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Recognising and Protecting the National Benefit of Sustainable Fisheries in the UK

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ABSTRACT

Sustainable commercial fishing makes valuable contributions to coastal regions and broader national benefits. This paper offers three arguments in relation to what is required for the societal benefits of sustainable fisheries to be fully realised and considers each in the context of the UK but with global relevance. First, there is a need to raise the profile of the full range of benefits that are delivered through sustainable fisheries to coastal communities and the broader public. In the UK, the delivery of a 'national benefit' objective through fisheries is now enshrined in law by the Fisheries Act, 2020; we operationalise this through a new framing that distils eight 'national benefits' that all sustainable fisheries should deliver. Second, better acknowledgement of what society gains from sustainable fisheries must be paralleled with recognition of what society is simultaneously at risk of losing through the decline of the fishing fleet. We detail this decline in a new analysis of long-term UK data, which highlights that the decline is unequally felt, with some regions of the UK, and small-scale fishing sectors, experiencing loss more acutely. This reality leads us to argue a third point, that if society is to retain and truly harness the benefits that flow from sustainable fisheries, governing bodies must act quickly to ensure that fisheries are environmentally sustainable, diverse and inclusive, pursuing fisheries that 'leave no one behind'.

1 | Introduction

> Fisheries are supposed to be for the benefit of society, producing food, providing livelihoods and enabling cultural continuity.
>
> (Barclay et al. 2023, 896).

The writing of this article was prompted by collective growing concern about the decline in the UK fishing fleet and the societal consequences of this loss, not just for fishing communities but also the general public. Sustainable fishing means 'leaving enough fish in the ocean, respecting habitats, and ensuring people who depend on fishing can maintain their livelihoods' (MSC 2024). This directs attention, in equal measure, across

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the status of fish stocks, the status of marine habitat and the status of the fishing fleet mediated by the viability of fishing livelihoods. In reality, however, interpretations of sustainable fisheries in UK policy are more heavily weighted towards stock assessment (Symes 2023), and this bias has produced a vision of sustainability in fisheries in which the people who do the fishing are increasingly diminished from the consciousness of policy makers (Voyer et al. 2017). As was argued over two decades ago,

> ...it is important to remember that sustainable development is a three-legged stool embodying environmental, economic and social sustainability: dangers arise when one of these legs is weakened by neglect. It is certainly not the case that social objectives have disappeared altogether from the rhetoric of fisheries policy. Rather they have been downgraded and made increasingly opaque
>
> (Symes and Philipson 2009).

The shortcomings of a narrow definition of sustainability, still prevalent in many approaches to fisheries management that are limited to biological and economic considerations, are now widely recognised (Carruthers et al. 2019; Angel et al. 2019; Homer 2023). In particular, there is lack of attention to governing the distribution of benefits that flow from sustainable fisheries both effectively and equitably (Parlee et al. 2021). While some observers recognise that many are 'striving to develop and manage fisheries that achieve both ecological sustainability and human well-being outcomes' (Bennett et al. 2021, 1), this broadening of a concept of fisheries sustainability from 'sustainable stocks' to 'sustainable ecosystems that incorporate people' has not been easy with an increasingly complex set of expectations now placed on fisheries management (Foley et al. 2020). Foley et al. (2020, 1) capture the challenge well in their special issue on 'full-spectrum sustainability':

> Fisheries managers now face the combined demands for an ecosystem approach to management... environmental NGO pressure for third party certification assessments...and the growing requirement to incorporate fishing-dependent communities... and other stakeholders in the management decision-making process...Fisheries management has also been challenged to move beyond the tendency to focus exclusively on threats to fish stocks and a narrowly conceived perspective on economic viability by incorporating fundamental social issues of fairness, ethics and justice in the human dimensions of fisheries management.

The Fisheries Act, 2020 legally binds UK fisheries policy to the delivery of eight objectives[1]. Of these, The *Sustainability Objective* clearly shares attention across stock, environment and livelihood concerns, so that '(a) fishing is (i) environmentally sustainable in the long term, and (ii) managed so as to achieve economic, social and employment benefits and contribute to the availability of food supplies, and (b) the fishing capacity of fleets is such that fleets are economically viable but do not overexploit marine stocks' (Gov.uk 2020). The Fisheries Act embodies specific social-economic concern via its 'National benefit objective', which dictates that 'fishing activities of UK fishing boats bring social or economic benefits to the United Kingdom...'.

This paper aims to contribute to the interpretation and delivery of the Fisheries Act in the UK, which itself represents a holistic 'full-spectrum' vision for fisheries policy, with three core arguments. First, if the societal benefits of sustainable fishing are to be protected and harnessed to deliver the objectives of the Fisheries Act there is a need to clearly articulate and evidence, and by doing so improve recognition of, what those benefits are. We present a new conceptual framing of eight 'National Benefits' that all well-managed sustainable fisheries should be able to deliver to society (see Section 2), as a steer to policy makers regarding how the national benefit objective of the Fisheries Act might be operationalised to realise wellbeing outcomes for society (Coulthard 2012; Voyer et al. 2017). Second, better acknowledgement of what society gains from fisheries must be paralleled with recognition of what society is simultaneously at risk of losing through the continued decline of the fishing fleet, both loss of boats from harbours and declining numbers of people employed as fishers. We detail this decline in a new analysis of long-term data for the UK fishing fleet (see Section 3). While the analysis shows widespread decline across the whole fleet in almost all parts of the UK, the data also confirms that the decline is unequally felt, regionally, and with the small-scale sector (defined in this paper as vessels under 10-metres (m) in length) demonstrating a steeper rate of decline across several measures. This dual recognition of what society gains through its fishing industry, but is simultaneously losing through decline in the fleet, leads us to a third argument. If society is to retain and truly harness the benefits which flow from sustainable fisheries, governing bodies must act quickly to ensure fisheries are environmentally sustainable, diverse and inclusive.

2 | Contributions of Sustainable Fisheries to the National Benefit

2.1 | What Does Sustainable Fishing Mean in the UK Context?

Sustainable commercial fishing makes valuable contributions to coastal regions and broader national benefits which, if recognised and protected, can bolster the meeting of sustainable development goals nationally and globally. By 'sustainable', we refer to the definition introduced earlier: 'leaving enough fish in the ocean', 'respecting habitats' and 'ensuring people who depend on fishing can maintain their livelihoods' (MSC 2024). A balance of all three elements is required for sustainability and our discussion of benefits is inclusive of any type of fishing that can be defined in these terms. It does not include unsustainable fishing, where intensity of fishing pressure, impact of fishing method, or consequences of governance, undermine the delivery of national benefits from marine resources. Furthermore, in this article we do not categorise sustainable

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fisheries as being specifically small-scale or low impact. These characteristics of fisheries are often contended as being synonymous with higher levels of sustainability and promoted in partnership with environmental and conservation objectives (EU 2022; Greenpeace 2024). For example, the 'Low Impact Fishers of Europe' (LIFE) platform has played a critical role in improving recognition of, and a united voice for, small-scale fishers, mirrored in the UK by the (recently closed) New Under Ten Fishermen's Association (NUTFA). While small-scale is often allied with greater sustainability, it is not always the case (Batista et al. 2009). The impact of any fishery is influenced by the intensity of fishing, status of management, and fragility of the stock targeted and the habitat in which it operates (Suuronen et al. 2012; Lloret et al. 2018; McConnaughey et al. 2020). As Fennell et al. (2021) point out in their systematic review of the literature, the way a gear is used also influences its impact and yet this detail is often absent; the authors highlight how impact assessment of nets often centre on ghost fishing from lost or discarded, rather than actively used (and usually looked after) fishing gear. Small-scale fishing operations can also have negative effects in certain contexts; intensive and prolonged potting in high energy environments is one (Stevens and Kotwicki 2020), unregulated small-scale trawling in fragile habitats another (Costa and Netto 2014). Detailed contextualisation in impact assessments of fishing gear is therefore important (Gall et al. 2020; Fennell et al. 2021; Solandt et al. 2025) and support (the now extensive) arguments for holistic ecosystem-based fisheries management (Long et al. 2017; Rees et al. 2021).

In the UK, as in other parts of the world, uncertainty over who is and who is not, included in definitions of 'small-scale' or 'low impact' have seemingly hindered progress in recognising the contributions, and specific needs, of smaller boats in national policy (see also De Vos and Kraan 2015; Smith and Basurto 2019), with concerns often mooted over the impacts of exclusion and division in what are inherently complex and diverse fishing communities. This is articulated well by Symes et al., (2020, 353) whom we cite at length here, to accentuate this critical point for current UK policy deliberations:

> ...Defining small-scale fisheries by reference to vessel size is problematic. In the UK the link between under 10 m boats (which also include vessels using towed gear), limited catching capacity and low impact fishing has been undermined by the ingenuity of small boat builders in designing so-called 'super under 10s' with catching and storage capacities well in excess of what is expected from small-scale fishing enterprises and by the determination of some under 10 m shellfish fishers to maximise output by deploying unusually large numbers of pots. Vessel size has never been a reliable indicator of harvesting capacity...Yet vessel length remains the only universal standard for measuring the size of the small-scale sector. The defining characteristic of the UK's small-scale fisheries is diversity, not only in relation to the range of species and métiers used but also the aspirations, behavioural patterns and performance in fishing. For some, small-scale fishing is simply a stepping stone to something bigger, or conversely a scaling down towards eventual retirement, while for others it offers a sufficient and fulfilling way of earning a living. Participation may be full time, part time, seasonal or occasional... Such diversity provides a huge challenge for fisheries management.

As De Vos and Kraan (2015) usefully remind us, small-scale is a relative concept: 'it can be understood by what it is not; it is not industrial or large scale'. In this article, which seeks to distil the benefits of sustainable fishing in all its forms, we do not infer that these benefits are dependent upon size of vessel or gear type, but rather they are universal benefits that should be afforded by all well-managed forms of fishing.

2.2 | Recognising the Full Range of Benefits of Sustainable Fisheries

An immediate challenge in recognising the value of sustainable fisheries is the poor visibility of the full range of its societal, cultural and regionally important contributions (Guyader et al. 2013), including employment and welfare functions (Gustavsson and Riley 2018), as well as indirect economic benefits such as those generated by coastal tourism (Urquhart and Acott 2013). From a national GDP perspective, UK fisheries overall are relatively marginal, contributing only 4.3% of the broader agriculture, forestry and fishing sector combined (MMO 2022a, 2022b). It is only when we consider the wider range of contributions, and the frequent concentration of these within relatively deprived coastal regions (Depledge et al. 2017), that the full societal importance of fisheries becomes explicit and amplified (Urquhart et al. 2014; Barclay et al. 2017; Kemp et al. 2023b; MMO 2024). Despite their lower economic importance at a national scale, fisheries have long been a passionate topic across UK society (NEF 2018). From their central role in the Brexit debate to the national dish of fish and chips, our societal and cultural connections to fisheries as an island nation are long-standing and run deep (Nadel-Klein 2020; Stewart et al. 2022; Watson 2023). The iconic presence of fishing boats in harbours and ports around the country connects, across generations, modern-day practice with centuries of fishing activity and sense of place (White 2015; Urquhart and Acott 2013b, 2014). The challenge is capturing these diverse connections in a more tangible way that affords them greater visibility in policy debates.

Across policy documentation the terms 'social' and 'economic' are frequently conflated, often appearing as a single 'socio-economic' construct. This conceptual conflation, and the reality that economic benefits are frequently more quantifiable, monitorable, and therefore dominant in policy, means that the 'social' invariably becomes subsumed under the economic (a common limitation across many policy domains) (Martino et al. 2023). The phrasing of the national benefit objective in the Fisheries Act itself states; 'fishing activities of UK fishing boats bring social or economic benefit' rather than social *and* economic benefits. This may seem like semantics but, in the case of fisheries management where more tangible economic

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benefits regularly preside over social ones, this risks giving precedence to larger-scale fishing operations that contribute more explicitly to GDP, and overlooking the smaller-scale with potential lower economic value but which offer many non-monetary contributions, including employment and rural development (Loizou et al. 2014).

Furthermore, smaller and medium-sized boats are more widespread across differently sized harbours and beach-landing sites (without harbour), where it is not always possible for larger boats to land their catch. The public can easily access and experience fish landing and buy fish from smaller boats directly; Hastings and Cromer in South-East England are good examples of where this takes place and forms an important part of local culture (White 2015). Larger landing ports are often required by large-scale fishing boats due to their infrastructure and market availability, but are usually multi-use, many with restricted public access (Brookfield et al. 2005; Reed et al. 2013). The *quality* of national benefit, measurable in terms of the full range of contributions alongside distribution and public accessibility of those benefits, is just as important as the *quantity* of benefit in terms of GDP. Balancing attention across economic and social benefits, and the employment of new metrics capable of capturing them, is therefore key (Schuhbauer and Sumaila 2016; Williams et al. 2018).

In Figure 1, we distil eight national benefits, which collectively constitute an important public good and contribute to delivering the Fisheries Act national benefit objective; we detail each in the context of UK fisheries.

2.2.1 | The Coastal Economy Benefits

Sustainable fisheries widely distribute multiple economic benefits across coastal regions that span rural and urban geographies. These include local employment on boats and among onshore ancillary industries such as processing and sales, boat repair and fisheries management (Zeller et al. 2006), alongside regional economic wealth, including that generated by fisheries-related tourism (Urquhart and Acott 2014). Furthermore, shore-based family members of commercial fishers often form important parts of the local labour force and economy in coastal communities (Nadel-Klein 2020). These multiple contributions are starting to become recognised in the UK (MMO 2024). For example, a recent report by the Cornish Fish Producers Organisation (CFPO 2023) concluded that in the county of Cornwall in south-west England, the seafood sector contributes £174 million to the county's total gross value added and generates around 8 thousand jobs, which means for every fisherman at sea in Cornwall there are 15 more jobs on shore.

2.2.2 | The Sustainability Benefit

The sustainability benefit is founded on ensuring fish in the sea for future generations, but it is not limited to this. A broader conceptualisation of 'sustainability benefit' can encompass, and be accentuated by, environmental stewardship and sustainable practices. Commercial fishers often (though not always) exhibit a

FIGURE 1 | National benefits of sustainable fisheries.

sustainability ethic and sense of stewardship over the marine resource upon which they depend (Christie et al. 2014; McConney et al. 2019; Rivera-Hechem et al. 2021). This can be motivated by stewardship over local fishing grounds, particularly with less mobile species such as shellfish, upon which inshore fishers can be heavily dependent compared to more nomadic offshore fleets which can (relatively) more easily relocate (Richardson et al. 2005), albeit we acknowledge this is increasingly challenged by competition for marine space offshore (NFFO 2022). Commercial fishers also frequently express a concern for the health of fish stocks and intrinsic value in relation to the continuation of a fishing industry to benefit future generations (Kincaid and Rose 2014; Malcolm et al. 2021; Ertör 2023). Those future generations often represent family or known community members and a direct passing down of the family boat, trade and tradition (White 2015). The Sustainability benefit can also be enhanced through pursuit of management that reduces the ecological impact of fishing techniques, for example, management of effort to reduce fishing intensity and through adopting low impact gear or modification of gear design to reduce impacts on the marine environment (McConnaughey et al. 2020). Good examples from the UK include transformation from dredging to potting or hand-diving for higher value scallops (Enever et al. 2022) and effective spatial management of bottom-towed gears in Marine Protected Areas to ensure adequate protection of features that are sensitive to their impacts (Birchenough et al. 2020).

2.2.3 | The Social Fabric Benefit

Fishers and their families are closely intertwined within the social fabric of coastal communities, they are valued by the public (SFF 2024) and play core roles in the function of coastal communities, such as lifeboat volunteering for example (White 2015). Fishers are 'place-makers': 'their activities such as working with the tides, working on the harbourside and tackling the elements are the activities that very publicly recreate the uniqueness of the

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place' (Reed et al. 2013, 67). In more rural and island locations, fishing families can uphold population viability that helps maintain essential service provision such as schools and health care (Thomson and Cottage 2001; Stead 2005). It is increasingly recognised that changes occurring in a fishery can trigger transformation of wider social structures and dynamics that impact multiple ways of life on land (Crona and Bodin 2010; Katikiro et al. 2015).

2.2.4 | The Culture and Heritage Benefit

The contribution of fisheries to local culture and heritage is founded upon fishing families residing in coastal communities. The role that fishing plays in 'sense of place' has been highlighted throughout Europe (Urquhart and Acott 2014; De Madariaga and del Hoyo 2019) often captured by numerous exhibitions, museums and cultural events dedicated to local fishing; a growing range of research now seeks to explicitly embed heritage values in ecosystem-based frameworks (Khakzad and Griffith 2016; Azzopardi et al. 2023).

2.2.5 | The Human Rights Benefit

Recognising and protecting sustainable fisheries necessitates the human rights of those working in fisheries to be recognised and to continue their valued and historic way of life with dignity, alongside the human right of the public to continue to receive secure benefits from sustainable fishing. The benefits of human-rights-based approaches to fisheries management have long been advocated (Charles 2011; Allison et al. 2012; Gray et al. 2023; Finkbeiner et al. 2024) including in the UK (Human Rights at Sea 2020), with human rights constituting an essential component of improved resource management and human wellbeing (Ratner et al. 2014). As is well argued by Lewis et al. (2017, 379). 'Although there can be legitimate disagreement about the level of a fished stock consistent with a well-managed fishery, the international norm is clearly that commercial industries, such as fisheries, should not participate in slavery or other human rights abuses'. Growing evidence of human rights abuses within fisheries, which include human trafficking, financial bondage, physical and psychological abuse, and exploitative working conditions and wages (Tickler et al. 2018; Djohari and White 2022) have centralised recognition of human rights in the delivery of sustainable fisheries and heightened accountability of those managing fisheries to comply with human rights law (Lima Weston and Kelling 2024). Recognition of rights and equal opportunities similarly draws attention to the important role of gender equality in sustainable fisheries, both in terms of how gender shapes the experience of active fishing (Sze Choo et al. 2008; Kleiber et al. 2015; Williams 2019a, 2019b), and in terms of the needs of women and family members on land who may not actively fish, but provide essential support that enable a functioning fishing household, including childcare, book keeping and additional income sources (Frangoudes and Gerrard 2019).

2.2.6 | The Co-Management Benefit

Fishers, especially those who have been fishing in an area for a long period of time, build up high levels of detailed knowledge about their fishery. This includes long-term changes in the marine environment, stocks, markets, fishing effort and practices, societal change, and consequently, management needs and challenges (Hind 2015; Bentley et al. 2019). Fishers also benefit from long-standing relationships of trust and respect within their own fishing communities (Turner et al. 2014). This constitutes a valuable foundation from which to strengthen fisheries co-management arrangements and improve uptake of fisher knowledge through partnership between government and fishers situated within their communities. The co-management benefit can also intersect with the sustainability benefit, where enhanced stewardship and sustainable practices can be motivated through collaborative approaches to fisheries management that enable knowledge to be shared alongside the generation of mutual understanding and respect (Karr et al. 2017; Scalisi et al. 2024).

2.2.7 | The Food Security Benefit

Despite being a welfare state, food security in the UK is a significant policy and political issue, accentuated in recent years by increasing food prices, growing reliance on food banks (Gorb 2022) and the wide-ranging impacts of climate change that are already being felt in the UK food system (DEFRA 2021; Hasnain 2024). Until recently, sustainable fisheries have been neglected as a focus for national food policy (Kemp et al. 2020). The National Food Strategy focuses almost entirely on agriculture[2], however there is growing recognition of the role of seafood in providing nutritious and low carbon food (Stewart and O'Leary 2017; Tigchelaar et al. 2022). Recent research by Martino et al. (2023) evidenced a strong public preference for seafood that is locally and sustainably caught alongside tangible cultural attributes such as visible fishing operations, arguing that fisheries constitute a 'living heritage', which should be valued. Similarly, Urquhart and Acott (2013) have argued, for over a decade, the value of reconnecting and embedding seafood in place as a central part of rural development in coastal regions. It is important to note that, at present, most seafood consumed in the UK is imported, while most UK fish catches are exported (Stewart and O'Leary 2017). In 2022, UK vessels landed 395 t of sea fish in the UK, exported 330 t and imported 640 t (MMO 2022b), highlighting untapped potential for sustainable fisheries to contribute more to food security in the UK.

2.2.8 | The Added Value Benefit

The added value benefit considers that, in its entirety, the whole contribution of sustainable fisheries is greater than the sum of its individual parts. The contributions expand across a wide range of government policy, including rural and coastal development, food security and poverty reduction (Urquhart and Acott 2013). In the UK, there is growing recognition of the potential for fishing and to serve as a primary instrument through which to channel national and supranational funding to coastal populations (Depledge et al. 2017), to address the widening economic gap between coastal communities and the rest of the country and many other social inequalities (Lambert 2019). The added value benefit speaks to broader public goods, which can

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be derived from sustainable fisheries, including healthy seas and marine food chains, environmental monitoring and reporting, and maritime skills and knowledge. Relevant here is the concept of 'public money for public goods' (PMPG) at the core of the new Agriculture Act (2020), which is revolutionising farming subsidies to reward actions by farmers which deliver societal gain. Scholars have recently posited the potential benefits of a 'marinisation' of the PMPG concept to transpose it to marine fisheries, given the extensive public goods derived from healthy seas and sustainable fishing (Maljean-Dubois and de Oliveira 2018; Vaughan et al. 2021). Illuminating the public goods of sustainable fisheries may provide a route to possible application of the PMPG concept to fisheries, and potential receipt of public money under this framework.

In our framework, we purposefully do not attempt to prioritise societal benefits. Many of the benefits clearly intersect and mutually support one another and, correspondingly, have the capacity to undermine each other if unequally attended. The connections between co-management and sustainability provide one such example, where effective co-management can stimulate sustainable fishing practice contributing to the sustainability benefit, but more top-down management that does not effectively communicate its rationale to stakeholders can erode trust and legitimacy of decisions made (Linke and Bruckmeier 2015). The framework is holistic, seeking to organise, recognise, protect and accentuate the delivery of national benefits that currently flow from sustainable fisheries, while identifying new opportunities to further transform the marine capital held within our seas.

3 | Evidencing the Nature of Decline in the UK Fishing Fleet

The preceding section detailed a new framing of societal benefits that can flow from sustainable fisheries, recognising the breadth of contributions that the sector has to offer. Simultaneously, however, the UK is at risk of losing those benefits from many parts of its coastline. While the decline in the UK fishing fleet is captured periodically in published works (Hatcher and Read 2001; Abernethy et al. 2010; Korda et al. 2023; Kemp et al. 2023a) regular analysis of long-term change in the fishing fleet is lacking, with government reports mostly constituting annual snap shots of the fleet (such as the annual Seafish Fleet Survey). Yet, the decline in the fleet is frequently lamented by both fishers and those who work in fisheries management (Abranches 2023). Many coastal towns and villages that once heralded a strong fishing tradition and culture are down to a handful of fishing boats (Brookfield et al. 2005; Hutton et al. 2008), often operated by the older generation of fishers close to retirement age who are quick to share their concerns over a lack of recruitment into fishing work. Internationally, an ageing demographic of commercial fishers is a widely documented global concern often termed the 'greying of the fleet' (White 2015; Donkersloot and Carothers 2016; Cramer et al. 2018; Cutler et al. 2022).

This section of the paper presents a new and detailed analysis of decline in the fishing fleet using national data from Seafish (2020), a public body in the UK responsible for publishing annual accounts of the status of the fishing industry. Figure 2 shows the decline in the fishing fleet presented as a 'heatmap', a graphic visualisation of the change in number of active fishing vessels around the UK between 2008 and 2022. The heatmap clearly shows that some regions are experiencing decline in the fishing fleet more acutely than others, resulting in an unequal erosion of societal benefits that flow through fisheries, with parts of the south, east, northern regions and Wales, being particularly hard hit.

A more in-depth exploration of seafish data shows further inequalities regarding the severity of decline in the fleet. Figure 3 shows a breakdown of loss of active vessels split between under 10-m and over 10-m length vessels. While boat length is (as acknowledged earlier) an imperfect definition of small-scale fisheries in the UK context (Davies et al. 2018), these are the categories of data that are available to work with at national level. The data show clearly that the under 10-m fleet, which makes up 75% of the entire fishing fleet in the UK, is particularly affected by decline across multiple measures.

The data show that, in 2022, under 10-m vessels made up 75% of the active fishing fleet and contributed to a total landed catch value of £120.7 million. Between 2008 and 2022, the overall active UK fishing fleet decreased from 4835 to 4006 vessels, equating to 17.2%, with the number of under 10-m vessels declining by 14.6% and the over 10-m fleet experiencing a more pronounced reduction of 23.8%. Despite the larger reduction in the number of over 10-m vessels, the decline in registered tonnage shows a different trend. Registered tonnage for vessels under 10 m decreased by 12.6%, while for over 10-m vessels, it only declined by 2.9%, indicating a shift towards fewer but larger vessels in the over 10-m category.

In terms of days at sea, a key measure of fishing activity, the overall UK fleet saw a reduction of 35.3% from 2008 to 2022. The decline was more severe for under 10-m vessels, which saw a 40.7% decrease, compared to a 29.2% reduction in the over 10-m fleet. Employment in the fishing industry, measured in full-time equivalents (FTE at 2000 h per year), also declined significantly, with an overall decrease of 24.7%. Employment in the under 10-m fleet fell by 41.7%, while employment in the over 10-m fleet decreased by 20.0%. These percentage changes collectively highlight a marked decline in the UK fishing industry, with a greater decline observed in the indicators of days at sea and employment in the under 10-m fleet.

Table 1 and Figure 4 break the data down further, separating it by vessel size and into the devolved nations of the UK. Declines are observed for all four home nations, although the extent and nature of these declines vary.

In England, between the years 2008 and 2022, the combined fleet contracted by 20.4%, with under 10-m vessels seeing a sharper decline (22.3%) almost double the rate relative to over 10-m vessels (12.6%). Under 10-m vessels also saw major reductions in days at sea (43.6%) and employment (47.4%), while over 10-m vessels showed slight resilience in tonnage and employment. In contrast, the number of under 10-m vessels in Scotland saw a slight increase (2.0%), but the number of over 10-m vessels declined sharply (29.6%), with both categories seeing decreases in days at sea and employment. In Wales, the trends differ again, with Wales experiencing the steepest declines, particularly in

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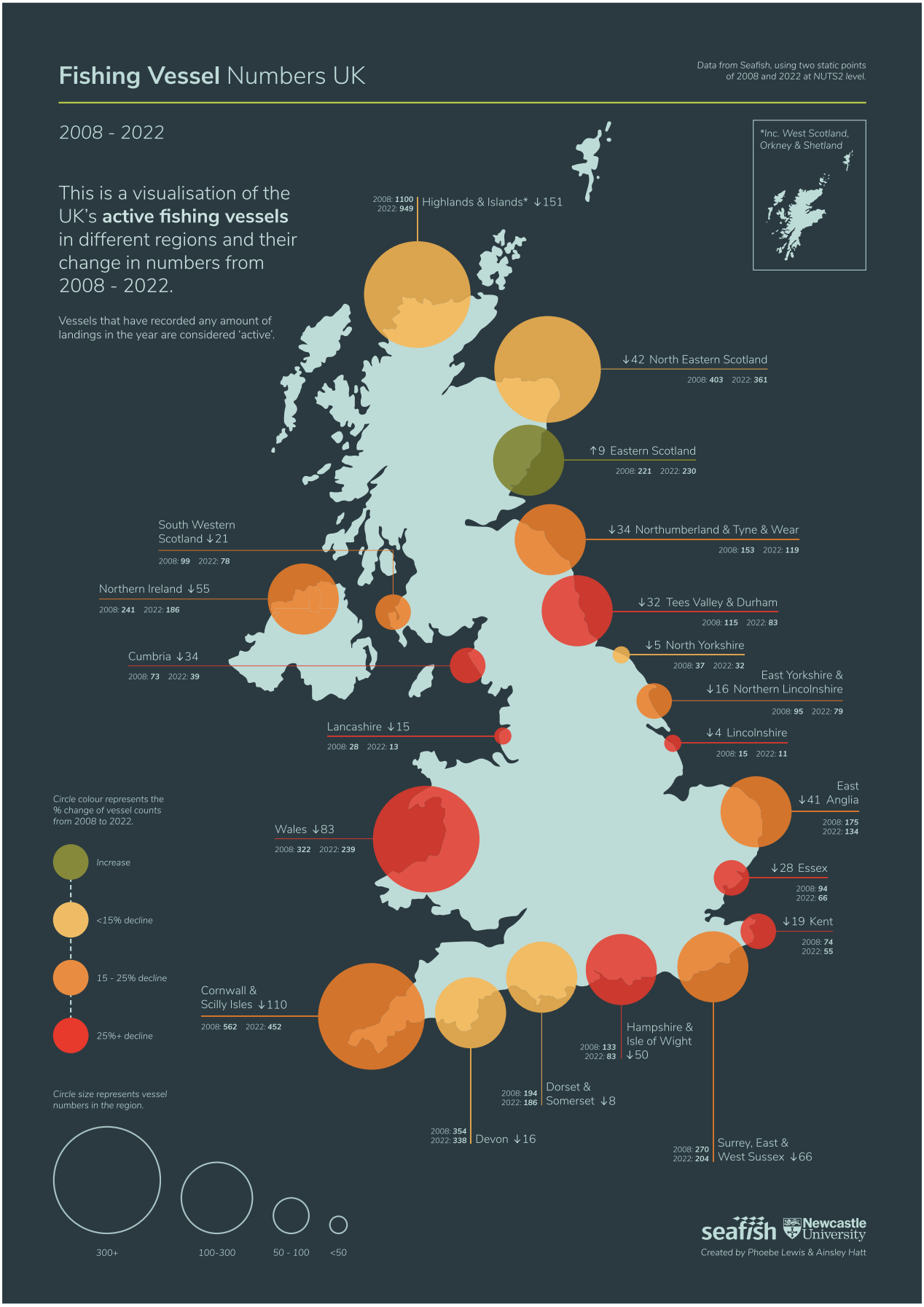

FIGURE 2 | Legend on next page.

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FIGURE 2 | A heatmap visualisation of the change in number of active fishing vessels around the UK between 2008 and 2022. The map adopts a traffic light system of coloured 'hotspots' with red spheres representing regions with a loss of over 25% of the fleet, medium-orange spheres between 15% and 25% loss of the fleet, light-orange spheres 0%–15% decline and green spheres, an increase. The size of the sphere indicates the size of the fleet in each region in the year 2022.

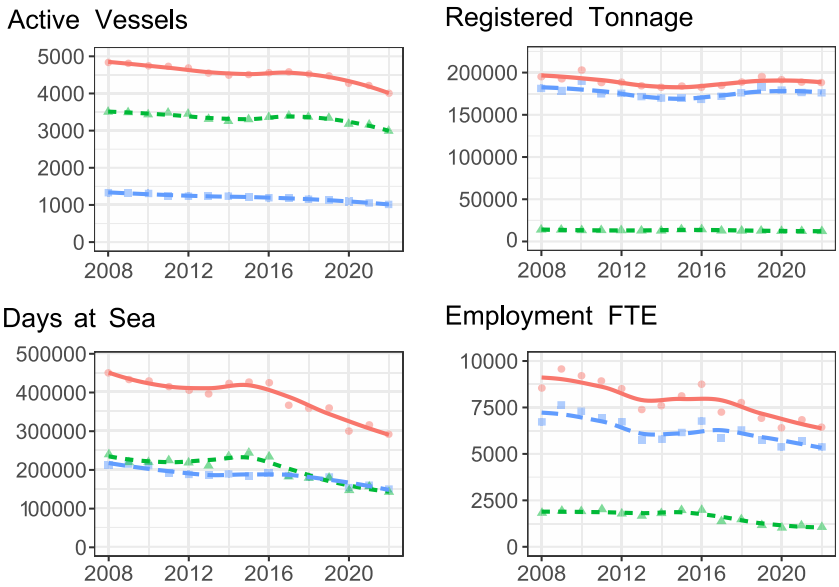

FIGURE 3 | Changes in the UK fishing fleet. Red = Combined counts, Green = Under 10-m boats, Blue = Over 10-m boats.

registered tonnage (81.4% for over 10-m vessels) and days at sea (63.9% for under 10-m vessels), with employment falling by over 60% in both categories. Northern Ireland also saw significant fleet reductions, with the number of active vessels, days at sea and employment declining by more than 20% for both under and over 10-m vessels. These trends, alongside the regional heatmap, highlight the uneven distribution of challenges faced within the UK fishing industry, with under 10 m vessels, across many indicators, facing sharper declines, particularly in England.

4 | The Significance of an Upscaling of the UK Fishing Fleet and Loss of Smaller Boats

Data presented thus far on changes in the UK fishing fleet collectively indicate an 'upscaling' of the fleet whereby fishing effort is being increasingly concentrated in fewer but larger boats. The implications of this, for the capacity of a fishing fleet to deliver societal benefits, have long been debated in many different parts of the world (Overå 2011; Symes and Phillipson 2016; McCauley et al. 2018; Zeller and Pauly 2019; Ayilu 2023). Some argue that fewer, larger, vessels enable a more efficiently managed fishery capable of contributing to GDP that filters down to benefit society as a whole; such 'wealth-based' fisheries management promotes adoption of economically-rational fisheries management that focuses explicitly on limiting access and the wealth-generating potential of fish resources (Cunningham et al. 2009; World Bank and FAO 2009). However, reducing access inevitably leads to the exclusion of some fishers and many have counterargued that a more appropriate approach, particularly in the context of small-scale fisheries in low-income countries, is for fisheries management to adopt 'welfare based' management that is more focussed on maintaining access for employment and providing community development and welfare (Jentoft 2000; Bene et al. 2010; Nunan 2014). Furthermore, some have argued that cumulative modernisation of the fishing fleet can lead to eventual 'decline and disintegration of traditional fishing communities' where small, independent fishers are increasingly unable to compete with large-scale, high-tech fishing operations (Kooiman and Van Vliet et al. 2019). Bavinck et al. (2024) recently argue that the significance of the employment function of fisheries warrants a new 'Maximum Sustainable Employment' (MES) measure that should be used as a 'third beacon' alongside Maximum Sustainable Yields (MSY) and Maximum Economic Yield (MEY) to position fisheries in a broader social context.

This paper concurs and contributes to these debates by similarly advocating a broader social framing for sustainable fisheries, beyond stock and GDP, that can be articulated through the national benefits framework, highlighting that the quality of benefit is just as important as quantity. Adopting the UK context, we highlight the appropriateness and relevance of these arguments to all fisheries, everywhere, not just in the global south where employment in fisheries tends to be proportionally higher (FAO 2023). Quality pays attention to the broader range of social benefits but also, crucially, the extent to which those benefits are distributed across publicly accessible harbours, of all sizes, urban and rural, where the public can see, experience and buy directly from fishing boats. A balanced approach between a welfare and wealth-based fisheries management ethos is perhaps optimal, where *diversity* in the fleet ensures strong contributions across both economic *and* social domains, rather than

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TABLE 1 | Home nation fishing industry trends.

		Active vessels		Registered tonnage		Days at sea		Employment (FTE)	
		2008		2008		2008		2008	
Nation	**Vessel size**	**2022**	**Δ%**	**2022**	**Δ%**	**2022**	**Δ%**	**2022**	**Δ%**
England	Combined	2425	↓20.4%	52,680	↑ 1.1%	183,573	↓31.5%	2867	↓14.9%
		1930		53,274		125,765		2441	
	Under 10 m	1950	↓22.3%	7852	↓22.6%	117,732	↓43.6%	935	↓47.4%
		1515		6080		66,395		492	
	Over 10 m	475	↓12.6%	44,828	↑5.3%	65,841	↓9.8%	1932	↑0.9%
		415		47,194		59,370		1949	
Scotland	Combined	1823	↓9.9%	123,345	↓3.3%	216,012	↓36.7%	4680	↓29.0%
		1643		119,335		136,737		3325	
	Under 10 m	1137	↑2.0%	4595	↑9.4%	96,730	↓35.4%	711	↓33.2%
		1160		5027		62,496		475	
	Over 10 m	686	↓29.6%	118,750	↓3.7%	119,282	↓37.8%	3969	↓28.2%
		483		114,308		74,241		2850	
Wales	Combined	307	↓24.4%	5792	↓74.7%	17,479	↓57.7%	252	↓62.4%
		232		1465		7388		95	
	Under 10 m	276	↓24.3%	860	↓36.0%	13,611	↓63.9%	93	↓61.1%
		209		550		4908		36	
	Over 10 m	31	↓25.8%	4932	↓81.4%	3868	↓35.9%	159	↓63.1%
		23		915		2480		59	
Northern Ireland	Combined	280	↓28.2%	13,326	↑6.1%	32,374	↓35.3%	748	↓22.7%
		201		14,139		20,931		578	
	Under 10 m	142	↓23.9%	621	↓17.7%	10,688	↓26.0%	83	↓29.6%
		108		511		7905		59	
	Over 10 m	138	↓32.6%	12,705	↑7.3%	21,686	↓39.9%	665	↓21.8%
		93		13,628		13,026		520	

being pitted against each other as they sometimes seem. The infrastructure and mechanism for delivery of national benefits should therefore be geographically widespread and built upon a diverse fleet of multiple boat sizes and gears.

However, such a vision for a diverse fleet requires recognition, and address, of the structural causes of past and present inequalities that are evident in the UK fleet today. The data are clear; the under 10-m fleet are suffering a disproportionate decline across multiple measures, especially in England and Wales, relative to the over 10-m sector. Understanding why the decline in the fleet is occurring and, in particular, why it is so pronounced in the under 10-m small-scale fleet, is riddled with difficulty and evidence gaps. Multiple changes spanning environmental, economic, social and legislative arenas have all influenced, to differing extents, the loss or retention of fishing boats over time (López Gómez et al. 2024). Disentangling and attributing specific causes to the patterns of decline presented above, which vary across regional and national contexts, is a major challenge. Since fisheries management in the UK is devolved, different approaches are taken by the four administrations which may underpin some of the evolving trends (Ares and White 2018). Some of the pressures faced by fishing boats are common to boats from all sectors, some are more distinct to particular sectors, so there are differential sensitivities that are poorly understood (Turner et al. 2024). Regarding the measure of 'days of at sea', fishers may be venturing out to sea less frequently for different and combined reasons, frequency of stormy weather (Pope et al. 2022), interactions with offshore wind development (Rouse et al. 2020) or rising costs of fuel (Galappaththi et al. 2022) for example. Furthermore, we have not been able to distil from available employment data, at national level, the

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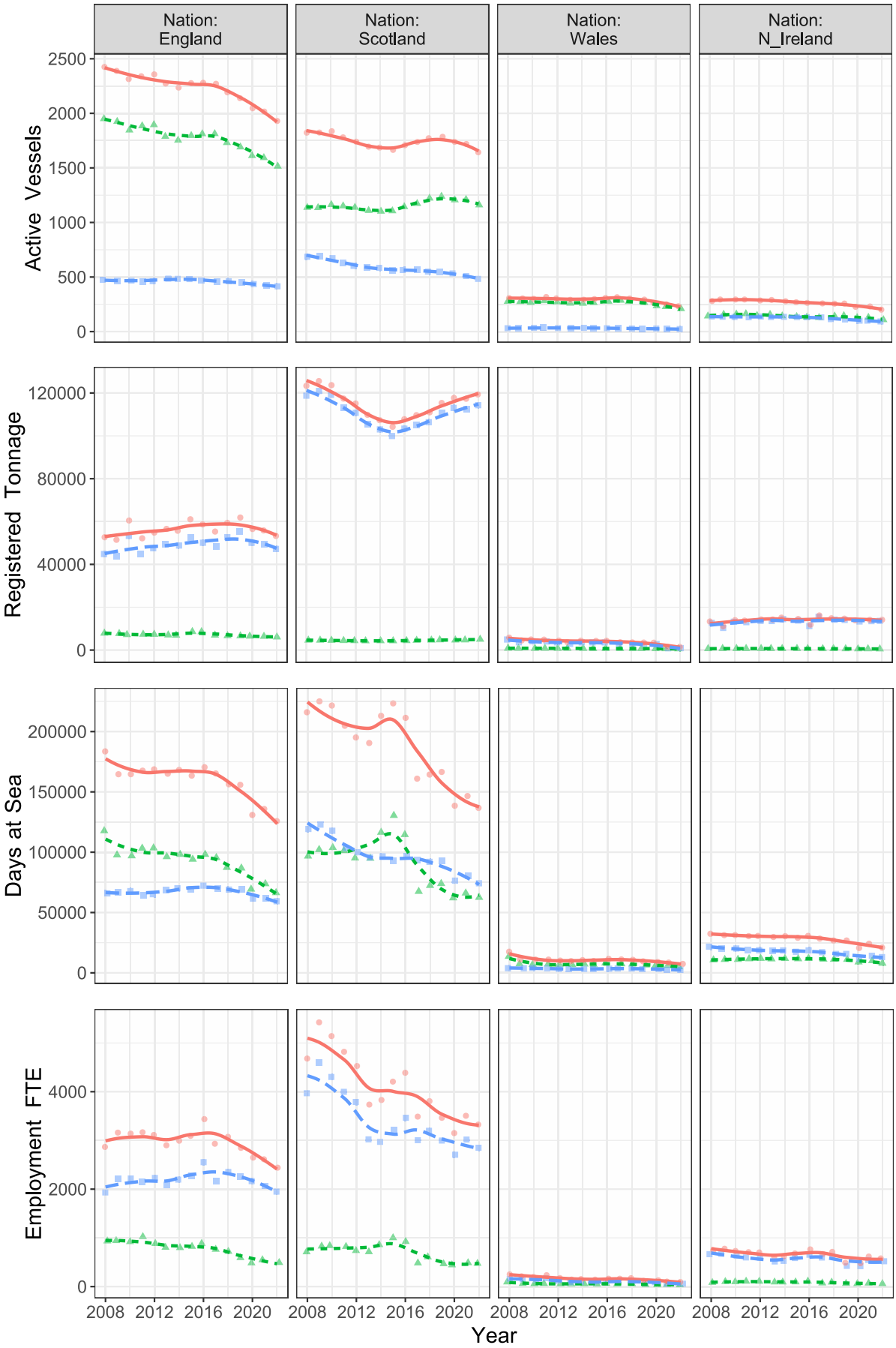

FIGURE 4 | Home nation fishing industry trends. Red = Combined counts/Green = Under 10 m/Blue = Over 10 m.

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proportion of fishers moving into part-time fishing and implications for the retention or reduction of societal benefit flows, or indeed impacts on the fishers themselves (an area for future work) although some research has usefully illuminated this trend in particular case studies in the UK (Ota and Just 2008; Morgan 2013; White 2015). Arguably however, whether the decline in full-time (FTE) fishing reflects exit from the sector, or a shift to part-time fishing, all combine to reduce employment time in fishing. Boats in harbours are important, but those boats must be actively working to secure a consistent flow of benefits from fisheries that is maintainable and high in quality.

5 | Conclusion—Governing for Sustainable Fisheries That 'Leave No One Behind'

It has been said that fisheries have a long history of being in a state of 'perpetual crisis': 'For generations they have realistically perceived their livelihoods as poised on the edge of ruin' (Nadel-Klein 2000, 365). The data presented here suggest that the capacity to forge ahead and adapt to crisis is not limitless and that, for many in fishing, a significant and irreversible tipping point may be approaching. We have argued that delivery of the UK Fisheries Act, if interpreted as a holistic 'full-spectrum' vision for fisheries policy, requires three things. First, a clear articulation and evidencing of the full range of societal benefits that can be harnessed through sustainable fishing and translated into wellbeing outcomes for society. Our conceptual framing of eight 'National Benefits' aims to support the progression of such an evidence base. Second, better acknowledgement of what society gains from fisheries must be paralleled with recognition of what society is simultaneously at risk of losing through the continued decline of the fishing fleet. Our analysis of long-term data shows widespread decline across the whole fleet, but also confirms that the decline is unequally felt, with some regions and sectors experiencing decline more acutely than others. Research is urgently needed to unpack and explain the differential decline that is evident in the fleet. Third, if society is to retain and truly harness the benefits which flow from sustainable fisheries, governing bodies must act quickly to ensure sustainable fisheries are diverse and inclusive, addressing inequalities where they exist.

How can the UK therefore respond to the challenge, which was succinctly laid out in the seminal article of Cochrane (2021), to reconcile 'sustainable', 'economically efficient' and 'socially just' marine fisheries? As history reminds us, policy initiatives that have sought to rebalance rights and opportunities usually start with recognition of, and support to, those who are marginal and disproportionately burdened. In light of this, our paper concludes with a call for fisheries governance in the UK to explicitly and pro-actively pursue an approach that adopts a 'leave no one behind' ethos, drawing from existing international commitments, including the UN Sustainable Development agenda and the FAO 2014 Voluntary Guidelines for Small-Scale Fisheries, to which the UK is signatory. However, while others have made similar arguments (often at a global scale) aligning a prioritisation of small-scale fisheries to avoid being 'left behind' (Mohammed et al. 2018; Basurto et al. 2025), this argument does not straightforwardly translate into the UK context. Clearly, higher rates of fleet decline among the under 10 m boats in some, but not all contexts in the UK, certainly warrants closer attention than it currently receives in fisheries policy. However, heightened vulnerability cannot always be aligned with being small-scale, recognising too that small-scale is almost impossible to define in diverse and ever-changing fishing communities.

An all-inclusive interpretation of 'leaving no one behind' allows attention to be given to those in fishing who need it most, those who are identified as suffering disproportionate burden relative to others in the fleet, and this is not necessarily related to size. Identifying and evidencing such need requires a more coherent and consistent engagement with the social sciences to unpack the dynamics of vulnerability (Johnson and Welch 2009; Kolding et al. 2014; Herrón et al. 2018). As Islam and Chuenpagdee (2022, 1) point out, it is still the case that lack of knowledge regarding what makes small-scale fisheries vulnerable 'impedes appropriate policy response and intervention'. We would extend this argument to allow that lack of understanding of vulnerability, in any form, presents just as much of a challenge. It is a challenge relevant to any nation where fishing constitutes a diverse mix of small, medium and larger-scale fishing operations.

Gathering knowledge about the differential sensitivities within the fishing fleet to the pressures of the day is likely to be most effective when championed at regional and local levels, recognising the importance of local context and detailed knowledge in any assessment, and following the principle of subsidiarity, where issues are addressed at the local level by those directly affected by decisions made (Symes 1998; Bavinck and Jentoft 2011). Such investment requires explicit commitment and buy-in across government, science and the fishing industry itself, to recognise and collectively address the decline in the fishing fleet. Particular attention is needed in areas where that decline is being felt most acutely, alongside a clearer distinction between sustainable and unsustainable forms of fishing, with concerted efforts to address the latter, which undermine a viable fishing future for everyone. These efforts will be strengthened, and held to account, if they combine with broader public recognition over what society will lose if the decline in the fishing fleet remains unaddressed.

Recent efforts to promote public awareness of, and evidence public values regarding, the contributions of sustainable fisheries are gaining traction and clearly show that protecting a sustainable fleet as a part of sustainable fisheries is a public priority and concern (SFF 2024; Oceana 2024), which constitutes some important common ground between fishing industry-led representation and environmental NGOs. Building on that common ground and advocating government with consensus, wherever possible, recognising the powerful communication that can accompany a unified voice, is now essential. We are running out of time in which to turn things around. Our fishing communities, once gone, are likely to be gone for good.

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Conflicts of Interest

All author contributions have been made entirely independently of employment status or association with any particular organisation. It is recognised that the co-authorship team includes individuals who work for organisations actively involved in advocacy in UK fisheries, which can, in some cases, present a potential conflicts of interest; however, we reaffirm that the understandings applied in the writing of this article are of the individuals own and do not reflect the views of the organisation for which individuals may work.

Data Availability Statement

All data used in the assessment of fishing fleet decline is publicly available online via the Seafish fleet survey database, as referenced in the article.

Endnotes

[1] *Source:* https://www.legislation.gov.uk/ukpga/2020/22/section/1/enacted.

[2] See www.nationalfoodstrategy.org.

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