. But I am a devious bastard at times. You got to be able to stand out'* (KI-FAL-72).

Some FAs are very active: '*Since the last five years, it's been picked up by one of the local fishermen and now it's thriving. It's got lots of members. They meet* [formally] *twice a year, but really they meet every day, on the radio and so on and so forth. But two formal meetings and that's a really strong organisation nowadays. They are all part of it*' (KI-IFCA-106) - with high levels of participation: *'Most of the fishermen are part of the association'* (KI-FAL-63). The success of a FA was attributed to a strong leader: '*You need a strong leader for this*' (KI-M-67), able to negotiate on behalf of their members: *'they know the lingo to use'* (KI-F-37). These leaders must command the trust of their members: *'you have to have a certain amount of trust that the person sitting there is actually going to represent your interest* (KI-FAL-16) and exhibit an assertive nature: *'I am definitely heard; I definitely make myself heard'* (KI-FAL-99). FA leaders also needed to be experts in their field: '*If it wasn't for XX some might say we would be screwed. He doesn't get the nickname the professor for nought. He is smart about fishing definitely*'

(KI-F-98) - and be prepared to actively engage with management agencies: *'XX is on their committee so he puts your case forward*' (KI-F-98).

One community recognised the importance of effective leadership of its FA so much that it made the job into a full-time professional post, and turned the FA into a limited company:

> *'As the realisation for them was that there was an awful lot of paper work involved in understanding what is going on and they don't have the time to keep on top of that. They have their own full-time jobs and this is another one on top of that. So I did that initially as a part-time job and then doing my own PhD in the meantime. Then it quickly became apparent that it is not a part-time job, it is a full-time job. So we turned this into a limited company and here we are ... there is always a guy in the office, to field phone calls and chase things up as they just don't have time. It's not that they are not capable of doing it, of course they are capable of doing it, but it's just that they also have a business to run and a full-time job ... So having someone around to pick up the admin and read through the hundreds of consultation documents and summarise it as they don't have time to read them. And we provide a short summary that they can then read on their I-phones whilst they are out working. It's useful. So you have to engage with them, but it helps to have someone who has time to do that. And with things like stock management, again you have to take it seriously'* (KI-FAL-81).

Another FA secured a leader with specialist negotiation skills: *'my full-time occupation from certainly 1971 was that I was a full-time trade union official, looking after the dock workers ... you see I'm a negotiator, I'm an arguer ... I have worked in every industry and I have argued every case, whether its scaffolders who have been on strike or dockers. I have done all that, I've done it for years, I've got the t-shirt*' (KI-FAL-4).

Collaborative working relies on an ability to unite: '*the big strength we've got here is the unity'* (KI-FAL-81). This unity is based on mutual trust and support: '*they stick together and there is trust*' (KI-IFCA-106). This in turn was built on a basis of honesty between fishers: *'I mean if we ever caught a pot by mistake I'll always haul it in and give it back to XX*' (KI-F-18). This mutual caring and sharing is especially true of small communities: *'When you get to the smaller ports where it's more of a community*' (KI-FAL-16) - or where only a few fishers worked: *'There's not many of us so we try and work together as much as we can'* (KI-F-11). Where tensions did arise, successful FAs maintained this unity by enacting well-established conflict-resolving techniques: *'We were looking for designation of zones and I am trying to keep them away from the inshore area and they*

are trying to keep them away from the offshore area. So we had to come to an understanding to recognise each other's positions' (KI-FAL-4).

Nothing unites a local community more than a crisis: '*when there is something that bothers them they can become very active if you try and do something in their area that they don't like'* (KI-IFCA-109). For example, the threat of a wind-farm on prime fishing grounds electrified one community behind its FA in successful opposition:

> *'You will find that around the coast Fishermen's Associations coalesce around a particular topic and then fall away when it is resolved. This was around a survey that a wind-farm wanted to do, a solar survey that they wanted to run right through their grounds. So this cable route was going to come into here and they wanted to close this huge area in the summer months. And they announced that they were going to come in in a month and that everyone needed to move their fishing gear. And this caused huge problems and concern. Especially in an area like here where summer is the peak time. This was 2011. There was a panic about this as they were being asked to shift their gear away from a really profitable area at the time of year that they make the money that sees them through the winter. There was real worry about this. And there was a really arrogant approach from the developer, who seemed to think that they could just demand the sea cleared for them and that would be that! People banded together and came up with a very robust response to that and ultimately it didn't happen'* (KI-FAL-81).

As well as community collaboration, FAs that were most effective collaborated with external organisations: *'We're affiliated with the XX fishermen's association ... the XX fishermen's association* [and] *We're affiliated to the XX fishermen's association, so we all talk to one another'* (KI-FAL-63); with NUTFA *'they are another voice that can shout for us if we need it'* (KI-F-64); with NFFO: *'We have a relationship with the NFFO. So we are connected with them and I am a director of the NFFO as well*' (KI-FAL-81) and with the Harbour Commissioners: *'I was already dealing with the harbour commissioners'* (KI-FAL-4). A respondent explained how his FA's efforts to collaborate with local groups meant they were successful in their bid to get the MCZs they suggested pushed though, which offered their fleet and target stock further protection: *'We have the fishermen and the wildlife trust and all the stakeholders all working together. So we were one of the first lots to have our zones accepted, because we worked together to achieve that*' (KI-FAL-38).

However, not all FA's attempts at radical TR were successful, as one respondent ruefully reported, explaining how their conservation initiatives were rejected by their IFCA: '*We*

tried to implement some byelaws, but they got thrown out. We tried to push byelaws through to protect the reefs and ledges. They got thrown out so that the beam trawlers could have access to these sensitive areas. And we spent years trying to ban beam trawling inside the three mile. And I mean years' (KI-FAL-48). Another respondent explained how their continued campaign for pot limitation measures still had not yet been successful: '*That is one of the things we have put to them on more than one occasion to have that as a conservation measure. It's a good way of controlling the area. As if you make it unviable for a big boat to come in here by controlling the number of pots, you ain't going to have to do anything else as they won't go here. They work up to 5,000 pots*' (KI-F-64).

6.3.2.4 Fisher attitudes

In the absence of an effective FA, radical transformative resilience may depend on the characteristics of individual fishers. For example, KI-F-65 explained how he took on the fight to ensure that a proposed MCZ was used as a mechanism to impose a three-mile limit on trawlers which had badly impacted his activities: '*if an MCZ is controlled properly, they should be for our benefit. At least for the inshore grounds ... I have been pushing for the three-mile limit … I will be a pain in their arse till I get it. Just a thorn in their sides ... I put forward that we need a three-mile limit that you could only get access to if you were a beach-launched vessel. But my name was mud. I was called everything under the sun. But I couldn't care less, and I still wan't that to happen*'.

6.3.2.5 Managerial attitudes

Some respondents called for a radical change in the mind-set of managers towards the inshore sector: '*The solution needs to be more people who know what they are talking about*' (KI-F-7). Management regimes have to understand who they are managing: '*the first thing is that the MMO are the marine management organisation, they are in their title managers, so if you are going to manage, you have to have individuals at the top who understand what they are managing and they have to be connected and they have to have purpose with a view to producing a set of regulations which are going to be advantageous to society and the rest of the country*' (KI-F-21). A participant explained that in order to do

this, agency staff needed to shadow their fleet: '*That's what they need, a representative from each sector, whether you're shell fishing or whether you're white fishing, they need to have these people on board with them basically, they need to come back down onto the shop floor onto the boats and see how it's done*'. One respondent explained how his communities had put this into practice and taken their local fishery officers out on their vessels: '*Both* [IFCA deputy chief fishery officer] *and* [enforcement officer] *will say that they learnt more from* [inshore fisher*], than they did from sitting in that office. Both of them have said that to me*' (KI-M-49).

According to one respondent, a cultural change was required at the top:

> *'It must be to do with the hierarchy of the MMO because the foot solders learn from the person who is in charge. And if the person in charge has issues then it filters down the line till you have a situation where you have mistrust, lack of cohesion with the industry completely ... it's got to come down, and restructuring has got to come down from the top. If you want to go back to a working relationship with the industry, then they need to look at ... areas ... like the south west and up the east coast where I know fishery officers ... seem to have a totally different attitude. It isn't "I'm God and you will obey me, because I've got the right to do anything I like". There's an attitude of working with the industry and working with the fishermen cause there's a mutual concern, because we're not all criminals as we're deemed to be in the south east of England ... Until that mind-set is changed we are not going to get out of this ... I think there needs to be a change of attitude within the hierarchy of the MMO. Maybe a briefing with the MMO officers about a code of conduct which should be laid out'* (KI-FAL-48).

One community explained how they had attempted to build relationships locally by inviting MMO officers to local events, an attempt which was not reciprocated by the MMO: '*We had a photographic exhibition of fishermen and I put an invitation in for them to come to the private view but no one turned up. So we have tried to extend a hand of friendship to, saying come to the private view, because one of our members had passed away so we thought this was a good time to try and build some bridges. So we have extended our hand and nothing's come back'* (KI-M-49).

6.3.3 *Moderate transformative resilience*

Moderate transformative resilience is the strategy adopted by inshore fisher's respondents who seek to modify rather than overturn or replace the system. There are seven elements

in the moderate strategy: rebalancing participatory mechanisms; reducing bureaucracy; improving communications; quota flexibility; using fishers' knowledge; innovative marketing, and marine spatial planning.

6.3.3.1 Rebalancing participatory mechanisms

Fishers suggested that the government adjust their traditional participation mechanisms to provide fishers with a fairer share in the decision-making process: *'Government need to be experimenting with ways to meet with fishermen in a way that facilitates useful dialogue not just pushing the same format'* (KI-M-51). Fishers said: '*All you want is a fair crack. You just want to be listened to and seen to be listened to. Not just lip service'* (KI-F-65). Improved access to the IFCA committees was suggested as a way to start rebalancing, and one respondent suggested that communities pay fishers for attending for committee meetings (it is worth noting that this is already available but fishers were not universally aware of this payment):

> *'I think one of the biggest problems … lies with the fishing industry in that it is very expensive for fishermen, for active fishermen, to be representatives as it means losing a day at sea"* (KI-M-20).

Several communities reported that they got their FAL to attend their IFCA's committee meetings: '*the chairman of our association is on it*' (KI-F-35), through which they have been able to question management choices: *'XX is on the IFCA ... through him we complained about the permits*' (KI-F-101). Respondents said such attendance was necessary since it was important for fishers to be on the inside, not the outside, of decision-making processes: *'because half the time you are not going to hear what is going on'* (KI-F-93). As a result of this proactive stance, fishers in this community are now more informed: *'if I hadn't been on the IFCA, none of this would have come out'* (KI-FAL-1). One community reported how they no longer waited for the IFCA to call meetings: '*they* [the inshore fishers] *will tell our chairman and he will call a meeting and give us the opportunity to have our say'* (KI-IFCA-36). They have also invited their IFCA CFO to be a formal part of their association meetings thus ensuring they are kept abreast of the IFCA's work and interests: '*I'm the secretary or the scribe as I call myself. I do all the minutes and note-taking and everything*' (KI-IFCA-106). An IFCA officer reported that in his area, fishers regularly contact him about new fisheries:

'If fishermen want to fish a particular area or catch a particular sort of fish, they usually find out pretty quickly that they need to come and speak to the IFCA and find out whether they are allowed to, and where there are any regulations. We had a case where some fishermen wanted to access a razor [*Siliqua patula*] *fishery in the district which they thought was very large. Well, it turns out we had no regulations in place and we needed to go through quite a long process of scientific appraisal to see whether or not they could do this … we don't usually have to go looking for stuff to do; they usually come and tell us when they want things to happen'* (KI-IFCA-109).

Respondents explained the importance of a balanced IFCA committee: *'You need an environmental voice on the committee, but you can't have it slanted or else it will just be an environmental committee'* (KI-FAL-99). There should be equal representation of fishers and anglers: *''You would like to think that we would be allowed on the IFCA committee so we had a voice in that ... If there are going to be two anglers, then you need two fishermen'* (KI-F-39). Moreover, respondents said that generic fisher appointees were not sufficient, but that appointees should be reflective of the district's industry: *'It should be made up of people from every port and representing every type of fishing. There should be one guy from each of these types'* (KI-F-10). Several respondents explained how they tried to achieve equal representation within IFCA committees by putting forward specific candidates from their community: *'We wanted someone with the knowledge of round here'* (KI-FAL-1). This was seen to strengthen their position: '*we have a couple of good guys in there and I think that sort of thing strengthens us a lot ... they are all local people and they are all aware'* (KI-F-37). It is important to have people on the IFCA committees whose livelihoods are at stake: *'Have a look at who sits on the committee. There are people from all walks of life who whatever happens to the lobsters it doesn't mean anything to them. It won't change one penny in their pocket. Get the people who are going to be affected badly by the decisions and the fact that they may not be able to make a living any more*' (KI-F-21). One respondent said: *'I think the industry has got to think very carefully about its candidates. The people there have got to be really good'* (KI-F-39). Another respondent remarked that: *'you have to realise there is no them and us … You have got to work together and you can't let it get spoilt or else there will be nothing left'* (KI-FAL-2).

One respondent explained how his IFCA had listened to fishers' concerns and were attempting to get more fishers on their committees: *'There have been a few vacancies on the IFCA recently and to me there seems to be a bit of an effort to try and get industry representatives to fill those seats'* (KI-FAL-81). Another respondent explained how rebalancing already had an impact on his IFCA: '*XX is on the IFCA, so through him we*

have complained about the permits ... a Fishery Officer was jumping around here and making issues. And he was moved on as we complained about him' (KI-F-101).

Fishers also felt that the IFCA should have total autonomy over the decision on who is appointed to their committee: *'They shouldn't be chosen by the MMO for sure ... I don't understand why the MMO has the whip hand when they have less to do with the industry in relation to like the county council for instance*' (KI-FAL-48). Another suggestion by a respondent was to abolish voting in IFCA committees because fishers were always outnumbered:

> *'Voting shouldn't be there at all ... what happens is if you have to vote on something it will be debated and it will always come down to a vote and the industry will always lose as it is a numbers' game. How can four people outvote the other 18? And the other 18 always go along with what the expert says* [yet] *... the only thing he is an expert in is manipulation. So, no, it is not representative ... I changed the format* [of my FA]. *We have a committee of 14, but it is not a voting committee. Decisions are not based on a vote ... They are based on negotiation. You will sit there, and you can sit there till midnight, I don't care. But you have to thrash out a deal that is acceptable to all. So you sit there arguing for hours and hours as you have to get something that is acceptable as a compromise. But that is not how the IFCAs are run. Any of them. They are all voting committees'* (KI-M-51).

6.3.3.2 Addressing bureaucracy

Another element of moderate transformative resilience is the demand to reduce bureaucracy. For example, respondents said the management system should be made more intelligible to fishers by adopting layman's terminology: *'It would be better if they explained it more simply ... just don't complicate issues and put it straightforward like ... You have to go through so much nonsense to get there. It gets on your nerves when things could be so much simpler ... It just needs to be made more understandable and more practical to be honest'* (KI-F-37). Simplicity is also vital to enable fishers to know what their obligations are: *'Not because fishermen are simple folk, far from it, but because it's a complex thing and it needs simple rules in order for people to understand that they are fishing in step with and exploiting in a sustainable manner, but also for those in the enforcement side to understand when compliance hasn't been achieved and in my mind it's the old keep-it-simple, stupid. It's either open or it's shut'* (KI-IFCA-105).

Respondents also complained about the inconsistency of regulations between IFCAs: '*the*

Eastern IFCA has it illegal to remove from the fishery berried lobster. But if you go outside of six miles you can ... [and] *in North Eastern IFCA you can. So a bit of joined-up thinking would be good. If IFCA is going to do any good, you can have local byelaws but the trouble is that your local variations have to stop somewhere*' (KI-FAL-72). However, several different IFCA bodies reported working together to eliminate inconsistencies between them: *'We have a good relationship with the other IFCAs, very good. Obviously again, the south-west has done this but we hold something called a south-west working group ... officers get together once every six months and we discuss about what we are doing, any emerging works, anything about impact assessments ... and tried where possible across borders to harmonize byelaws for the stakeholders. Because otherwise it's pretty confusing ... You cross an imaginary line and then one minute you're allowed this and the next minute you're not. You can't always get away from that, but where we can, we try*' (KI-IFCA-103).

Fishers explained that they would also like to see the MMO speed up its approval procedure for grant applications: '*I would like to see them turn things around quicker. I would like to see them pay out for the grants quicker. Because people are going for grants as they don't have enough money, but they have to upfront the money. So they should pay out quicker. They do it the other way round in Scotland. I know there is a risk that people take the money and risk, but that is a minority. It would make more sense to send the schedule of work given to them and then pay up first. Otherwise it causes a cash flow issue'* (KI-F-80).

6.3.3.3 Improving communication

A respondent explained that he would like to see management increasing their engagement with his fleet: '*They* [the IFCA] *should communicate more, not just with their representatives. Sometimes we don't hear from them in months'* (KI-F-74). Communication, it was argued, was key to forging good relations between management and the local community:

> *'So taking the community with the organisation and getting support of the community. Making sure that there's the right communications there and that the community feel that they have appropriate buy-in and in return how that links to the appointments to the authority and that those are carried out in a way that the right people are on the authority. so the community has confidence in that organisation and its officers and its*

members particularly, to be able to progress what the local needs are and sit that comfortably within the statutory requirements of the authority' (KI-IFCA-112).

An IFCA officer said this needs to take place on a face-to-face basis: '*I'm firmly of the belief that the best way to communicate and engage with people and consult with people is face-to-face'* (KI-IFCA-110). One FAL urged the IFCA management team to appear at public meetings, despite (or because of) the flak they are likely to receive:

'When it comes to consulting fishermen on new management measures, they should be less afraid of talking to them, en masse ... Yes, they would have people disagreeing with them, but that is their job. When we have meetings with all our members, I accept that it is my job to stand up in front of everyone and get shouted at. That's life. When you are in charge of an organisation you need to do that. As an IFCA they are making decisions that are going to impact on people's livelihoods, so they need to stand up and get yelled at. And they will find that … there will be a lot less shouting than they think there will be. People will get heated as they are passionate, but most won't and quite a few people will agree with them and it will allow for a debate. You need a debate as long as it is managed properly. These public meetings are nothing to be afraid of. But I think they are afraid of them. They should accept the anger that they will get from some people but they shouldn't be afraid of it, as I think it will be a lot less than they think. The audience will be a lot more reasonable. It is intimidating standing up in front of a crowd, but it's kind of their job. If you are a leader, you should lead. You have to stand up and take the grief' (KI-FAL-81).

One fisher explained that communication strategies needed to go further and be held in all ports to maximise participation: '*It would be nice if you could have meetings all around the country. Different ports could have their own meetings ... It would be nice to be able to ask why about everything but we never get a chance or the opportunity as they always do it sometime when we are not here or we are out to sea*' (KI-F-10). Some IFCAs were praised for taking strides to achieve this: '*In every port, there are two or three people that run it and care.* [The CFO] *has made a point of going and finding that guy or guys in every port, who will tell him what is actually going on*' (KI-F-39). An IFCA manager outlined his commitment to communication: '*Talk. Talk to people. One of the things we've have done here … as I was quite aware that if I'm not careful my position gets quite isolated from the reality and people don't talk to me and I don't see people, I'm going on gut feeling. I don't like that. I'm not a control freak, but I like to understand what is going on out there … I hold twelve meetings around the coast … we go round twelve small ports and some bigger ports. The idea being that in the peripheries ... They know where to find us, but when you get out towards XX and XX and they know where to find us, but would they bother to drive eight, ten miles? No'* (KI-IFCA-104).

One fisher explained how he had some success in his communication with the MMO: *'I took the view that you get nowhere unless you're talking with people. I wrote to the MMO in October, no November in last year, saying I didn't like the decision to discontinue the skate fishing and that we don't want to be going down this road again next year, and they said can we come along and see you and so we had a meeting* ' (KI-FAL-4).

One suggestion was that communication strategies should take the form of group meetings rather than individual interviews, because fishers feel intimidated by lone interactions with regulators:

> *'When they consulted on the most recent byelaws, they wouldn't hold a public meeting: they held individual meetings with individual skippers and that is all that they would have…you have two guys in uniform, one of whom is in charge of enforcement and you as a skipper in an office. And they are asking you if you agree with the new laws they want to bring in. Now that is not going to get a great frank debate is it? "Oh, aren't you the chap who can inspect my catch and stop me going to see? Maybe I won't disagree with you, then" They might not do that but it's the perception. People said to me, well I am not going to say that I think it is rubbish because that is the guy who can make my life hell. So I am not going to say anything to him. So people didn't take up the offer of these meetings. What they should have done is have a meeting in the town hall'* (KI-FAL-81).

On the other hand, a respondent from another community explained how his fishers found public meetings intimidating and preferred one-on-one interviews:

> *'Most fishermen are a real dichotomy and they can be really noisy but at the same time, really shy and not many of them are well-educated ... That is why many of them ended up in fishing, as they are not very well-educated and don't feel like they had an alternative. Those people still have some genius ideas and they don't feel that they are eloquent enough to put those ideas forward and they get very self-conscious in these meetings. Which is why I always advocate, although neither Defra nor the MMO ever listen, but I always advocate that we should not have group meetings as the fishermen absolutely tie themselves in knots'* (KI-M-51).

A respondent praised his IFCA for providing drop-in sessions as a way of communicating in their area: *'This IFCA is really good at communicating and also pulling people in. they have had a few of these drop-ins ... it acts like a social event and it pull them all together. If only because they are scared that they might be missing something'* (KI-F-39). However, one fisher explained that all they want is just to be kept in the loop through written correspondence: *'they don't actually... have to write to anybody ... or write to him but they should do, I think every fisherman should be written to when a new rule comes in*' (KI-

FAL-16). Nevertheless, an IFCA officer said they often followed fishers' initiatives: '*we don't usually have to go looking for stuff to do. They usually come and tell us when they want things to happen'* (KI-IFCA-109).

A fisher said that managers ought to make clearer what channels of communication were open to the fishers: '*The fishermen need to know the right channels to use. And the other side need to facilitate access to allow this to happen. Not just think, "Oh, that is just another fisherman just moaning"'* (KI-M-67) - though an IFCA manager insisted that fishers already knew of the many channels available: *'They all know how to contact us. We are available by email, phone, walk in off the street, websites, through our members, so if they want to take it up at that level, they can go through the members'* (KI-IFCA-103).

One fisher berated the IFCA for failing to see that special kinds of communication were needed for fishers:

> *'We're a section of society that struggles to engage ... in normal methods or ... through normal mediums ... You have a responsibility to find the best way to engage with them ... For example, if they were engaging with something to do with the blind or the deaf, they would recognise that they have to provide ... consultations in braille and tell formats ... They would recognise that because the stakeholder base that you are trying to engage is predominantly deaf or blind ... they would have to alter the way that it's consulted. And that should be true for other sectors of the population. For example, there are issues to do with adult literacy. What you don't do is end up with a 40-page consultation document that people you are trying to consult with can't read ... I think that there are fundamental flaws in the way the government engages'* (KI-FAL-15).

However, one IFCA manager outlined how he strove to be inclusive: '*a lot of them seem to suffer with dyslexia ... So unofficially when they bring their statistics here, the girls will go through and make sure they have filled it in properly ... All our documentation and reports are in century Gothic type. Why is it in century Gothic? Because if you're dyslexic, it's one of the easiest types to be able to read*' (KI-IFCA-103). Another IFCA officer claimed to be sensitive to the needs of isolated fishers:

> '*Some people shout loudly and aren't affected. Some people are very quiet and are really affected. We find that all the time, so it's a question of undertaking that kind of salient analysis. Trying to get to an information exchange which is not based simply on who shouts the most. And you do that through* [dialogue]. *One of the ways I really like and I speak to the guys about and they have really done well using it, is evidence, not*

> *emotion. It's factual. So let's talk about how you use this site. Let's go down to your boat and look at the plotter. You know and if you're the loud guy in the corner shouting and there's the quiet guy in the corner, thinking about how he is going out of business, then it's the quiet guy that we are going to go and deal with*' (KI-IFCA-111).

An IFCA committee member explained how his association had embraced social media as a mechanism to expand its reach: *'We have moved into the age of social media. We have stuff out on Twitter and Facebook and all that sort of nonsense. We are trying to engage people in whatever the fishermen use, and get people to make comments'* (KI-F-40).

Some respondents testified to the advantages of improving communication between managers and fishers. For example, as a result of improved communication, an IFCA CFO received far fewer objections to his proposals:

> *'A lot more consultation on the management measures and lots of events in ports along the coast, asking for peoples' views and what people would like us to prioritise, I know from the new management in XX, that it met with a big positive response and we have advertised byelaws and the number of objections has been very low. And that is because he ran these pre-consultations, met with people and listened to their issues and then amended the rules in line with these. Then advertised them formally and had no formal objections'* (KI-F-40).

Another participant explained how his community had seen real changes to policies as a result of their input: *'The XX fishermen said that the information that the IFCA were using was from the 1970s so was no good. And we asked why are we amber-based on that, so they changed it to a green'* (KI-F-101).

A respondent urged management to give fishers advance warning of upcoming changes to regulations to enable them to plan their businesses efficiently: *'Even if they gave you a week at least you could try and organize your life around that*' (KI-FAL-12), though another respondent said fishers must take responsibility for this too: *'As long as you keep up with what is going on, I think you can see what is coming and put stuff in place to help yourself as much as possible'* (KI-F-37). One way this could be done was by the production of long-term management plans: *'we need four-year cycles at least. We need to say how we will deliver stuff, so people know what's coming and so we can plan the use of our assets and resources … i.e. strategic evidence-based* [management], *engaging fully and properly with the community with regular and effective communication*' (KI-IFCA-111).

6.3.3.4 Quota flexibility

Respondents who adopted a moderate transformative resilience strategy proposed modifying (rather than replacing) the quota system to make it more flexible, reflecting the fact that commercial fishing is an inherently unpredictable business. For example, some supported lengthening the short-term monthly allocations to longer time periods: *'If they gave us a year's supply of quota, then we could decide when the market is right, when the weather is right'* (KI-F-58). One respondent praised the increased flexibility shown by the government in giving fishers three months' quota at a time: *'They had a system last year where they would give you three months of quota at once which you could then determine how best to use, this was really good ... that gives the fisherman a bit flexibility to really plan ahead and manage their own fish … That three-month period gives you a hell of a lot more flexibility, so like if there is a bit of bad weather you don't lose your quota'* (KI-F-31). A fisher explained how he worked with the MMO to secure an increase to their key quota allocation: '*We've managed to get a bit more quota, we managed to get some unused quota reallocated two years ago*' (KI-FAL-15).

Other respondents said that the distribution needed to be decentralized to a regional level to allow quotas to be set in line with local availability rather than national negotiations: *'the quotas need to be realigned with the availability of fish, rather than the availability of paper fish. Need to be based on fact. The quota is out of step with reality*' (KI-F-21). Participants explained that a decentralized system would enable fishers to exploit sudden surges in stocks: '*the opportunities from healthy stocks are negated if you don't have access to them through access to quota. So you could have soles knee deep, but if the quotas stay as they are, you still can't touch them. And you can't discard them, so what are you going to do with them ... this is where your flexibility comes into it and this is what I am advocating*' (KI-M-51).

6.3.3.5 Fishers' knowledge

Another moderate transformative change demanded by respondents was for fishers' knowledge to be incorporated into stock assessments. In response to a criticism of a deeply flawed stock assessment system, respondents claimed that: *'The fishing industry has to be more involved with the science'* (KI-FAL-4). Fishers suggested that fisheries scientists:

‘*need to come back down onto the shop floor, onto the boats and see how it’s done*' (KI-FAL-12), since: '*The fishermen know more than the scientists about how many fish are about and about how some of the stocks are increasing quite well*' (KI-FAL-26). Some respondents claimed that when they had put these suggestions into practice, fisheries officers gained much from fishers: '*both XX and XX will say that they learnt more from* [fishers] *than they did from sitting in that office. Both of them have said that to me ... It ought to be encouraged for them to come out with us*' (KI-M-49).

A related illustration of moderate transformative resilience is the demand of fishers to take part in scientific survey work using their own boats: '*We can be working with them* [scientists]*, be giving them all the knowledge we have, we could be doing good scientific work ... given that we are out there every day observing the stocks, we would be ideal to use to monitor fishing effort and fishing strategies and fishing policy, but instead we are treated as if we are numpties with no brains in our heads, as if we are not capable of doing anything*' (KI-F-21). Also fishers have asked to join scientists doing fisheries research on the scientists’ vessels: *'we have asked them on several occasions, that every time there is a* [scientific] *survey if we can have a representative out on the boat. And they have said yes that’s fine, but we still see the boat out there surveying, and they don’t ask us*' (KI-F-59).

Several respondents reported that collaboration between fishers and scientists was already taking place: *'There have been very encouraging partnerships between the fishermen and the scientists and that has to be the way forward*' (KI-M-20). For example, in the cockle (*Cardium edule*) fishery, such collaboration enhanced the quality of the data: *'When you have quite a large area to be surveyed, you should rely on having the industry surveying it. It’s already happening in XX with the cockle fishers’* (KI-FAL-4). Another project involved spur-dog (*Squalus mitsukurii*) research: *'I am involved in a few scientific projects to try and change things. I am involved in a spur-dog project. We have been banned from catching them, but there are an abundance of them. We have been banned as they have been put on the endangered species list. And there is no need for that; they are going to die of old age far before we get them. There are massive big bitches out there'* (KI-F-71). Another project was lobster tagging: *'at the minute we are participating in a lobster tagging project ... We know that the stocks are sustainable so why not prove that they are*

sustainable? Sure, it is a little bit of work associated it but if it proves the point' (KI-F-35). Some fishers even contributed to the funding costs of IFCA research into v-notching of lobsters:

> *'There were several* [IFCA fishery officers] *down here asking for donations for the v-notching scheme, when they buy them back from the fish merchants and put a v in their tail. And if we catch them, then we have to put them straight back to sea. And I have contributed now for about ten or twelve years. Every summer. As it's to my advantage as I want to be fishing in this job as long as I can. And we feel if we do our little bit then it will help us in the long term. So they ask the fishermen for a small amount. Not everyone agrees with them, but I do and fair play to them. They send a lovely little card when you send the money and I like to think that we are doing something for our own benefit'* (KI-F-97).

An IFCA official testified to the value of such collaboration in another project on rocky reefs:

> *'We brought in a byelaw prohibiting mobile gear on rocky reefs ... It was ultra-cautious and very precautionary and therefore in closing down complete areas ... to bottom towed gear, there are areas which we have therefore closed down which aren't rocky reef, in other words, sand and muddy ground etcetera, to which that prohibition shouldn't apply. Therefore, we reached out to the local fleet and said "Look, we've made this byelaw, it's what we felt we've got to do but if we can we will open up areas in the future which are not rocky ...* [but] *are sandy etcetera areas which there undoubtedly are. Can you help us with this?" And the industry were able to come forward very effectively and point us in the direction where we would commence our ground-truthing and other research activities to try and establish those areas, with a view in due course, if we can, to open up areas to trawling activity to resume there. The knowledge that was displayed to me, and I've been in the job a fair while now, but if I'd ever doubted it, the knowledge that they displayed about their grounds was tremendous, so I think that is one of their great strengths'* (KI-IFCA-110).

Another IFCA officer confirmed the high quality of data obtained by a collaborative project on MCZs: *'The quality of the data and the evidence that we provided, for the MCZ, to Defra, we were the only IFCA in the country that got five out of five, the top marks for every single sub-site in our marine conservation zone. So we got a gold star for that. I mean it's lovely ... it's not just my work on that; a lot of it was that the fishermen helped us. They're brilliant*' (KI-IFCA-106). This persuaded another IFCA to hire fishers to run part of their survey work: '*we hired their boats to go and survey those areas and then opened them up because there wasn't reef in there. And they know there wasn't reef there because they were able to fish across it and it was also on the distal edge of the reef*' (KI-IFCA-111). An IFCA officer suggested that the IFCA could even share equipment and

boats for research purposes: *'there are things like equipment and boats that could be shared. Like I don't necessarily believe that we need our own boat. So more partnership working of equipment and information'* (KI-FAL-38).

Collaboration not only took place on ecological data but also on economic data, as an IFCA officer reported:

> *'We've got a monthly survey which fishermen run but we process, that looks at what they catch, where they catch it and how many people and what the price of fish are. And we have been running that for two years. The fishermen do it all and it's all anonymous but what we do is we provide the infrastructure, so we pay for that fishermen's liaison person and we then process all the stuff and then then give it back to them ... So we've got two years of data there and that's really good ...* [It] *gives a really clear economic model and what it shows is that the good inshore fishermen are working on option values in a fishery'* (KI-IFCA-107).

These data were thought by respondents to be of use by the IFCA in deciding the site-specific allocation of quota: *'The only way they'll get that information if they take the word of the fisherman, see where they're catching it and when they're catching it, cause ... you'll catch cod and whiting inside there up to the beach at the moment, but say three months down the line ... they'll be gone, gone off into deep water'* (KI-F-11).

There are also examples of communities themselves organising and funding research programmes, which they then feed into their local IFCA:

> *'We collaborate with them on our research programme. We have been clear with them from the start that our research programme is only ever any good if the data get used. It needs to be used by the IFCA as they are the ones that have the power to manage things. So we share our data with them. We are engaged in a number of collaborative projects with them. We had a meeting with their scientific officer yesterday about a range of projects. There are things we can do that they can't. They don't have a boat down this end of their remit and it's hard for them to get their boat down this end of the district. Well, we have a research boat here and if we want the IFCA to manage this area well, then we better help them out getting some data. We are a not-for-profit so we can do things quicker and cheaper than they can. We can be reactive. They haven't hired us; we work in partnership instead. We have worked on some joint grant applications together, but they don't hire the boat from us. A lot of the stuff they say would be useful to them; we can easily collect whilst we are doing something else. The stock assessment stuff, that's the mainstay of what we do and we just give them that data. The IFCA have measured 7,000 lobsters last year as part of their boarding duties. This last year we measured 20,000 ... in an organised sampling programme with regular sampling projects, with very good comparability of data. We just have the capacity to do that and they don't have it. They are facing big budget cuts and they have a huge problem with staff retention. We can just get stuff done … we were asked*

by the IFCA yesterday to conduct a study into how long it takes them [lobsters] *to regrow their limbs after they shed them. So that was at their request to us. Great idea and it came straight from the IFCA and it's a great example of working with them*' (KI-FAL-81).

One respondent explained that they were undertaking their own research to prove how sustainable their fishing is: *'we are doing our own research to check if it* [our fishing] *is or isn't* [sustainable] *and if it isn't then we will do something about it. But the fact that there is a willingness to find out if it is sustainable or not, is in itself strength'* (KI-FAL-81). Another respondent claimed their research data were more reliable than those of CEFAS: *'We have the fishery industry group which is unique to the country and they have their own research vessel, which does research on behalf of the fishermen. They have got more robust data than CEFAS as to what is going on up here. We found that out at the shellfish conference down in Greenwich ... the more that CEFAS talked, the more we realized that the data that XX had round here is more robust than what they got'* (KI-F-80). Another participant explained how they had been collecting their own data for years: *'We've got records and anecdotal things going back donkey's years … we do observe what's going on around us*' (KI-FAL-3). Respondents said fishers have the best knowledge of the grounds - *'We know it better than the electronic charts'* (KI-F-78) - and of the fisheries they prosecute: *'The fishermen know more than the scientists about how many fish are about and about how some of the stocks are increasing quite well'* (KI-FAL-26). Fishers explained the benefits of incorporating fishers' knowledge into decision making processes: *'The solution needs to be more people* [involved] *who know what they are talking about. Like this cod recovery project. We're being told that we have fished to destruction yet the cod's all over the place, but you can't catch it as there's still a cod quota on'* (KI-F-7).

6.3.3.6 Innovative marketing

Respondents spoke of schemes they had implemented to change their marketing system. One such scheme was where fishers cut out the middleman all together and sold their produce themselves directly to customers: *'Some of them are doing very, very well. The lot I like to call the go-getters. That is the people who are very proactive and either will find niche markets or will do their own selling*' (KI-IFCA-103). In some locations the FAs were the driving force, setting up direct selling schemes for their communities: *'I think the only way you could do it, is to do what they do in other ports is to set up a fisherman's cooperative and sell directly to customers but then you are incurring the costs of*

delivering to lots and lots of small outlets. But you can govern your prices better' (KI-F-37). Elsewhere, fishers set up electronic auctions to maintain good prices for high quality under-10 metre landings:

> *'There is a slightly better system, which they use in Plymouth and Loo, which is an electronic market so that the buyers are not actually sat next to each other. Because whilst buyers are in competition with each other, as the fish comes in … you can negotiate with the guy sitting next to you to bring the price right down … if I take this box you can take the next one and I won't haggle the price up for you. So then both you and your neighbour can pay bottom prices for top-end fish. And it's in all of their interests to not push the prices up at all. So it's not a fair bidding system. Now with an electronic market like they have at Plymouth, you don't know what the other is bidding, so it's like a silent auction … It works in our favour as we land high quality fish compared to the deep sea trawlers so we get the higher prices. Then we have the advantage as it is hours caught as opposed to days old stuff the trawlers bring in. When your boat's name comes up, and all the buyers will know the boats' names, because the buyers aren't talking to each other ... people go for the fresh stuff'* (KI-F-22).

6.3.3.7 Marine spatial planning

Respondents reported efforts by fishers to engage with the MMO lead marine spatial planning (MSP) scheme by demanding that fishing rights should be factored into the decision-making process:

> *'Our biggest opportunity ... is to get more engaged with management of our fishery ... I think we need to be engaging with management more. And we are. We have a lot of projects going on. One of which with Defra, which is looking at designating protected fishing grounds which will be set aside from development work. It's feeding into the marine spatial planning project that the MMO started. The focus of this marine spatial planning process is largely to outline the areas of the sea bed for either wind farm or aggregate extraction. Those two seem to be the priorities of the marine spatial planning process. I argued quite strongly that fishing should be included in that too. What they are arguing about is which bit of the sea should we give to gravel extractors and which to energy companies. Well we were there first. You are talking about which bit of the sea we are currently using you are going to give to someone else, effectively in perpetuity. That bit of ground assigned to the gravel collectors will literally be taken away and sold and wind farms are taking ground away for 25 years. You are effectively giving that bit of ground away; you are privatizing it. But we were using that. That was our ground. Legally it's not that simple, but we have fished that ground from here for four generations. So our argument is that they should protect our interest as well. Now we have some interest from Defra and we are looking at how that could be incorporated. There are some lines which say something like when it comes to fishing, the ability to fish in this area could be given priority unless a pressing reason which would prevent this occurs. And pressing reasons have been things like, wanting to build a wind farm. So in other words you will fish there unless someone else wants it. So the right to fish is*

trump-able by everything. So I would like something more secure in there. And I am fighting for that from the MMO. So trying to get to grips with fishing rights and management opportunities is an opportunity we have' (KI-FAL-81).

6.4 *Conclusion*

Three main resilience strategies which were pursued by fishers in response to the vulnerabilities outlined in the previous data chapter were discussed in this second data chapter. It was surprising that a number of fishers were observed to adopt positive passive strategies, for example, continuing to work as they always have in the face of adversity as a consequence of commitments to protect traditional technics. That said not all of the strategies evoked were positive ones and some fishers have adopted destructive passive stances whereby they disengaged with management. Likewise, adaptive techniques were found to be both constructive (such as swapping between quota and non-quota species depending on regulatory restrictions) and also destructive (such as fishers moving to dangerous lone working arrangements or even breaching legislation in the face of economic restrictions). Adaptive strategies were also observed to come at a high price: constant adaptation is very stressful, time-consuming and costly. Transformative resilience was found to be a highly risky and costly process, and examples of transformative *actions* were far rarer than examples of transformative *aspirations.* In the next chapter we will examine what is significant about the findings described in this and the previous chapter.

Chapter 7. Discussion

7.1 Introduction

This work contributes to an immense global collection of SSF resources in several key ways. It initially outlines similarities and differences between small scale fishers in the north and in the global south, in particular highlighting a primary link of insufficient participatory mechanisms which undermines the notion of a democratic process. It makes another original contribution to this global picture through its examination of different forms resilience takes by introducing the notion that resilience is not always sustainable and in the struggle to stay above water, fishers may adopt destructive techniques which must also be considered as coping strategies. It also examines the highly fluid nature of these arrangements over time as a consequence of both internal and external factors which serve to both facilitate and impede these endeavours. In these contributions, this work provides an original holistic perspective on the resilience strategies adopted by small-scale fishers against a backdrop of seemingly deepening social dislocation and marginalisation.

This research also makes an original contribution to the smaller but growing collection of work exploring the English case. It disagrees with commentators who attribute the English SSF's vulnerable state primarily to management measures such as inadequate quota arrangements. This study shows how these management measures are themselves symptoms of an ineffective participatory infrastructure, rather than the primary cause of discontent. This work contributes to the literature on fisheries co-management in the English SFF, through its in-depth analysis of the IFCAs, one of the most devolved regional fisheries and environmental management structures found in Europe, and its investigation into the social cohesion of the fishing industry and the representative capacities, leadership and engagement strategies of fishermen's associations.

These contributions are discussed in detail in this chapter through six main themes that arise from the findings in the two previous results chapters: (1) An examination of the source of the English inshore fleet's vulnerability; (2) Factors underpinning strategies of resilience; (3) Overlapping resilience strategies; (4) Strategy phase shift trends; (5)

Sustainability of resilience strategies; and (6) IFCA influence on community resilience strategies.

7.2 An Examination of the Source of the English Inshore Fleet's Vulnerability

When placed within a global perspective, it is clear that the English inshore fleet are not subject to many of the threats experienced by foreign fleets, especially those operating within developing countries, such as extremes of climate change (Jentoft and Eide, 2011); ethnic tensions (Aizenman, 2007) and consequences of inadequate access to health and educational services (Salas et al., 2011; Mills et al., 2011). However, once these are put aside, one common denominator was identified, linking the English context to a global one - a sense of powerlessness and marginalisation resulting from a governance system pursued by both management bodies and fisheries associations which fails to facilitate effective fisher representation and participation in managerial decision-making (Chuenpagdee and Jentoft, 2015; EFRACOM, 2013; Thorpe et al., 2007; Islam, 2011). Whilst this persists, the English inshore fleet and their dependents face an unsustainable future, in line with the global trend of this sector. Inadequate participatory mechanisms were found by commentators to yield unintended consequences for both management and fishers. A failure to include fishers in a meaningful and fair manner into decision making processes risked the production of inappropriate policies which undermined traditional stewardship (Chuenpagdee and Jentoft, 2015) and seasonal operations (such as quota arrangements). It also risked non-compliance as fishers were unaware of rules becoming material consideration, didn't understand said rules or failed to engage as deemed them to lack legitimacy. It also risked management pursuing arrangements based on an incomplete ecological understanding as by omitting fishers' knowledge; they failed to incorporate local and historical context. Amongst fishers and their communities, this process risked facilitating disengagement, fuelling local fractions (as fishers presumed unequal access/favouritism across their community) and risked fishers becoming subordinated to industrial fisheries and other marine users (Reed et al., 2013; Gray et al., 2005).

Ineffective participatory mechanisms were deemed to be the primary perceived cause of the English inshore fleet's vulnerability. The IFCA committee is a decision-making platform designed in a co-management model to facilitate a decentralised, participatory mechanism for relevant stakeholders to manage inshore waters in a fair and considered manner. However,

the findings of this study chimed with that of Rodwell et al. (2014) and Phillipson and Symes (2010) who report that the IFCA's current system of management does not encourage fishers to become fully integrated into decision-making mechanisms. Fishers said they were discouraged by several factors including the MMO's application process which was perceived to be complex and bureaucratic. The timing and location of IFCA committee meetings together with the large quantity of paper work requirements and financial sacrifice of attendance serve as further obstacles to fishers wishing to apply for posts. IFCAs reported struggling to recruit fishers representing the breath of their districts operations to their committees, which risked an unbalanced committee which led to decisions being made without inputs from fishers with relevant SSF experience and understanding of their situation. Groups who were able to put forward paid fisher members gained an advantage to influence the decision-making system. This imbalance was exacerbated by the presence of councillors on IFCA committees, immediately assigned seats and on average holding 47% of the voting space. This was deemed inappropriate as they did not appear to hold relevant expertise.

This system also often relied on the assumption that fishing associations would liaise accordingly with their wider community however; grass-roots governance mechanisms employed in turn were not always set up in a manner to enable messages to be disseminated effectively. This meant that these communications were not always propagated in a fair or useful fashion. This risked members of the same or neighbouring communities being seen to have unequal levels of access to either the IFCA committee or the stakeholder consultation process. This in turn could breed feelings of resentment, which undermined unity at a community level. These frictions also took place across neighbouring communities if mechanisms allowed them access whilst other communities were left out in the cold so to speak.

Other barriers to IFCA consultation processes were also reported. Some respondents criticised their agencies' internalised attitude of their fleet, explaining how it left them feeling subordinate to other interest groups. This finding fits with the results of previous studies which reported how the English administrative authorities treat the inshore fleet as an "underclass" (Symes and Phillipson, 1997; Salas et al., 2007) (of course the IFCA's can't be blamed for all of this but they are a micro-study which enables the actions of other bodies to be better understood).

Fishers said this made them question their ability to influence their working conditions, contributing to their feelings of disempowerment and moves to disengage (Gray et al., 2010). These findings are in line with the literature which demonstrates that fishers are only willing to take advantage of participatory systems, however accessible, if they feel that in doing so they will be influential (Pelling, 1998). A further effect of failure to effectively engage was increased levels of non-compliance as fishers do not always understand why regulations have been taken forward, and there is little sense of ownership at a grass-roots level. This chimes with other researchers' findings that compliance in fisheries is closely linked to regulatory legitimacy, and in particular to the involvement of fishermen in institutions such as "co-management" systems (Jentoft, 1989; Pinkerton, 2011; Nielsen, 1994; Jentoft and McCay, 1995; Ostrom, 1995; Nielsen and Vedsmand, 1997; Hanna, 1999; Nielsen and Mathiesen, 2003; Karper and Lopes, 2014).

Despite fishers holding invaluable local ecological and fisheries expertise gathered over many years of practical experience, their advice was deemed by some managers to be of low value because it was largely anecdotal and localised and also since they were not trained scientists. By ignoring fishers' knowledge, however, the IFCA were accused of failing to properly engage with all available sources of evidence (Johannes et al., 2000; Symes and Phillipson, 2009). This meant management decisions were sometimes a poor fit with the needs of the industry and inappropriate for the site for which they were designed (Davies et al., 2018; Chuenpagdee and Jentoft, 2015; Jones et al., 2010). At a time of austerity and declining governmental resources, the research capacity of government agencies is increasingly limited (Armstrong et al., 2013), and management can ill-afford to ignore fishers' potential contribution to scientific data. Where scientific long-term data sets are unavailable, older fishers are often the only source of information on historical changes in local marine stocks and marine environmental conditions (Johannes et al., 2000; Silvano and Begossi, 2012). A failure to draw on fisher's ecological knowledge limits the development of a historical baseline from which to assess the conservation status of marine species that are vulnerable to over-exploitation (Sáenz–Arroyo et al., 2005). This may result in measures being implemented which are more precautionary than necessary (Chuenpagdee and Jentoft, 2015), unnecessarily compromising the welfare of the resource users (Johannes et al., 2000).

7.3 Factors Underpinning Strategies of Resilience

Inshore fishers are exposed to shocks, disturbances and stressors which can adversely impact their operations and livelihoods (Béné et al., 2015). However, their reactions to these perturbations vary greatly at both individual and community levels (Thorpe et al., 2007; Morzaria-Luna et al., 2014; Faraco et al., 2016). Their choices are in part determined by key factors in the fishers' individual personalities, in part by the communities they inhabit, and externalities will also play an influencing factor. I will now examine these determining factors.

7.3.1 *Passive resilience*

Passive resilients put their heads down and carry on as they have always done, in spite of increasingly adverse conditions (Van Ginkel, 2001; Ross, 2013). This strategy can be attributed to particular personality traits, such as innate stubbornness, which is manifested as defiance or determination that they would keep going in the face of threats to their livelihoods. Some were driven by the vocational nature of the sector, stoically refusing to leave the industry or the techniques that they loved. Their work was deeply personal, reporting that it was a way of life and ultimately how they defined themselves. So there was never any question of doing anything differently even if that refusal meant increasing economic hardship (Van Ginkel, 2001; Ross, 2013). Some fishers reported persisting with unprofitable traditional operations as they were committed to protect their heritage and honour their heroic predecessors (Reed et al., 2013). There were of course less positive influencing factors reported by fishers. Some explained that they maintained a static trajectory as they felt they either lacked alternative options (either because legislation has locked them into a specific fishery, or the highly specialized nature of their work or their low education levels) or did not know what else to do. Passive resilients also tended to be loners, and were reluctant to join a fisheries association or an IFCA committee. Mowbray (2017) tied this response to a lack of motivation but this study found it was more often linked to strong principles of independence and self-determination. Another influencing factor was an external one, in terms of the witnessed response of the authorities to fishers when they request assistance or present potential solutions. If the institutions respond negatively, giving little or no ground, previously successful fishers and communities could move into a catastrophic phase (Henry and Johnson, 2015) and become passive or even give up fishing altogether (Wood and Bhatnagar, 2015). Tied into this was also when they received no response or explanation as to why their suggestions had not been taken on board.

7.3.2 *Adaptive resilience*

English inshore fishers were found to draw upon a range of adaptive strategies in response to ever-changing external circumstances such as moving between quota and non-quota species or targeting two different ICES areas to maximise their quota. This enabled them to continue operating whilst maintaining their function and structure (Pearson and Pearson, 2012; Wilson et al., 2013). Commentators have identified critical variables which determine the likelihood of individuals maintaining an adaptive capacity, starting with an ability to act flexibly and to experiment (Folke et al., 2003; Gunderson and Holling, 2002; Armitage, 2005). This in turn is dependent upon a number of factors identified through this study, including the existence of an environmental, legal and economic landscape which facilitates flexible working (i.e. the ability to flit between targeting quota and non-quota species) and experimentation (i.e. the ability to easily test different gears and operational methods) (Anderies et al., 2006).

Gunderson and Holling (2002) explain how experimentation and flexible operations are aided by fishers ability and willingness to network with fellow fishers and take on-board lessons learnt through their successes and failings, who may themselves have attempted similar trials. Levine et al. (2011) discuss how positive horizontal and vertical networks allow fishers to remain informed about upcoming changes in management or policy such as a reduction in quota allowances to further support their adaptive capacities. This facilitates forward planning enabling fishers to link into both internal and external social networks (Folke et al., 2003). This is reliant upon good relations and appropriate communication techniques being maintained both at a local level and vertically with relevant management agencies (Olsson et al., 2006; Gunderson and Holling, 2002; Walker and Lawson, 2006; Folke, 2006; Olsson et al., 2004). These factors tend to be associated with a querulous and sociable personality type, willing to chance failure in their pursuit of new opportunities (Wilson et al., 2013).

This strategy is only feasible up to a point, because it could be overwhelmed by an external stressor such as loss of ability to move between quota and non-quota species as a consequence of the landing obligation. In such circumstances, the adaptive capacity of the fishers or their communities will undergo a phase shift, moving into another state of resilience (Béné, 2013). This trigger point is not a fixed or easily measurable capacity and a given shock may have differentiated impacts on individuals, even those belonging to the same community.

7.3.3 *Transformative resilience*

This study found this form of resilience was most successful when pursued with the full support of a fishing community (Walker et al., 2004; Folke et al., 2010) together with external support and managerial transparency. There were several critical determinants which were identified as key to unlocking a community's capacity to pursue transformative strategies. Firstly, the actions of key individuals (usually the FA lead) embedded within communities; secondly, the support of an external network; thirdly, the ability of the target agency to respond in a transparent and respectful manner; and fourthly, an ability/willingness of a wider community to unite and support a movement. The presence of a community leader with particular skills was observed to be crucial (Schwarz et al., 2011; Wilson et al., 2013).

Figureheads (often found to be FA leads) must be able to mobilise and unite their community together around a common belief that an alternative future outside of their current situation is possible, even if the transformative path was risky (Wilson et al., 2013; Zeller and Pauly, 2005). In order for these figureheads to achieve this aim, they must hold the trust and respect of the community they represented (Folke et al., 2005), which required them to operate in an honest, inclusive and transparent way (Bown et al., 2013). Change became feasible when a critical mass was formed and ''a rivulet ends up as a flood'' (Sustein, 1999: 8). Under this climate, they were able to encourage individuals to work in a collective spirit of 'we are all in it together'. These figureheads also needed to be willing and able to develop and maintain supportive external network arrangements at a local (e.g. with other communities), regional (e.g. with their IFCA officers) or national (e.g. with NUTFA or NGOs) level (Teddlie and Tashakkori, 2009). This however is dependent upon the willingness/ability of these external parties to act positively on the leaders networking attempts. These networks were worth pursing as were found to significantly increase the chance of schemes crossing transformative thresholds (Tompkins and Adger, 2004, Anderies et al., 2006). This is well illustrated in the success and use of the FLAG program, whereby communities which held the support of external stakeholders also involved in the process were more likely to reap the rewards once funding was won.

An ability to self-organise at a community level also facilitated transformative schemes (Berkes et al., 2002; Bown et al., 2013, Boyd et al., 2008; Duit et al., 2010). This was

facilitated by positive relations existing at a community level whereby fishers trusted and respected each other, but also on internalised conflict resolution mechanisms existing. This appeared to be aided by family or old connections. Schemes were often resource-heavy and required a community to unite and contribute towards progressing strategies. This was illustrated by a scheme which set up a business selling fuel at lower rates to the community's fleet. Many skills were required to bring this project together and it relied on members coming together to contribute their different skill-sets. However, communities which were riven by hostility or distrust failed to self-organise, and in them transformative actions were not possible.

Transformative strategies were risky and their success appeared to depend on the way proposed strategies were received by the relevant management group (Lebel et al., 2006). This is not only because these bodies are responsible for the regulations which transformative initiatives often sought to overturn, but also because being treated with respect by management bodies encouraged transformers to persist with their campaigns. Transformative initiatives were resource-intensive processes which required momentum to be maintained (Béné et al., 2014). It was found in this study that being treated in a manner which was perceived to be disrespectful or just ignored created negative feelings of resentment amongst the community which could weaken this momentum. It was clear that even if the IFCA decided not to act on the fishers suggestions that it was vital that they communicated why they had reached this conclusion in order to help maintain a community's confidence.

Almost all participants in this study held transformative aspirations but there appeared to be few major transformative initiatives which gained traction. For example, while many fishers called for more self-governance, this was an idea implemented by only a small pool of communities, one of which explained how they had bypassed management bodies and generated their own grass-roots management systems which they self-police, including voluntary measures such as v-notching and extended carapace landing sizes for lobsters. Nevertheless, transformative aspirations are a necessary, if not sufficient, condition for a transformative strategy to emerge, which may take years to implement and for benefits to be realised. Therefore this study may have been privy to the start of something yet to materialise.

7.4 Overlapping Resilience Strategies

Most academic commentators who have studied resilience strategies (especially adaptive strategies) have interpreted them as standalone entities (Fauzi and Anna, 2010; Sievanen, 2014; Salmi, 2005; Pana and Sia Su, 2012; Coulthard, 2012; Fitriawati and Suroso, 2017). Only a few writers have discussed overlapping resilience strategies (González, 2011; Chuenpagdee and Juntarashote, 2011; Deswandi et al., 2012; Henry and Johnason, 2015). My research however, identified a variety of permutations of the three resilience strategies occurring concurrently across fishers within the same community was the most common scenario: indeed, this was observed in 14 out of a possible 21 communities. Two overlapping strategies were observed in four communities and all three resilience strategies were observed in ten communities. The remaining communities were found to exist in a single state whereby all fishers still only adopted adaptive resilience as they had either been successful in a transformative attempt and settled back into an adaptive state at the time of research or had never been forced into a situation which required further action. Others were found to have as an entity entirely moved into a state of passive resilience.

Fishers who experience the same regulatory conditions may react very differently to a given shock, so it is not surprising that individual members of a target community embraced different resilience strategies (Thorpe et al., 2007; Clay and Olson, 2008; Neis, 2000; Acheson, 2003). Examples of these multiple strategies together with the variables which facilitate overlapping strategies will now be discussed.

Fishers reported pursing both (constructive) adaptive and transformative strategies at a collective level in three communities: North Eastern Two, Sussex One, and Kent and Essex One. Their adaptive strategies included exploiting new fishery opportunities and different target grounds. For example, North Eastern Two fishers took advantage of an annually migrating population of velvet crabs (*Necora puber*); Sussex One fishers returned to a historic herring (*Clupea harengus*) fishery; whilst Kent and Essex One accessed quota from two different ICES areas. All three communities were observed to be highly united (Walker et al., 2004) where relations were strengthened by historical and family connections. With regard to transformative strategies, the North Eastern Two and Sussex One FALs reported developing wide and positive external networks at local (council), regional (IFCAs and neighbouring communities (in the case of Sussex One) and

universities) and national (national fishing unions and NGOs) levels. These connections provided them with the infrastructure and support to develop their transformative ideas (outlined below). Both communities' FA leads appeared to command the respect and trust of the wider community by acting in a transparent and inclusive fashion as well as working to unite the community. These two associations had established a support team in the form of paid association employees. As for Kent and Essex One, its transformative initiatives were more modest and arose out of local networking with two neighbouring communities.

Cornwall Two community exhibited concurrent passive and (constructive) adaptive resilience strategies, moving between quota and non-quota fishery opportunities to avoid quota pinch points. They were observed to be a united community which was somewhat separated from their association who they accused of working in isolation, rarely holding meetings nor reporting back discussions arising from the IFCA committee. Its passive responses were triggered by an incident whereby fishers witnessed what they deemed to be the unprofessional treatment of an elderly community member by an MMO officer.

All three resilience strategies were detected in ten communities – Southern One, Devon and Severn Two, North Western Two, Northumberland One, Kent and Essex Two, North Eastern Three, North Eastern One, Eastern One, Northumberland Two, and Eastern Two. The FA leads in Southern One, Devon and Severn Two, North West Two and Northumberland One had all developed strong and positive multi-level external networks and secured a number of transformative solutions (see below). However, passive resilience had emerged amongst the wider fleet as a result of disappointment in the isolated way their FA operated. Many fishers felt excluded from its decision-making processes because there were very few open meetings. Where FA leads held IFCA committee roles (Southern One, North West Two and Northumberland One), a perceived lack of transparency by the fishers led them to become suspicions of their FA's relationship with the IFCA.

In the remaining six of these communities, passive resilience was observed to emerge amongst the wider community as a consequence of external factors, following disappointment in the recent failure of transformative strategies. What appeared to facilitate this move to disengage was not necessarily the act of the failure itself, but more

the way either the pertinent management agency or their fisheries association had acted throughout the process.

The fishers of the Kent and Essex Two community reported how, in spite of positive relations with external networks, a united community who proactively supported their FA's work and a history of successful transformative initiatives, they had begun to disengage and to slip into passive resilience. They were distressed that the judicial review results had failed to be acted on by government and how the community quota project stifled by government bureaucracy. Also, fishers were exasperated by the perceived unprofessional treatment they received at the hands of MMO officers. North Eastern One attempts to persuade the IFCA to impose a lobster pot limitation to combat perceived increased effort from nomadic vessels, fell flat, leading to disillusion among fishers and a reversion to passivity. What was key was that the IFCA failed to neither respond to the FA campaign nor communicate why they did not act on their recommendations. In Northumberland Two, the community explained how they had mounted a concerted effort to overturn the IFCA's vulnerability assessment of the damage caused by their fishing gear on key MCZ benthic features which was being used to justify highly restrictive gear management measures. However, they reported that their argument was ignored, and despite remaining united, fishers had begun to express passive resilience sentiments such as pessimism about being able to influence their IFCA. The community of Eastern Two collectively united to drive forward a transformative initiative, launching a campaign to challenge the justification for citing an MCZ over their fleet's key fishing ground. However, whilst they won support from both neighbouring communities, local markets and an MP, they failed to persuade the IFCA who also didn't explain why they never acted on this attempt. Subsequently, disillusion with these failures led some fishers into a passive resilience mode: they still fished but only because they did not know what else to do. Skippers explained that their failure to persuade the IFCA for support coupled with other legal and environmental restraints saw them pursue destructive adaptive strategies, moved to solo operations as it became uneconomical to employ crew, whilst others maintained profits by pursuing illegal fishing operations.

Whilst North Eastern Three and Eastern One had elected energised, determined and innovative FA leads at a grassroots level, fishers reported that said individuals had not

invested the required effort required to develop external support so lacked a supportive external network. They attributed this to the failure of their attempted transformative strategies, which in turn had cost the association the loss of the support of their wider community. North Eastern Three reported that a failure to draw external support meant their attempts to secure funding to transform their marketing options from the FLAG bid they helped secure for the wider geographical area failed. This led fishers to lose faith in their FA and move into a passive state. Similarly, although Eastern One secured FLAG funding for their area, they were only allocated funding for one second-hand tractor to help move vessels up the beach, whilst other communities received major funding to support their projects. This again can be attributed to a lack of external support or understanding of their situation. The FA lead was also unsuccessful in campaigning for pot limitation measures. As a result, many of the community's fishers lost confidence in their FAL's transformative skills, and became passive resilient.

Constructive adaptive resilient strategies were also adopted by Southern One, Devon and Severn Two, Kent and Essex Two and North Eastern Three as they pursued intra-sectoral diversification strategies, adapting their operations between quota and non-quota species. At certain times of the year, quota limits rendered fishing operations unprofitable, so fishers in Kent and Essex Two and Southern One sought temporary opportunities outside the fleet, in offshore wind-farm development and the building trade. However, as operations were rendered unprofitable and flexibility removed by an increase in MPAs, seals and marine energy development, the adaptive strategies pursued by fishers of North Western Two, Northumberland One, North Eastern One, Eastern One and Northumberland became destructive. Skippers became single-handed operators and violated fishing regulations. A few fishers of Devon and Severn Two reported also adopting such adaptive strategies.

Although transformative resilience initiatives failed in the communities of North Eastern One, North Eastern Three, Eastern One, Northumberland Two and Eastern Two, successes were observed in North Eastern Two, Sussex One, and Kent and Essex One and Southern One, Devon and Severn Two, North Western Two, Northumberland One's and in part in Kent and Essex Two. Southern One, Devon and Severn Two, North Western Two, Northumberland One's had elected engaged, determined and experienced FA leads who

developed and maintained strong and positive external networks, although they lacked whole-hearted support from the community they represented. Southern One's FA established networks included MMO and IFCA officers, their local council and harbour boards, as well with NUTFA and NGOs such as Greenpeace and NEF, and they drew on these links to secure support for a number of transformative solutions, including generating aquaculture opportunities within their bay as alternative livelihoods for their community, and overturning the threat posed by nomadic fleets by securing a pot limitation regulation. Devon and Severn Two's FA lead reported establishing networks with adjacent communities, the IFCA, NUTFA and the NFFO. These groups supported their transformative initiatives coming into fruition, including the development of a local auction market and successfully opposing proposed precautionary MCZ management. The North Western Two community has a successful track record of transformative campaigns, which could be attributed to the energy of its FA and his supportive external connections with neighbouring communities, the IFCA, MMO, the harbour board, NFFO and NUTFA. He was able to arrange direct meetings with the MMO and negotiate a community quota scheme whereby they would take control of managing their quota. When faced with poor marketing prospects, he negotiated with an offshore wind-farm and won a grant from their community scheme to develop the infrastructure to ensure that the landed product was kept in excellent condition, together with a van to take the landed fish to markets which paid the best possible price. The Northumberland One FA lead reported being an active member of the local IFCA committee and drew support from the NFFO. He reported using this platform to ensure that MCZ management measures were not overly precautionary and thus protecting access to key fishing grounds. He also responded to an array of consultations on behalf of his members.

Kent and Essex Two, North Eastern Two, Sussex One, and Kent and Essex One also had elected FA leads who developed and maintained positive external networks, and they also maintained a transparent and engaged relationship with their united community, enabling them to be proactive and involved in their FA. Both Kent and Essex Two and North Eastern Three established wide networks with their council, MPs, harbour board and IFCA. These networks facilitated several transformative campaigns. For example, Kent and Essex Two's FA lead had negotiated compensation from a telecommunications company when their cable was laid over fishing ground, whilst also ensuring it avoided

their most valuable grounds. He used this compensation money to establish a fuel company which gave members reduced and stabilised rates and shared profits to all members at the end of every financial year. He also engaged with neighbouring communities together with NUTFA and NGOs to take a community quota project forward, and became an active founder of the campaign to establish a national inshore PO. The North Eastern Two's FA lead successfully challenged a large offshore wind-farm development proposal threatening their most valuable fishing ground. For its part, Sussex One innovated by working to secure a nationwide inshore PO, to regain control of quota allocation for the English SSF, whilst Kent and Essex One successfully challenged an MCZ from being sited across a valuable fishing ground.

Clearly, then, many permutations and combinations of resilience strategies can be observed existing simultaneously in the 21 fishing communities studied within the ten IFCA districts. This indicates the complexity of SSF's responses to threats to their livelihoods. Passive resilients may exist side–by-side both adaptive resilients and transformative resilients. Moreover, a single fisher may exhibit passive, adaptive and transformative tendencies during his/her career, and this fluidity is the subject of the next section.

7.5 Strategy Fluidity and Directional Trends

Much like an ecological or social-ecological system, human resilience is highly dynamic moving between different states. This has been touched on in terms of the mobile relationship between adaptive and transformative resilience in social-ecological systems (Brown et al., 2013; Folke et al., 2005; Walker et al., 2004) but no-one appears to have examined how or why an adaptive or transformative community or individual could slip into a passive state. Dynamic relationships between different resilience strategies was found to exist in 19 of the 21 target communities, with only one outlier identified, whereby the community was found to have manifested only adaptive strategies within its recent history. The fishers of Southern Two explained that this was partly because their location still allowed them favourable fisheries opportunities, including open access to key fishing grounds; partly because of favourable regulatory circumstances whereby proposed MCZs had never included their target grounds and they continued to be able to swap between quota and no-quota species; partly because their FA lead maintained positive relationships

with both their IFCA and MMO so the community were adequately forewarned of upcoming management changes, enabling them to plan ahead (Folke et al., 2005); and partly because the community had close internal social networks which enabled fishers to maximise their knowledge generation by accessing a collective social memory.

Fluctuations between states of resilience were exhibited in the remaining communities and can thus be inferred as normal practice. Constructive adaptive resilience appeared to be the status quo and the point which individuals and their communities tried to return as this allowed them to pursue normal fishing operations. This however, appeared to be a changeable milestone whereby the community may look different and operate through different parameters, but maintain their ability to work flexibly and experiment. Adaptive resilience is only feasible up to a point, upon which life becomes untenable. In the first incidences, all communities reported initially moving into a transformative phase with the intention of reconfiguring their external stressor and providing a new platform from which adaptive operations can once again be pursued. Depending on the outcome and/or the way that management agencies acted and/or the methods evoked by their fisheries associations, individuals within a community either moved back into a constructive adaptive state or into a passive resilience mode (this was limited to how fishers engaged with their fisheries association and management agencies). When they disengaged, they still pursued constructive adaptive fishing operations until the point that this was no longer viable and at that stage adopted destructive adaptive strategies such as solo operations or non-compliance.

The variables dictating which way a community is likely to swing will now be examined. Two communities – Island One and Devon and Severn One - had settled back into adaptive operations taking advantage of intra and inter-diversification opportunities following a campaign of transformative resilience, which created a fundamental new platform from which to continue their adaptive operations (Folke et al., 2005; Walker et al., 2004; Walker and Salt, 2006). Island One was reported by both the FA and fishers to be a closely united community, with a highly supported and transparent FA, whose association lead had moulded their relationship with their receptive and supportive IFCA to allow the fleet to largely self-manage themselves in a highly collaborative manner, whereby the community as a whole were involved in taking decisions forward. They collectively agreed to adhere to a series of self-imposed rules including an extended

lobster landing sizes and banning the historic sand-eel (*Ammodytes tobianus*) fishery to protect the islands sea bird colonies. Since then, they moved back to adaptive operations and reported being optimistic about their future. The Devon and Severn One fleet also reported being united and engaged with their FA whom they reported to be transparent and inclusive. They explained that outside of quota species, their main fisheries involved traditional drift netting methods to target herring (*Clupea harengus*) but this was threatened by a proposed EU drift netting ban as a result of turtle by-catch in the Mediterranean. Their FA lead contacted the NFFO, who took their cause to Brussels and successfully negotiated derogation from the drift netting ban for UK fishers. They collaborated with local stakeholders to win FLAG funding for their area, and directed funds to support local fishing festivals. They had settled back into adaptive operations.

By contrast, the North Western One, Sussex Two and Cornwall One communities reported shifting from adaptive resilience into transformative action when external circumstances were perceived to be untenable, before many fishers settled into a passive mode of resilience, coupled with adaptive fishing operations where possible or destructive operations when not. North Western One had unsuccessfully attempted to overturn an IFCA decision to grant a permit to an external company enabling them to access and remove the shellfish spat that the fishers traditionally harvested and believed therefore to be theirs. They believed they received unfair treatment by the IFCA and this moved all three association members to resign from the IFCA committee, and the community disengaged with management having lost faith in their influencing ability. Sussex Two had campaigned for their IFCA to impose a whelk pot limitation in light of spiralling effort, as fishers from surrounding communities moved into the fishery both as a result of quota restrictions and the boom in the fishery. However, they were unsuccessful and felt that their attempts had been ignored. What appears key here is that the IFCA did not explain their decision making process and provide feedback to the fishers. They explained that they had also been unsuccessful in their attempts to prevent a proposed offshore windfarm development being positioned over their most profitable fishing grounds. Fishers reported how the failure of these campaigns demoralised the community and lead them to believe they had no control over their fate, and reverted to passive resilience. Where possible, fishers said they still adapted their operations but disengaged from all managerial processes. Cornwall One reported being inspired to take up transformative strategies to object to the threat that licence capping policies posed to their adaptive capacities. Led by

their FA lead, fishers interviewed explained how they had requested a series of meetings with the MMO in order to object to further licence capping policies, but said they saw no changes as a consequence, and felt that attempting future challenges to be futile. Fishers reported reverting to passive resilience disengaging both with their FA and management processes, having lost faith in their ability to transform external issues.

Why did transformative resilience lead to adaptive resilience in some cases and to passive resilience elsewhere? The answer is that it all depends on the particular circumstances of each community. There is no inevitable or universal direction of travel: each community is unique. Nevertheless, we can make seven generalisations about the factors which determine patterns of change in resilience strategies. The first generalisation is that where there is a united community linked in with an engaged, transparent, inclusive and networked fishing association, the odds are that the community will not decline into passive resilience. The second generalisation is that a fisheries association is best placed to undertake this task in a sustainable fashion if the scene is set to allow them to commit sufficient time and resources to the role. The third generalisation is that where a community has built up a strong, positive, supportive external network who understand their situation, then it is unlikely to fall into this passive state. A lack of these variables can risk community inertia (Folke et al., 2005) and the emergence of a state of passive resilience. The fourth generalisation is that once a community has declined into passive resilience, it will find it very hard to emerge from that condition: there were no examples found through this study of communities shifting from passive resilience to adaptive or transformative resilience. That said there is no reason it isn't possible if the fisheries association and/or the IFCA embark upon a program of reengagement and strive to rebuild trust. The fifth generalisation is that the most common reason for a community's decline from transformative resilience to passive resilience was the negative response of its IFCA and (especially) the MMO to its transformative initiatives. This is in line with the conclusions of Berkes (2003) who writes how management responses are intimately linked to resilience strategies. However, this is not to let the FAL's off the hook as a number of communities ascribed this move as a consequence of the way their FAL's worked. The sixth generalisation is that it is common for fishers and their wider communities to carry on adaptive strategies until they become untenable, and at this stage, they attempt a transformative change, which either succeeds and they return to the adaptive mode, or fails and they fall into the passive mode. The seventh generalisation is that the capacity of a

community to take on challenges through transformative strategies is finite: challenges may become so overwhelming that communities realise that even herculean efforts are not enough to achieve a positive and sustainable outcome and they will revert to passive resilience (Mowbray, 2017). Furthermore, the required combination of factors may begin to degrade overtime even given the best circumstances.

7.6 Sustainability of Resilience Strategies

Transformative resilience cannot be sustained indefinitely because it is too resource-intensive and risky for a community. It requires great bursts of energy and is the costliest of all the resilience options. Even when all the ingredients are in place to allow for such a strategy to be taken forward, it becomes more difficult to maintain grass-roots unity and enthusiasm when the success rate of transformative initiatives begins to decline, as it will, in the end (Mowbray, 2017). It is also unlikely that passive resilience could be a viable long-term strategy for many fishers, since once their adaptive capacities had been removed as access is reduced and more overlapping restrictions on inshore fishing are imposed, they would be likely to eventually give up fishing. Adaptive resilience therefore is the most sustainable strategy, since fishers can go on adapting and diversifying to changing conditions indefinitely provided that the circumstances under which they operate are moderately favourable. The main role of a transformative strategy is therefore to achieve a sustainable future for inshore fishers by generating new platforms to allow for adaptive fishing strategies to be pursued for generations to come.

However, upon first examining the resilience landscape in the English SSF, it appears as if passive resilience was at risk of becoming dominant. For many of the twenty one communities targeted by this study, adaptive strategies were diminishing, and for some fishers were no longer a viable option. Subsequently, as their ability to act flexibly is dimensioned by ever increasing regulations and a loss of ground to MPAs and development, many English fishing communities are losing the battle to make their inshore fleets thrive. Many transformative efforts appear to have been unsuccessful in creating a platform for a long-term adaptive strategy to be established. Furthermore, many fishers reported an increasing number of consultations which risked overwhelming the communities, creating consultation fatigue. As a result, more and more fishers were adopting a strategy of passive resilience. This was reported to be a concerning situation to

the fleet because it threatens the sustainability of their sector. When belief that they can make a difference is lost, it is very difficult to regain it. The danger is that unless external intervention takes place, a spiral of negativity will continue to reinforce itself, potentially carrying on until the community falls apart. That said, almost everyone interviewed held transformative aspirations. For example, the majority of fishers interviewed believed that the CFP was responsible for the way quota was allocated across the English fleets. As these aspirations become a collective belief, campaigns such as Fishing for Leave became possible, these collective beliefs were key to transformative actions being brought to life, for example, 92% of the inshore fleet backing the UK's decision to leave the EU through the referendum held in 2016 (William-Evans and Williams, 2018). What, however, appears crucial is the role that authorities play in facilitating collective movements, and to help maintain a positive momentum and engagement they must re-examine the way they collaborate with the fleet and figure out ways in which they can encourage fishers rather than discourage them. This leads us to consider the role of the management bodies, in this case the IFCAs, in supporting inshore fishers.

7.7 IFCA Influence on the Sustainability of Community Resilience Strategies

As part of the move from SFC to IFCA's, the associations have been handed an additional conservation mantle, which at the point of research came with hefty workloads imposed by Defra together with tight timeframes. Added to this, associations faced reduced budgets as a consequence of austerity. One area where some IFCAs saved resources was by amending the manner in which they worked with their fleets, therefore whilst some continued to prioritize active communication despite the resource intense nature of this method, others have moved to more passive routes in order to meet their work obligations. The study has found that decisions made regarding the way IFCAs interact with communities have consequences and can be influential – even critical - to individuals or their associated community pursuing either a destructive or constructive trajectory. Passive IFCAs were identified as facilitating some fishers (and even communities) shifting into a passive resilience mode. For example, a lack of response (even if it is to explain why they are unable to act on a proposal) to suggestions presented by the fleet can add to a feeling of marginalisation and powerlessness. Proactive IFCAs meanwhile helped secure the sustainability of adaptive and (to a lesser extent) transformative resilience initiatives of individuals and communities. For example, a sympathetic IFCA officer may brief fishers

on upcoming measures, thus providing them with the time to prepare adaptive measures. Likewise, the very success of transformative strategy may wholly depend on the responses management agencies adapt to such strategies (Berkes, 2003; Jentoft, 2000), by for example, agreeing to bring requested byelaws into fruition. At any rate, transformative strategies are more likely to succeed if governing institutions are prepared to provide the platform for transformative ideas to be sympathetically heard (Gambetta, 1998). That said, even if proposals were not taken forward, communities were left feeling included if there was a dialogue about this process. Ideally, the best institutional model that provides such a platform is co-management (Jentoft, 2000; Jentoft et al., 1998) and is the model that the IFCA committee structure is best set up to achieve. However, even if IFCA committees are willing and able to act sympathetically, they are not the only fisheries management body, and an indifferent response by the MMO, Defra and the EU could be just as debilitating. Nevertheless, it is useful to assess which IFCAs have been perceived by the fishers interviewed to help promote acts of adaption and transformation through proactive communication.

Four IFCAs (IFCA 2, IFCA 3, IFCA 5 and IFCA 7) were found to pursue pro-active communication mechanisms. This allowed them to support adaptive strategies of fishers and their communities within their districts. Each utilised procedures which explicitly and deliberately sort out appropriate means to allow fishers universally to be brought into the decision making process (Berkes and Folke, 1998). In practice, this meant that they understood the importance of inclusive and appropriate communication processes, no matter how resource intensive the task, and created a system that gave all inshore fishers an equal platform through which to engage. This enabled them to support adaptive operations as IFCAs used this platform to keep their fleets informed of upcoming measures allowing fishers to prepare accordingly, and to glean local knowledge from fishers in order to adapt their own management measures to local contexts. These agencies were also found to pro-actively support transformative strategies, taking suggested strategies and concerns seriously, and produced several examples of when grass-roots campaigns had resulted in material management measures. IFCA 2 supported acts of transformative resilience by agreeing with the suggested system of the fleet largely self-managing themselves. The resulting code-of-conduct imposed by the fishers on themselves enabled the IFCA to meet its environmental objectives as MPA features were maintained in a good state and fisheries were shown to be sustainable. IFCA 3's CFO

designed their communication strategies to ensure that fishers across the board were able to be part of the decision-making process. They were offering a range of engagement options including one-on-one meetings, open meetings, and focus group meetings held at locations and times convenient to the fleet, and the CFO made a point of traveling to all the remote communities to build positive relations. Fishers reported positively when questioned about engagement and believed consultations to be inclusive and genuine. This enabled the IFCA to support adaptive measures as illustrated by their system of informing and engaging with fishers when major MPA management changes were mooted by Defra. This in turn allowed fishers to remain informed so they could adaptively plan for forthcoming measures. This process also enabled the IFCA to support transformative strategies as this engagement allowed fishers to critically assess the data held and identify the gaps in the IFCA's data on a biogenic reefed area requiring management. This exercise meant that proposed highly precautionary measures could be avoided and resulted in a protection plan allowing some fishing around (though not within) the biogenic reef area, thus satisfying both the Marine Conservation Society who were pushing for a full-site approach, and the fleet. IFCA 5's pro-active work was driven by a CFO who understood the importance of reaching out to the community. In order to encourage fishers to come forward with their ideas, the CFO organised meetings with them on a one-to-one basis and then ran a series of drop-in sessions more as fun social gatherings. This resulted in an increase in attendance and one outcome of this inclusivity was that the fishers offered up their local ecological knowledge to the IFCA to demonstrate that the portion of a proposed closed area that was of most interest to the fishermen did not contain any of the features that needed protection. This allowed the IFCA to avoid invoking the precautionary principle and instead introduce a byelaw prohibiting bottom towed gear in about a quarter of its district without adversely impacting the inshore fleet and with hardly any objections. The CFO also responded to fishers' cries for help to protect them from an intimidating gang-led illegal involvement with a clam fishery almost overnight by the introduction of a permitting scheme. Such pro-action by the CFO constituted support for both adaptive resilience and transformative resilience, since fishers were successful in changing the parameters of their fishing opportunities. Despite their resource constraints, IFCA 7 expressed a strong commitment to work with their fishers as a means of minimising the impacts of marine management arrangements. This is illustrated by the lengthy grassroots consultation they ran before introducing their whelk management strategy based on a

permitting scheme, thereby avoiding having to impose precautionary regulations (an example of supporting adaptive resilience). The IFCA also acceded to a campaign run by their fishers' against the proposal that their bad weather fishing grounds be closed (an example of supporting successful transformative resilience).

Three IFCAs (IFCA 10, IFCA 9, and IFCA 7) reported a commitment to pursue proactive engagement with fishers. However, they explained that given the burden of work associated with the MCZ program and revised approach to how fisheries were managed within European MPAs handed to them by Defra coupled with austerity driven budget cuts, they lacked resources to engage with communities in the manner they preferred. Instead they tended to move towards holding a handful of general meetings and a more reactive communications approach. This risked accidently favouring those communities who were best organised as these were the easiest to work with. For example, in response to a call for assistance from fishers worried by a crisis in the shellfish fishery, IFCA 10 implemented a pot limitation which pleased a dominant community (acceding to their transformative resilience agenda) but disturbed a weaker community (undermining their adaptive agenda, and leading them into passive resilience). Whilst IFCA 9 reported reacting positively to a range of communities' request for assistance, for example, implementing legislation to limit the range that nomadic scallopers can target at the request of a community, what was reported repeatedly by the fishers was how their campaign for a pot limit was rejected and instead escape hatches employed. Fishers accused the IFCA of being manipulated by the best organised and engaged community, instead of listening to what fishers deemed to be the most important campaign.

Lastly, four of the IFCAs (IFCA 6, IFCA 4, IFCA 8 and IFCA 1) reported that since Defra became a joint funder of their activities, that conservation had become their primary objective. They also explained that in light of an increase in workloads, they adopted an inactive communication technique, relying on fishers checking their website to discover policy changes. This undermined both adaptive and resilience strategies and instead facilitated a gradual slide into passive resilience. Fishers reported that they repeatedly attempted to get a pot limitation in place given the explosion of the fishery within the district but whilst IFCA 6 expressed interest, nothing ever came of it. The fishers explained that they suspected this was because it didn't fall in line with their Defra-led conservation objectives. According to fishers in IFCA 6's remit, inactive communication

technique meant that few fishers were made aware of management deliberations until they were confronted with decisions.

IFCA 4 took positive steps to support their fleet in response to initiatives taken by the FA which fitted within their MPA objectives. Recognizing that the survival of their fleet was integrally linked with their ability to adapt, the IFCA facilitated adaptive resilience by building up vessel monitoring system (VMS) data to understand where the fishing fleet work so they could refine their management tools to avoid indiscriminate measures. Furthermore, they said they actively kept the costs incurred by the fisher for purchasing a permit as low as possible and stretched the deadline of each permit over a couple of years. However, they explained that in the face of increased workloads, they amended their communication strategy and now direct FAs to the information uploaded on their website, leaving it to them to alert the wider community. The majority of fishers reported that this meant they were not made aware of consultations or vital updates. IFCA 8 was even more uncompromising towards fishers in that they said they were not accountable to fishermen operating in their district but to the requirements of the 2009 Act, which set up the IFCAs with a clear set of environmental objectives which they were obliged to meet. Their first priority was to ensure that the stocks were in the best possible state, and to present fishers with fishing opportunities that were consistent with that priority, and put the responsibility back on the fishers to decide how to capitalise on that opportunity. This is not to deny that IFCA 8 sometimes collaborated with fishers: one such collaboration was a co-management strategy for the cockle and mussel fishery. However, such work tended to be restricted to a few particular communities who behaved professionally and politely.

IFCA 1 made clear it would not tolerate unprofessional behaviour from any of its stakeholders, with no exceptions made for their fleet. The IFCA CFO explained that they pursued top-down engagement strategies, in which consultation processes were taken to their committee in the first incidence so that the principles could be set in stone. He explained that their communication strategy was a non-proactive one, whereby they uploaded information on their website and made the FA leads aware of this, then relying on them to disseminate outcomes to their members. In principle, the CFO explained that the IFCA was willing to set up ad hoc meetings upon request, but they put the onus on fishers to take responsibility for initiating such meetings. The fishers reported that their

concerns or complaints fell on deaf ears, as the IFCA declined to respond to their objections.

7.8 Conclusion

Ineffective participatory mechanisms were found to be the primary perceived cause of the English inshore fleet's vulnerability. This created a multitude of problems which both impacted the community's ingrained resilience but also compromised the IFCA's ability to undertake their duties effectively. Strategies of resilience pursed in response to these problems were heterogeneous at both individual and community levels and observed in many different combinations. These states of resilience were however highly fluid. Under normal circumstances, all fishers pursued constructive adaptive operations; however when they perceived the flexibility required to facilitating this arrangement to be threatened by a change in the managerial, ecological or economic landscape, fishers collectively tended to move into a transformative stage. The manner in which transformative strategies were pursued by FA leads and received by management bodies lay the foundations for fishers either moving back into a constructive adaptive phase or one by one falling away into passive resilience in regards to their willingness to engage with either their FA or with management bodies. This then threatened the ability of their FA to pursue further strategies. Many fishers were found to continue however to fish adaptively until this became untenable and at that point revert to a destructive adaptive strategy. It was clear that the authorities can play a crucial role in facilitating collective movements, and helping to maintain a positive momentum. In the next chapter we will summarise the primary findings of this research, and propose recommendations for managerial bodies to improve the situation of the SFF. We also examine wider implications of the work and propose potential future work to help further the findings of this study.

Chapter 8. Conclusion

8.1 Summary of Findings

This research set out, first, to examine the primary drivers underpinning challenges facing the English inshore fleet. Second, it assessed the long term viability of three different resilience strategies (passive, adaptive and transformative) and how management agencies (mainly focusing on the IFCA groups) influence these strategies. Thirdly, it examined how external and internal factors (such as the manner in which the IFCAs engage with their fishing communities) influence the sustainability of resilience strategies enacted by the fleet. By highlighting factors which shape which coping mechanisms are adopted, this thesis aims to share lessons about what mechanisms can and should be utilised to enable the inshore sector support themselves and management arrangements.

The most important factor perceived to be driving the English inshore sector's vulnerability was an inadequate participatory mechanism which was felt to hinder the fisher's ability to engage in, and contribute meaningfully to, the managerial process which governed their activities. This was an unexpected finding because I anticipated that the quota allocation system was most likely to be the primary threat, given that this appears to be the most frequently discussed topic in the sector-specific publications, and that major campaigns lead by the sector have been based around their inability to make a living through quota allocations. What my findings suggest is that inadequate quota together with other problematic polices and their managerial arrangements are a symptom of an ineffective participatory infrastructure, rather than the primary cause of discontent.

Non-inclusive participatory systems were perceived by fishers and their associated community members to undermine the notion of a democratic process, creating an imbalance of power within the managerial machine when legislation was discussed. Where fishers observed this, they reported losing trust in the managerial system, feeling that rules were agreed behind closed doors under the influence of more influential interest groups. Fishers reported that this undermined their belief in their ability to be influential and reduced their willingness to collaborate with authorities. They also reported how this risked the production of over-precautionary or inappropriate legislation which failed to capture geographical variabilities and as such may have adverse unintended consequences.

Examples reported included assigning quota at an ICES level. Some fishers explained that a consequence of these homogenous regulations was that they rendered their operations financially unviable, and compelled them to move to a state of non-compliance. Repercussions of inadequate participation were reported to include fuelling of local factionalism, widening divisions between groups within communities, since communities were not all involved equally or processes assumed that community leaders would disseminate messages fairly. Some fishers reported wellbeing issues, citing depression and anger as they contemplated their powerlessness. This also ultimately risked fishers disengaging in processes which in turn compromised how effectively the IFCA were able to undertake their duties.

The study observed that fishing communities and their members drew on three different resilience strategies to evade external threats. These offered alternative (or complementary) ways of taking control of their own destinies. Adaptive resilience was found to be the foundation to normal fishing operations. Adaptive fishers operated in a flexible and experimental manner, constantly adjusting their working practices to capitalise on new opportunities (whilst being prepared to risk failure) and learning from their or others failures in order to avoid harmful consequences of ever-changing external threats. An ability to operate in this fashion is highly dependent upon the environmental, legal and economic landscape governing them. Fishers were adversely affected by restrictive management measures limiting their ability to move between fisheries, large-scale marine developments and MPAs reducing the ground they could target, and an unpredictable economic landscape. If challenges were perceived to overwhelm their adaptive capacity, these fishers and their communities were observed to undergo a phase shift from constructive adaptive strategies pursued at an individual level, into a collective transformative stage.

Fishers and their communities were found to achieve success with their transformative attempts, enabling them to move back into a constructive adaptive phase or take on further transformative schemes if five key factors were in place. First, there has to be a willingness to drive change, routed in an unwavering self-belief that they can overturn, or gain control over the source of their external stressor. Second, they must be able to put their radical plan into action, which means they need effective leadership with organisational skills. Third, a united community, engaged with their FA. The sustainability

of this was found to be tethered to the actions and character of their FA lead. Fourth, an FA lead who had developed and maintained external multi-level supportive network and finally, fifth, a receptive and flexible managerial system, willing and able to allow for the necessary conditions to be put in place to allow for systemic change or at least able to have an honest and open discussion when changes were not possible. In the short term, the first two and fourth conditions were found to be the most crucial as if FA leads are determined and held external connections; they were able to pursue transformative change in spite of an indifferent or even hostile management. A community's ability to evoke transformative strategies in the long-term was highly dependent upon having all five factors in place. The way that projects were received by relevant management groups was influential, as in the end, continuously unreceptive treatment could create negative feelings of resentment amongst the community which could undermine this momentum. Meanwhile, if an FA lead failed to engage their fleet, they were observed to lose the support and trust of their wider community, who then disengaged at a local level. Furthermore, a lot can be achieved by one person in the short term but this wears thin quickly and without the support of their community, the resource heavy transformative strategies become unfeasible and exhausting. An absence of both of these factors risked a community losing its self-belief and trust in their own systems, and subsequently disconnecting from pathways they could use to improve their position, allowing apathy and mistrust to take over. The ability to maintain the first four factors was observed to be most sustainable when a fishing association had elected a leader who in turn was able to take up the role in a full time capacity or at least dedicate sufficient time to it, supported by experienced treasurers or secretaries. It was clear that this was the costliest (i.e. most resource heavy) of the three resilience options and the manner in which transformative strategies were pursued by FA leads and received by management lay the foundations for the associated community either moving back into a constructive adaptive phase embracing strategies such as intra-diversification, whilst maintaining sustainable transformative ability to be evoked when required, or moving into a destructive trajectory embracing either passive resilience or destructive adaptive strategies such as non-compliance. Adaptive resilience was still found to be the most common strategy adopted by the inshore fleet, but it was often observed in many cases to have moved into a destructive mode.

Passive resilience was adopted by fishers who did not give up but carried on pursing their operations in the manner they had always done. Such fishers appeared to embody

particular personality traits including stubbornness and an unwavering commitment to traditional fishing methods. Their determination can be deemed positive in that it enabled them to keep operating; though for some it meant an economic reality whereby their work increasingly became a way of life rather than a means of making money. Furthermore, the strategies they adopted were observed at times to be self-destructive in the form of a refusal to engage with management even when engagement seemed to offer some relief. It is theorised that once a community has declined into passive resilience, it will find it very hard to emerge from that condition: there were no examples observed of communities shifting from passive resilience to constructive adaptive or transformative resilience schemes. That said there is no reason that this isn't possible.

Different resilient strategies were found to co-exist in some communities. Individual members of the same community were noted to embrace different resilience strategies despite being subject to the same environmental and regulatory conditions. Whilst in part this can be ascribed to the individual personalities of those comprising the communities, this can also result from the actions of their FAL and their perceptions of the interactions with their management. Other community member's options also matter and can be an influencing factor. i.e. if other fishers to which they are close to decide to abscond from engaging this may sway someone who was impressionable. Indeed, most communities embodied a combination of all three strategies (although permutations of resilience were highly dynamic), whereby FA leads remained committed to transformative actions whilst a passive mode had begun to manifest itself across the wider community, who begun to disengage from both their association and external groups, whilst maintaining where possible, adaptive fishing operations. Many communities appeared to be in a transition phase, and it can be hypothesized that if both external and internal leadership bodies amended their way of interacting and injected resources into reclaiming trust and respect, it might be possible to avoid a total phase shift and curb this spiral of negativity which in its current trajectory could continue to the point that some communities could experience disintegration.

IFCAs faced an increased remit with an increasingly conservation focus dictated by Defra together with budgetary restrictions. It was clear though that the decisions they made regarding engagement strategies they pursued (in particular either moving to passive or

reactive methods, or using heterogeneous methods despite communities unique arrangements) in the face of these restrictions influenced the resilience modes adopted by fishing communities within their remit and played a crucial role in maintain positive trajectory's and facilitating collective movements. This also risked their ability to undertake their duties effectively and implement suitable management measures. This study argues that it is in management's own interest to strive to put resources aside to strive to understand how different communities work and develop proactive engagement strategies to work along the grain of communities' aspirations rather than against them. Where this has occurred, there has been a positive response from fishers which has made the IFCA's job easier and their resource intensive process has paid off. This responsibility does not sit solely with the IFCAs and as such is a strategy which the MMO and Defra would be prudent to adopt.

A further external element which is likely to impact the resilience's of the English inshore fleet is the outcome of the Brexit decision. Fishers reported that as a negative spiral was occurring at a local level, many turned their attention to linking into national transformative strategies, the biggest of which was the Brexit campaign, the ultimate transformative strategy for the under ten-metre fleet concerned with restoring sovereignty to English fishers. This however, was very much a step in the dark, and comes with no guarantee that the hoped-for benefits to the UK fishing industry of a return to Westminster of 'control' over British waters will come to fruition. At the present moment, it is not clear that the English inshore industry will be better off post-Brexit. If, Brexit fails to deliver highly anticipated benefits, it could place further constraints on the English inshore fleet and heighten its state of vulnerability. Further still, it might push fishers further into a passive resilience mode leaving them with no choice but to seek destructive adaptive strategies.

8.2 Recommendations

This work proposes that the primary cause of the problems faced by English inshore fishers is an ineffective participatory infrastructure operating at both a management and fisherman association level. Accordingly, my first recommendation is that the IFCAs take a leading role in addressing this deficit. Given the heterogeneous way in which communities function, the IFCA should embark upon a phase of working with their fleets

to construct a bespoke system to facilitate fair and inclusive involvement of fishers in management decision-making. This in turn must be based on the target audience's preferred modes of communication. There is no guarantee that fishers' participation rates would improve, but given the grass-roots tone observed in most locations, if the IFCA can prove that they are committed to this process and genuine in their intentions, this strategy is likely to help. Whilst this is a resource-heavy task, in the face of shifting objectives, increased workloads and reduced resources with no guarantee of success, it is worth committing the resources to this process, since improved relations and increased engagement will bring long-term benefits to the IFCA as well as to the fleets. The IFCAs have a duty of care over fishing groups in their areas and so such short term costs may be morally justified.

My second recommendation is that IFCAs should work with fishing associations to provide a steer on why they need to engage in a fair and inclusive manner and help build their own internalised capacity to enable them to hold the tools to provide sustainably.

My third recommendation is that IFCAs should be alert to signs of disengagement by fishers in their districts. This is key as it appeared that several communities were at risk of moving into a passive state so now appears to be a prudent time to act. This work has highlighted key indicators which an IFCA can draw upon to identify signs of a community or parts of it moving towards negative adaptive strategies or passive resilience strategies. For example, when fishers stop attending meetings that is the time when alarm bells should be ringing and managers should be stepping up engagement and taking necessary steps to encourage fishers to come back on board.

Fourthly, I recommend that the management authorities should pay more attention to the need to inform fishers about the way policy is made. Fishers didn't appear to universally know which agency was responsible for what in fisheries management. For example, quota management decision pathways between MMO, Defra, the EU and ICES were not understood by most fishers. This is problematic as major campaigns such as UKIP's Brexit campaign were founded on misleading assumptions about the relationship between the CFP and UK decision-making on quota.

Fifth, the relationship between the IFCAs and the MMO needs to be recalibrated. IFCA committees serve as platforms through which adaptable co-management measures can be successfully achieved. However, the effectiveness of these committees was being threatened by MMO's interference with the working practices of the IFCAs. It would be prudent for the relationship to be revisited to allow the IFCAs to gain regional autonomy.

Six, consultation fatigue appeared to be a real threat and as such it would be sensible if agencies were to work collaboratively to produce a program of consutlations so not to overwhelm fishers and their communities. Seveth, agencies should consider the whole suit of pre-existing legislation when considering the consequences of management measures.

8.3 Wider Implications

The wider implications of this study include the fact that it contributes to the growing literature on the marginalisation and vulnerability of SSF communities around the world, whilst offering up potential opportunities on how management can address these challenges. What is happening inside these communities, including their resilience strategies, is often not only a consequence of internal arrangements and personalities but also to do with external interactions. Across the globe, they are confronted with a broad range of threats which expose their vulnerability, including natural hazards, marine developments displacing them from their traditional fishing grounds, and competition from vast numbers of IUU vessels. The challenges faced by SSFs globally is now high on the research agenda as illustrated in the focus of the peer-reviewed Centre for Maritime Research (MARE) Publication Series, hosted by Springer and the Too Big to Ignore (TBTI) project, which strive to elevate the profile of small-scale fisheries around the world. SSFs have attracted considerable international interest and support in the last few years as the benefits of fishing communities are better understood as food security and livelihoods providers and for their contribution to cultural heritage, social cohesion, and identity. This increasing momentum has resulted in the Pan-European grass-roots movement – LIFE, the research conglomerate - Too Big to ignore, and the FAO's Committee of Fisheries endorsing the Voluntary Guidelines for Securing Sustainable Small-Scale Fisheries in the context of the Sustainable Development Goals of Food Security and Poverty Eradication in 2014. The FAO guidelines call for major policy initiatives and governance reforms and mark a historical moment for millions of small-

scale fishing people around the world, as never before has this sector received such global recognition. A number of countries have already taken steps to implement the SSF Guidelines, including Algeria, which in 2014 launched a 'Charter' for sustainable fisheries and aquaculture that specifically refers to the SSF Guidelines. Costa Rica enacted an executive decree in 2015 regarding the official application of the SSF Guidelines, and Malta established a permanent working group within the General Fisheries Commission for the Mediterranean (GFCM) in 2016 with the prime objective of implementing the SSF Guidelines.

It is vital that this enormous wave of global support for SSFs is properly capitalized upon, and I hope my study will help both management and communities to harness it. My thesis may, therefore, be regarded as part of this global movement of concern for the future of SSF in coastal areas across the world. A common underlying theme in the case studies of SSFs published in edited books like Jentoft and Eide (2011), and Jentoft et al. (2017), is the feeling of powerlessness and exclusion from decision-making felt by SSFs, which is similar to the English case study. The FAO Guidelines seek to address this key point, and highlight how crucial it is to ensure that collective grass-roots action is facilitated by mainstreaming SSFs into relevant policies, strategies, and actions. The Guidelines explain how the provision of effective participation and involvement in designing effective and fair management measures gives fishers financial stability, yet whilst the SSFs need a voice, this is not enough and they must be provided with more control over the conditions under which they work. It is stressed that provisions to build capacity for those communities not able to engage is key, and methodologies provided include association building and a sustained process of building trust, mutual understanding, and institutional arrangements that enable respectful multi-directional communication and exchange. This is important as it must not be assumed that all SSFs are capable of engagement and in order to meet their commitments to these Guidelines, government agencies must prepare the ground.

However, this research stresses that achieving fisher participation in management is not as simple as providing the opportunity and waiting for fishers to turn up. SSF fishing communities are enormously diverse, differing ecologically, organisationally, economically, culturally, and technologically. Management must understand that fishers

cannot be regarded as a single group: this work has highlighted that homogenous measures efforts will not work, and each community must be treated as sui generis. Management should bear in mind one important lesson that my thesis stresses - one size does not fit all. As Edmund Burke put it, "Circumstances give to every political principle its distinguishing colour and discriminating effect". There is also a widespread belief that the presence of a fishers' association is sufficient for management to engage with, but while a FA is a useful starting point, it is by no means enough to reach all fishers in a community. Moreover, authorities must get to know their communities in order to design their consultation processes to the mind-sets of the fishers they are dealing with.

8.4 Reflections on PhD Experience

I have found the fleet as a whole to be more resilient than I initially anticipated when I began this work, and I am now guardedly optimistic about the future of the English inshore fleet. Whilst most fishers are anxious about their future, they do keep working, often against the odds. Furthermore, whilst they may have disengaged from their fisheries association or/and management agencies, they do still operate as a collective at a micro level and this is something which can be built up from. My research, therefore, has produced a largely positive message that these fishers will survive, though often in a passive capacity unless they are motivated to participate and engage in management decisions both with their fishing association and management groups. As evidenced by certain IFCA's, this scenario of mutual engagement is entirely possible, but it depends on the political will of management and the spirit of cooperation in fishing communities.

I have hugely enjoyed this academic journey and the privilege of being entrusted with stories of determination, desperation and resilience from so many corners of the nation. As I expected, the work has been demanding but I never expected it to be so utterly exhilarating and for me to become such a firm advocate of the English inshore fleet. Though often tiring because of the travelling and the long days involved, I found the field work to be completely absorbing and rewarding. Part of my enjoyment was that I was able to draw on the knowledge and prior experience of this sector gleaned through my years spent working for the Sea Fisheries Committee and the MMO, as well as with international fleets.

There are various ways in which one can make 'an original contribution to knowledge' - such as by developing new theories, challenging or re-interpreting existing theories, or applying existing theories to new areas of knowledge. My thesis tends towards the last approach – applying the theories of resilience to a new case (the English SSF) but it also makes a (modest) contribution to the theory of resilience by adding passive resilience to the familiar concepts of adaptive and transformative resilience.

I did, however, experience some research challenges. First, the national contact I approached in the MMO refused to allow any of their regional staff to be interviewed by me, which was a considerable disappointment since it meant I could not obtain their side of the story, defending themselves against many criticisms made by fishers. Second, I was forced by constraints of time and resources to abandon my initial intention to conduct a participation action research (PAR) exercise. Third, I gradually changed my strong understanding of passivity as a failure of resilience to a third form of resilience. Fourth, I had a challenge in persuading fishers to accept me as a neutral researcher given my earlier work as an enforcer of fisheries regulations on the SSF fleet. Fifth, I found juggling my research with my paid work and the demands of a young family to be much more exhausting than I predicted. Sixth, the shaping of my thesis was a slow process, both as a result of my part-time status but I was always encouraged by my supervisors and was spurred on by my genuine interest in the subject area and my commitment to the future potential of the English SFF.

8.5 Directions for Future Work

There were aspects of my research which I was unable to address, and there are also new areas which have come to light which have yet to be explored. Some of these ideas are expressed below as topics for future research:

- A comparison between the management cultures of the MMO and the IFCAs, and their respective impacts on the SSF fleet's resilience;

- Further analysis of the impact of Brexit on the under-10 m fleet's internalised resilience;

- A comparison of the inshore fleet's experience in England with their counterparts' experiences in Wales and Scotland, given the different governance systems in the devolved administrations;

- A comparative analysis of inshore fishers in other countries through the theoretical lens of the three resilience strategies; and

- Further investigation into the possibility of communities self-motivating to move out of a passive resilience state back into either an adaptive or transformative mode, and examples of external bodies have facilitating this process.

Appendix A. Sample Invites

Fishermen's meeting

[Location], [date], [time]

Are you a XX fisherman working a 10 metre or under vessel? If so… we are very keen to hear your thoughts on the challenges facing your fleet, any potential solutions you may have and on consultations mechanisms employed by fisheries management bodies as part of my PhD project with Newcastle University. Alternatively, if you would prefer to speak to me separately, I will be in [location] from [date arrive] to [date leave].

Participation is purely voluntary, but teas and coffees will be provided. All discussions will be made anonymous and participant's identities will remain confidential to allow all involved to speak freely and honestly. Participants will be free to withdraw from the research at any time and copy of the final thesis and associated papers can be made available upon request.

Please feel free to contact me on 07818001266 or **r.korda@newcastle.ac.uk** if you have any questions.

Rebecca Korda
PhD candidate

Appendix B. Participation Information Sheet

I would like to invite you to take part in this research project and have therefore provided further information outlined below on why the research is being done and what it would involve for you.

Project title	"When is resilience sustainable? A critical analysis of the challenges facing English small-scale fishers, and their varying responses"
Lead researcher	Rebecca Korda Email: r.korda@newcastle.ac.uk Mobile: 07818001266
Sponsoring institution	Newcastle University
Ethical approval	Yes. Ethical approval has been sought and obtained for this project
Research purpose	This study seeks to examine (1) what the challenges which affect the English under-10 metre fleet are; (2) how the English under-10 metre fleets have responded and (3) what can be done to improve their position.
Possible conflicts of interest	None
Why have I been invited?	You have been invited to take part because your opinion on this topic is greatly valued and we believe that your knowledge and experience of this subject area will assist the research greatly.
Do I have to take part?	No, your participation is entirely voluntary. If you do agree to take part, we will ask you to sign a consent form. You have the right to

	withdraw from the study at any time without giving a reason.
What is involved in participating?	The focus group will take roughly 1 to 1.5 hours and will be recorded on a Dictaphone. The transcript and the original recording will be saved in a password protected file only assessable by Rebecca and her supervisors. It will then be anonymized prior to analysis. You will be provided with a copy of this file and asked to confirm it is true and accurate. You may be asked to participate in some follow-up research at a later date, but you have the right to refuse without giving a reason. Unfortunately, we are unable to provide a financial incentive, but we will be happy to provide you with a copy of the thesis when the project is completed.
What will I have to do?	If you agree to participate, you will be asked to attend a focus group where you can discuss a series of questions. You will also be given the opportunity to add further comments if you wish. The same script will be used for all participants.
What are the possible benefits of taking part?	We believe that the motivations and perspectives of stakeholders have important policy implications for the small-scale fishing industry. By taking part in this study, you will assist us in researching this interesting, yet relatively unexplored topic.
What happens when the research study finishes?	Once the research has been completed, the results will go towards the completion of Rebecca Korda's PhD thesis and any spin off papers for publication.
What if there is a problem?	If you agree to take part in the study, but later find that you are unable, or prefer not, to participate then you have the right to opt-out. Any complaint that you have about the way you have been treated will be dealt with in accordance with the University of Newcastle's research guidelines.

Will my taking part in the study be kept confidential?	You will be given the option to keep your participation and that of your organisation anonymous. All information that is collected from you during the study will be strictly confidential and stored in a secure location accessible only by authorized individuals.
Terms for withdrawal	You have the right to withdraw at any time without prejudice and without providing a reason.
How to file a complaint	Please contact Rebecca Korda's supervisors, either Professor Selina Stead (selina.stead@ncl.ac.uk) or Professor Tim Gray (tim.gray@ncl.ac.uk)
Further information	If you would like further information on any of the issues mentioned above, or about the research study in general please contact Rebecca Korda.

Appendix C. Participation Consent Form

Title of Project: "When is resilience sustainable? A critical analysis of the challenges facing English small-scale fishers, and their varying responses"

Name of Researcher: Rebecca Korda

Name of Supervisors: Professor Selina Stead and Professor Tim Gray

I, the undersigned, confirm that (please tick box as appropriate):

	I have read and understood the information about the project, as provided in the Information Sheet dated 30th December 2014.
	I have been given the opportunity to ask questions about the project and my participation in it.
	I voluntarily agree to participate in the project.
	I understand I can withdraw at any time without giving reasons.
	The procedures regarding confidentiality have been clearly explained to me.
	The use of the data in research, publications, sharing and archiving has been explained to me.
	I understand that other researchers will have access to this data only if they agree to preserve the confidentiality of the data and if they agree to the terms I have specified in this form.
	My name will not be used in this project

	I, along with the Researcher, agree to sign and date this informed consent form.

Appendix D. IFCA Chief Fishery Officers Interview Script

Background information

- How long have you held your current role?
- How long have you worked in your IFCA?
- How did you come to be involved in fisheries management?
- How many years' experience do you have working in connection with fisheries?

Challenges/solutions

- What are the challenges facing the English under-10 metre fleet?
- What solutions are available to meet these challenges? Can you give examples?
- What are the constraints faced by the IFCA in applying these solutions?
- What if any are the constraints faced by the English under-10 metre fleet? And other groups?
- How do you anticipate that these challenges will change in 10 years?
- What are the strengths of the English under-10 metre fleet?
- What are the weaknesses of the English under-10 metre fleet?
- What are the opportunities of the English under-10 metre fleet?
- What does the future of the under-10 metre fleet look like?

IFCA management characteristics

- If you had unlimited funds, where would you prioritize the resource input to achieve a sustainable under-10 metre fishery sector in your IFCA district?
- How would you identify a successful IFCA?

Community characteristics

Please rate communities (1 = disagree strongly, 2 = disagree, 3 = agree, 4 = agree strongly)

Variables	**Communities**

Self-organisation	
Presence of active fisheries association	
Presence of a motivated leader	
High participation rates in fisheries association	
Trust (between fishers within the community)	
Community tradition in self-organisation	
United community	
Community rules established and self-enforcement mechanisms	
Community networks	
Fleet are embedded within the community (wider community support)	
Community networks with other fishing communities	
Community engages with other grass-root networks (e.g. FLAG)	
Community engages with IFCA	
Vertical collaborative working arrangements	
Economic options	
Diverse produce to persecute	
Communities able/willing to diversify and foster innovative solutions	
Access to markets	
Ability/willingness to capitalize on opportunities arising from niche market	

Aging fleet	
Accessible fleet for youngsters	

Governance mechanisms

- Which groups, organisations, or associations does your IFCA work with on a national level?
- Which groups, organisations, or associations does your IFCA work with on a regional level?
- What influence over your managerial decision making processes do they each have? How?
- What type of events/activities does your IFCA attend within your districts fishing communities?
- How do you communicate with these different fishing communities? How often?
- Can you talk me through the normal processes involved when your IFCA undertake a consultation? Have you used different consulting mechanisms? If so, which was the most successful? Why haven't these been adopted as normal consultation processes?

Principles of good governance

- Do the under-10 metre fisheries communities support your authority's regulations? If not, who and why?
- Do other marine stakeholders largely support your authority's regulations? If not, who and why?
- How is your authority answerable to your fishing communities? In particular, to your under-10 metre fleets? Can the under-10 metre fishing communities challenge your authority's regulations? How?
- Do you ensure that the reasoning - i.e. the process undertaken and the underpinning evidence - behind any byelaw decisions is evidence to your under-10 metre fishing communities? How?
- When consultations are undertaken, are all stakeholders treated equally? Can you provide examples?

- How do the committees fishing representatives disseminate information back to the under-10 metre fishing communities in your district? Is this monitored?
- In the last three years, what feedback have you received in terms of the effectiveness of these participatory processes? Has any come from the under-10 metre fleet? If so what?
- Does your IFCA have clearly defined processes for identifying the common needs and priorities of its under-10 metre fishing communities? Yes/No. If so, how?
- Does the composition of your committee provide proportional representation of your districts stakeholders?
- How would you characterize the relationship between your agency and the wider community?
- Do your different stakeholder groups trust each other?
- What procedures do you have in place to identify, assess and manage risk regarding the management of the under-10 metre fishing communities?

Appendix E. Fishers' individual interview guide

Occupation

- What type of vessel do you operate?
- What gear do you use throughout the year?
- Do you own your vessel?
- Do you fish alone or with others? Has this changed over the years? If so, why?
- How long have you been a fisherman?
- How did you come to be a fisherman?
- Is this your main job? What other occupations do you undertake? Why do you diversify?
- Do you have a family history of commercial fishing?
- Would you ever consider leaving commercial fishing? What other options are available?
- What does the future look like for the English under-10 metre fleet?

Community definition

- Who do you see as being part of your fishing community?
- Is there a main spokesperson for this fishing community? Who and why?
- Are there any formal networks within your community i.e. under-10 metre fishermen's associations? Are you a member? Why did you join? How many fishermen engage with them? How are decisions made? Is it achieving its aims? How could it be more effective?
- Do you engage with fisheries-related networks elsewhere? Who and how?
- If there was a problem which affected the whole fishing community, would people work together to tackle the issue? Do you have an example of when this happened? What was the outcome?
- Is your fleet embedded in the wider community of XX?
- How would you identify a successful fishing community? Is yours successful?
- What are the strengths of your fishing community?
- What are the weaknesses of your fishing community?
- What are the opportunities open to your community?

Perceptions of challenges

- What are the challenges currently facing your fishing community and the wider under-10 metre sector? How have they affected your fishing community?
- What do you see as the potential solutions to these challenges? And does one size fit all or do bespoke policies need to be customized for individual communities?
- Are there constraints to implementing these solutions? If so, what are they?

Perceptions of governance mechanisms

- What are your experiences of dealing with your IFCA (regional legislation)? Does this differ from your experiences of dealing with the MMO (national legislation)?
- Do you think that the regulations your authority produces are sensible? If not, why?
- Can under-10 metre fishing communities challenge your authority's regulations? How?
- Do you feel that your opinions/feelings/rights are taken into consideration when decisions about fisheries management are made?
- Do you know how decisions are made by the IFCA? How, and by whom?
- When decisions are made, is information provided to you to explain why a particular decision was taken? Do you have any suggestions on how to make this more useful?
- Are you consulted when the IFCA make decisions that will affect you? Do you consider this to be suitably inclusive?
- Do managers make an effort to include the right people when they're making decisions?
- Are there any barriers to you being involved in the decision-making process?
- What is good about how they run their regulation forming process?
- Do some stakeholders have more influence on decision-making than others? If so, who?
- When stakeholder consultations are undertaken, are all stakeholders treated equally?
- Does the composition of your IFCAs committee provide proportional representation of your districts stakeholders?
- Do you have any suggestions as to how you would like the relationship between the under-10 metre fleet and both organisations to work?

- How could their decision process be improved?

Appendix F. Fisher focus groups

Introduction

Hello and thank you all for coming today. My name is Rebecca Korda and I am a PhD student with Newcastle University. Before we get started, I just wanted to say a bit about my research. Over the next few months, I will be conducting group discussions with fishermen in different areas of England. I am investigating the challenges facing the English under-10 metre fleet; what strategies are used to overcome this and what can be done to improve their position. Whilst this is an academic piece of work, we are hoping that the findings will be useful to both yourselves and management agencies. A major part of this project is to hear from you and these focus groups are part of that effort. In addition, I hope to speak with people on a one-to-one basis.

Before I ask you any questions, I will explain how we will run the meeting today. Your participation is purely voluntary, so you are free to leave whenever you want. However, I value all of your views and opinions greatly and hope that you will stay and share them. I will be recording this group meeting, so that I don't miss anything that is said. Please don't be concerned by this, as whatever we discuss today will be kept strictly confidential and used only for this research project and none of you will be named in the final study. That means that any comments you make will be made anonymous. Is it OK with everyone to record this discussion? If you are happy to take part, I have a consent form for each of you to sign at the end of the meeting.

I would like to stress that there are no right or wrong answers and we are interested in your opinions and experiences, so please feel comfortable to say what you really think and be honest. We would like to hear as many points of views as possible so feel free to disagree with someone else and share your own view, but be sure to be considerate, respect other people's opinions and avoid offensive views or language. It is also important that only one person talks at a time so we don't miss anything on the recording. This discussion will probably take about an hour or so. Before we start, are there any questions?

Introduction questions

- I wondered if we could start by going around the room so you can introduce yourselves and tell me what type of vessel you operate and what gear you use throughout the year.
- Every fishing community is different – can you tell me about the XX fleet? What changes you have seen over the years? Who do you see as being part of your community?
- What fishing networks do you engage with? Local fishing associations? NFFO? NUTFA? Sit on the IFCA?

Perceptions of challenges and opportunities

- Now that we have discussed your thoughts on your fishing community, I would like to discuss the challenges currently facing your fishing community and the wider under-10 metre sector. What are these challenges? How have these challenges affected your fishing community?
- What do you see as the potential solutions to these challenges? And does one size fit all or do bespoke policies need to be customized for individual communities?
- What constraints prevent the implementation of these solutions? If so, what are they?
- What are the strengths of your fishing community?
- What are the opportunities open to your fishing community?

Perceptions of governance mechanisms

- What are your experiences of dealing with your IFCA? Do you feel supported by them? Do their decisions impact your community? How? How does this differ from how they work with the over-10 metre fleet?
- How does this differ from your experiences of dealing with the MMO?
- Do you have any suggestions as to how to improve the relationship between the under-10 metre fleet and both organisations?

Perceptions of marginalization

- Can you name a recent regulation created by the IFCA which affected your community?
- Why was this regulation introduced?

- How were you involved in the decision-making process? Were your opinions were taken into consideration? Did any individuals, groups or organisations have more influence than others over the process? Who? How were the decisions communicated to yourselves? Was this sufficient? Were there any barriers to engagement?
- What was good about the decision-making process?
- How could decision making have been improved?
- Is this different to how the MMO creates regulations?

We are now reaching the end of the discussion. Does anyone have any further comments or feel that there is anything which should be captured that we have not yet discussed?

Thank you so much for your time, your experiences and opinions are very valuable to assist with this piece of work.

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