

## Beyond Brexit – Is the UK’s Fixed Quota Allocation (FQA) system in need of a fix?

Andy Forse<sup>a</sup>

Dr. Benjamin Drakeford<sup>a</sup>

Prof. Pierre Failler<sup>a</sup>

Dr. Jonathan Potts<sup>b</sup>

Dr. Negar Akbari<sup>a</sup>

<sup>a</sup>Centre for Blue Governance, Economics and Finance Group, Faculty of Business and Law, University of Portsmouth, Richmond Building, Portland Street, Portsmouth, PO1 3DE

<sup>b</sup>School of the Environment, Geography and Geosciences, University of Portsmouth, Buckingham Building, Lion Terrace, Portsmouth, United Kingdom, PO1 3HE

### **Corresponding author:**

Andy Forse

Andy.forse@port.ac.uk

Department of Geography, University of Portsmouth, Buckingham Building, Lion Terrace, Portsmouth, United Kingdom, PO1 3HE

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## 1. Introduction

Over the second half of the 20<sup>th</sup> century efforts were made globally to address the over-exploitation and decline in fisheries. Input controls (limiting fishing effort by restricting fishing areas, days that fishing is allowed and what gear can be used) and output controls (quotas on the amount of individual or total species that can be harvested in a given period of time) were used to address what Hardin, (1968) described as “the tragedy of the commons”. Amongst these controls, forms of catch shares known as Individual Transferable Quota (ITQs) have arisen as a popular method globally (Chu, 2009). These ITQs provide a share of the Total Allowable Catch (TAC) in a given fishery and effectively license the fishing activity by providing the holder of ITQs with the right to fish for their share of what the government sets as a TAC (Arnason, 2005; Chu, 2009; McCay et al., 1995).

First introduced in the 1970s, these rights to fish have been seen as a way to address the issue of economic inefficiency in fisheries and by privatising and controlling access to the harvest avoid the issues inherent with a common resource being shared (Arnason, 2005). ITQs are seen generally to have been successful at this aim, improving economic performance, increasing efficiency, reducing fleet size and improving management of stocks (Arnason, 2006; Hatcher & Read, 2001). There are however concerns that this increase in efficiency has led to consolidation within the industry and structural changes that have taken control of fisheries away from the community by allowing for the concentration of fishing rights within an ever smaller pool of, often large commercial, fishing interests (Anderson, 2008; Chu, 2009; Davis, 2014; Eythórsson, 2000; Squires et al., 1998; Young et al., 2018).

The Common Organisation of the Markets (CMO), the EU policy for managing the market in fishery and aquaculture products, is one of the pillars of the Common Fishery Policy (CFP). In particular the CMO deals with the competition rules applicable to business and rules on state aid. It also covers general provisions on exceptional measures including measures to guard against market disruption caused by price fluctuations, outbreak of disease, loss of consumers’ confidence and other market imbalances (European Commission, 2021). Under the CFP a central TAC for quota species in the EU combined EEZ, based on scientific advice and political negotiation is agreed. The United Kingdom (UK) had, until 31<sup>st</sup> December 2020, been given, along with other member states, a share of this as an annual TAC to utilise in line with its own national fisheries management strategy (Appleby et al., 2018; Le Gallic et al., 2018; The European Parliament and the Council of the European Union, 2002, 2018).

At first, the UK government administered this on behalf of the fishing industry and decided, on a monthly basis, how much fish could be landed by vessels. Over time this was devolved to Fish Producer Organisations (known as FPOs or POs). Groups of fishery or aquaculture producers can form an FPO if they are able to demonstrate that they are economically active and meet one of the following criteria on an ongoing basis: i) number of vessels operated by FPO members is at least 20% of the total number of vessels operating in its area, ii) FPO lands at least 15% by weight of the total production in its area, iii) FPO lands at least 30% by weight of total production in a major port or market in its area, iv) FPO has a minimum of 200 members that are active fishermen, v) FPO lands at least 5000 tonnes of fishery product. Recognised FPOs are to ensure compliance with the conditions of CMO, however it is up to national authorities to set the specific guidance for the FPOs (such as how a FPO operates, setting trigger price for different species, etc.) (MMO, 2021). The logic behind this decision was that FPOs, embedded in their local and regional fishing areas, would better understand

their own needs and could adapt to changing circumstances better than a centralised administration (Cardwell, 2015).

The UK government eventually codified this split by reforming the licencing system and grouped fishing vessels based on length into 'over 10m' and 'under 10m' (Appleby et al., 2018; Cross, 2021). The licences were now based on catch shares as opposed to the number of vessels with these licences. This, coupled with the right to move licences between vessels and owners, allowed for the transferability of fishing rights within limits (Hatcher & Read, n.d.). This change in licensing resulted in three classes of vessel for quota purposes 'over 10m' who had their quota managed by an FPO, administering it to the benefit of their members, under the Fixed Quota Allocation (FQA) system, 'over 10m non-sector' who remained independent of an FPO and had their quota administered by central government and the '10m and under' fleet, collectively known as the inshore fleet or the 'under 10m', who share a portion of the UK's TAC that is held for them in a 'pool' which is allocated out to them as an equal share of the pool on a monthly basis (Cardwell, 2015; Cross, 2021). FQA units themselves were based on a measure of 'cod equivalents' which was used to balance the value of FQA units across species (Hatcher & Read, n.d.). From 1996 the trading of quota shares between FPOs was allowed with the FQA system being brought in in 1999 and FQA units apportioned on the basis of catch by vessels during the period of 1994 to 1996, replacing the previous system that was based on a historic track record that was deemed to have driven excess catching activity by vessels to ensure that quota could be obtained in subsequent years (Cardwell, 2015; Cross, 2021; Le Floc'h et al., 2015; Tingley et al., 2010). The historic track record, on which the share of FQA units was based, was absent for the inshore fleet. This led to them not being allocated quota and therefore have to rely on the equal share of allocations from the MMO on a monthly basis. The pool of quota is believed to be a significant underestimate of the landings of the inshore fleet prior to FQA that has been enshrined in the UK's management system to the benefit of the FPOs at the expense of the inshore fleet (Cardwell, 2015). The Register of Buyers' and Sellers' legislation (1986) proved this underestimation but, at the point that it became apparent, the inshore fleet had been left out of the allocation of fishing rights (Anbleyth-Evans & Williams, 2018). From 1999, this system of FQA units meant that fishing opportunities were fixed for a unit as a proportion of the UK's TAC. This meant that, for the first time, quota in the UK had a fixed ownership, based on a share of the TAC, with a guarantee of fishing rights in perpetuity (subject to the size of the UK's TAC apportionment in any given year) and could therefore be traded easily (Appleby et al., 2018; Cardwell & Cardwell, 2015; Cross, 2021; Hatcher & Read, 2001).

This ownership of transferable fishing rights has created a market that is poorly understood and lacking in transparency. The tension between the property rights, that come with ownership of FQA units by the FPOs, and the Government who gifted these rights but administers the system, was exposed in a judicial review judgement on a dispute between the UK Association of FPOs and the UK Government in 2013. This confirmed the ownership of the fishing rights by FPOs but allowed the UK Government to effectively reduce the value of this by transferring some quota to the under 10m pool (Royal Courts of Justice, 2013).

As such the FQA units became an asset with a market value and it is this feature that is the focus of this paper. The FPO system now dominates the UK fishing industry as shown by the MMO report of UK Sea Fisheries Statistics 2019, where 86% of the UK landings by quantity were from vessels in an FPO with this figure rising to 98% for species that have a quota (MMO, 2019).

Table 1.1 Landings by UK vessels in 2018 by sector

	Demersal	Demersal		Pelagic	Pelagic		Shellfish	Shellfish		Total	Total
	('000t)	(£ million)		('000t)	(£ million)		('000t)	(£ million)		('000t)	(£ million)
Producer organisation vessels	170.46	332.85		383.58	270.37		58.38	165.27		<b>612.41</b>	<b>768.48</b>
% share of total	96.6%	93.9%		99.4%	99.1%		43.1%	45.7%		<b>87.8%</b>	<b>77.7%</b>
Non-sector vessels	0.75	1.63		0.01	0.01		49.76	109.27		<b>50.52</b>	<b>110.90</b>
% share of total	0.4%	0.5%		0.0%	0.0%		36.8%	30.2%		<b>7.2%</b>	<b>11.2%</b>
10m and under pool	5.16	20.00		2.26	2.40		27.16	87.20		<b>34.58</b>	<b>109.60</b>
% share of total	2.9%	5.6%		0.6%	0.9%		20.1%	24.1%		<b>5.0%</b>	<b>11.1%</b>
Total All Sectors	176.37	354.48		385.85	272.77		135.30	361.74		<b>697.51</b>	<b>988.98</b>

The regional nature of the FPOs are shown in Table 1.2. Although vessels land at any port in the UK or abroad those particularly active in the North East of Scotland, registered at and landing into Peterhead and Fraserburgh are Scottish FPO Ltd, Lunar Group, North East of Scotland FO Ltd, Klondyke and Anglo Scottish FPO Ltd.

Table 1.2 Vessel number and catch by tonnage and value for FPO active in 2018 (MMO, 2018)

Fish producer organisation	Number of vessels	Quantity ('000t)	Value (£ million)
Scottish FPO Ltd	155	138.4	177.4
Shetland FPO Ltd	33	83.1	86.9
Anglo Northern Irish FPO Ltd	55	43.5	48.5
South Western FPO Ltd	82	21.5	48.4
Cornish FPO Ltd	96	18.6	41.9
Lunar Group	4	67.1	38.9
Interfish	11	44.5	38.7
North Atlantic FPO Ltd	2	38.0	33.0
The FPO Ltd	8	18.1	31.5
North East of Scotland FO Ltd	24	15.9	30.2
Northern Ireland FPO Ltd	111	17.1	29.8
Klondyke	2	44.1	29.2
Eastern England FPO Ltd	26	11.5	21.9
North Sea FPO Ltd	15	7.2	17.7
Fife FPO Ltd	29	7.5	17.1
Aberdeen FPO	18	7.4	13.7
Anglo Scottish FPO Ltd	33	6.5	13.0
Wales and West Coast FPO Ltd	6	3.7	11.6
Orkney FPO Ltd	17	5.1	10.8
Northern Producers Organisation Ltd	21	5.8	9.6
West of Scotland FPO Ltd	29	2.5	7.9
Lowestoft FPO Ltd	4	2.9	5.7

With the signing of the EU / UK Trade and Co-operation Agreement (TCA) this situation has changed from 1<sup>st</sup> January 2021 with the EU and UK agreeing on a TAC with shares agreed until at least 2026. However for all practical purposes the UK system, at least in the short term, remains the same with the UK's Fisheries Act of 2020 giving no indication that the UK will change from the FQA system or apportion new quota in a novel fashion (UK Government, 2020; United Kingdom & European Union, 2020).

The purpose of this paper is to present the view of the FQA system by those who operate under the system, highlighting the benefits and issues raised and making recommendations for change alongside future research. This research focusses on FQA units that the 'over 10m' fleet that are part of an FPO use, so all references to quota will be to this system.

Research was conducted with stakeholders in the North East Scotland commercial fishing industry. This is the UK's largest fishing hub containing its largest port and is home to some of the largest operators in the industry who are licenced through the FQA system and who manage quota either directly for their own use or on behalf of others within an FPO (MMO, 2019). The results of the interviews with these stakeholders present a view from a core, influential part of the industry that can inform fishery managers in the UK and more widely.

This article contributes to the broadening of the understanding of the UK's FQA system and how its operation impacts on the industry in the short and long term (Appleby et al., 2018; Hatcher & Read, 2001; Hatcher et al., 2002; Le Floc'h et al., 2015; Tingley et al., 2010). By identifying the positives and negatives associated with the FQA system from those for whom FQA is the foundation of their catching business, a powerful view of the threats and opportunities for this significant sector of the fishing industry is revealed. Although this paper is focussed purely on the perception of those operating under the FQA system, these results are critical to any future decisions that could be made in regard to the long-term stability of the industry.

The paper is organised as follows. The method is described in the next section. The aspects of the FQA system identified by the stakeholders are presented in the third section with the fourth section dedicated to a discussion of these results, considering the consequence of the identified points for the stability of the industry and any opportunities to improve the effectiveness of the system that were discovered.

## 2. Methods

### 2.1. Data gathering

In 2018 research was conducted among members of North East Scotland's commercial fishing industry to investigate their views on Brexit, the current management system, the science behind stock assessments and any impacts of further devolution / Scottish independence. Semi-structured interviews were held with key stakeholders with four questions used to provide a framework:

1. What are your views on the current management system?
2. What is your view of stock assessments?
3. What is your view of the impact of Brexit?
4. What is your view of the impact of Scottish Independence or further devolution?

The research results were published in 2019 and provide for a view of the industry as it waited for confirmation of any new management system post-Brexit (Forse et al., 2019). Within that research a structural issue for the industry was highlighted. This issue regarded the UK's quota system, the FQA system, and this paper will examine these results in more depth.



Figure 2.1 Map of Scotland showing Peterhead and Fraserburgh

## 2.2. Study sites

North East Scotland is a major centre of the UK's commercial fishing industry. Two ports, Peterhead and Fraserburgh as shown in Figure 2.1, dominate the industry in this region, and the UK as a whole and were selected as study sites due to these factors. By landings in 2019, both volume and value, Peterhead is the largest fishing port in the UK with Fraserburgh third for volume and second for value (MMO, 2019). Peterhead landed a third of the entire UK's catch while Fraserburgh was the leading port in the UK by fleet gross tonnage and power (MMO, 2019). These ports, and the vessels registered there, operate under the UK's licencing system. 38 of the 111 vessels registered in Peterhead, and 98 of the 223 registered in Fraserburgh are over 10m in length and Individual Transferable Quota (ITQ) system known as the Fixed Quota Allocation (FQA) (MMO, 2019). The 198 other vessels across the two ports comprise 4 non-sector over 10m vessels and 194 that are 10m or under in length belonging to the inshore fleet (MMO, 2019). These fish outside of the FQA system either with quota allocated by the MMO or by targeting non-quota species.

Table 2.1 Landings into Peterhead and Fraserburgh by quantity and value in 2018

	Demersal	Demersal		Pelagic	Pelagic		Shellfish	Shellfish		Total	Total
	('000t)	(£ '000)		('000t)	(£ '000)		('000t)	(£ '000)		('000t)	(£ '000)
Peterhead	50.33	87.54		100.54	72.86		2.72	8.86		153.60	169.26
Fraserburgh	10.35	16.14		11.10	7.57		5.67	18.30		27.12	42.01
Total	60.69	103.68		111.64	80.43		8.39	27.16		180.71	211.27

Within this pool of potential interviewees, those who worked with FQA units across the two ports, it was important to identify a diversity of experiences and ensure as heterogeneous group as possible (Cuppen, 2012). This requirement was met by ensuring that the pool of respondents represented views across fishing activity onshore, offshore, FPO management, vessel ownership and fleet management and in the processing sector, as shown in Table 2.2. The eight interviewees in the research, see Table 2.2, are comprised of those in management positions onshore with interests in multiple vessels, either through ownership or as an executive in an FPO administering FQA units on behalf of their members, as well as those involved in more direct activity as skippers of vessels, processors and merchants. As a result these eight stakeholders represent 58 vessels and form a substantial part of the industry in the two ports and a significant portion of the UK's overall industry. The vessels represented by the stakeholders accounted for 17.37% of the 338 total vessels registered in Peterhead (111) and Fraserburgh (223), and 41.43% of the over 10m fleet at the two ports (Peterhead, 41 and Fraserburgh, 99). This equated to 2.78% of Scotland's fleet and 10.43% of the over 10m fleet and 0.96% of the United Kingdom's fleet and 4.55% of the over 10m fleet. These figures from the MMO sea fisheries statistics for 2018 include over 10m non-sector vessels within the over 10m fleet and do not provide a breakdown of this below United Kingdom level. At United Kingdom level 495 of the 1276 over 10m vessels are classified as non-sector vessels (470) or Isle of Man Non-sector (25). The eight interviewees therefore represent 7.43% of the 781 vessels that are members of an FPO in the UK.

The UK Government FQA register holds the details of all holders of FQA Units. Of the 8,264,157 FQA units on the register, 5,475,501 are administered by Marine Scotland. 1,752,624 of the FQA Units are held by the interviewees or those that they represent. Of these, 1,747,942 are administered by Marine Scotland meaning that 31.92% of Scottish FQA Units are held by the respondents and 21.21% of the UK total (Gov.uk, 2021).

The share of over 10m vessels and FQA units represented by the interviewees is such that their responses represent a significant proportion of this sector of the industry.

Table 2.2 Interviewees organisation, role and fishery (n=8)

	<b>Organisation</b>	<b>Role</b>	<b>Fishery</b>
Interviewee A	Multiple vessel owner and retired skipper	Owner	Demersal
Interviewee B	Producer organisation	Chief Executive	Demersal
Interviewee C	Vessel owner and skipper	Owner and skipper	Demersal
Interviewee D	Vessel owner, merchant and retired skipper	Managing Director	Demersal
Interviewee E	Vessel owner and skipper	Owner and skipper	Demersal
Interviewee F	Multiple vessel owner, producer organisation and processor	PO manager	Pelagic and demersal
Interviewee G	Multiple vessel owner, shipping agent and merchant	Managing Director	Pelagic and demersal
Interviewee H	Multiple vessel owner, producer organisation and processor	Chief Executive	Pelagic and demersal

### 2.3. Classification of responses

Stakeholders were asked questions but were then allowed to freely answer and discuss issues that they found to be of importance to their business and the industry as a whole. The transcribed responses were coded for meaning using Nvivo 11 software and classified into groups. The major groups were Brexit, current management systems, general performance of the industry, history of the industry, EU Common Fisheries Policy, ideas for improvement, the inshore fleet, fish processors, science base to quota and Scottish Independence. These major topics were further broken down into areas e.g. Brexit – Access, Brexit – Trade, Brexit – Quota etc.

One sub-topic that appeared under multiple topics was ‘quota’ in relation to the FQA units and it is these results that this paper will present for discussion. Quota was discussed in relation to four areas: Quota management as a focus for the operation of the industry; FQA units allowing consolidation in the industry; the value of FQA units forming a barrier to new entrants; and the FQA system allowing for investment in the industry. From these eight interviewees, seven raised the quota system when discussing the current state of the industry and what the future may hold.

## 3. Results

The four areas related to quota, and the results of the analysis are presented in this section, supported by direct quotes from the transcripts. These quotes are unedited first-hand views from the stakeholders containing colloquial expressions and demonstrate the complexity of quota management and the complex interplay of factors within the industry.

### 3.1 Quota management as a focus

The importance of quota to the industry, especially in a mixed demersal fishery, was highlighted as a challenge. The day to day management of quota, the trading and leasing to



ensure that fish caught could be landed, is one that draws focus away from other aspects of the business such as improving marketing and supply chain **Interviewee B** *“I would say like for our organization we would probably like to focus more on the marketing of the fish because at the moment there’s quite a lot of our time spent on the management acquiring the quota... as an organization we are starting to look at the marketing and focus more on that and getting your fish abroad you know, yeah that’s what we would like to focus more on”*. This respondent went on to say that gaining enough quota to sustain their enterprise was their primary focus. **Interviewee B** *“quota management would be a big part of our operation at the moment, just trying to acquire quota for the boats to have a full 12 months”*.

The management of quota under the current management system was at the forefront of seven of the eight respondent’s views on the system. It is clear that a significant amount of the effort and focus of the catching industry is on ensuring that they each have access to quota and that this is a key dynamic for the industry. **Interviewee E** *“We have an FQA system which I get my own quota, then the fish we can land is topped up with fish we lease in. Now over the last few years, the price of the last couple of years, the prices on the market have been very good so it’s worked out very well with the profit from the boat having been excellent. Where the problems come is when the prices are poor on the market, and the leasing costs are hard but that hasn’t happened the last few years”*.

This is contrary to the intention when FPOs were set up under the EU’s Common Organisation of Markets (CMO) regulations where the intention was that they would promote their members interests and market the catch. The UK Government’s decision to allow the transfer of FQA units created an ITQ system whose administration, this interviewee highlights, is the primary management task of FPOs (Cardwell, 2015).

### 3.2 Consolidation and ‘Quota Barons’

FQA unit’s emergence as a tradeable asset has led to a phenomenon known to the respondents by the colloquial term ‘quota barons’. These ‘barons’ are those, either individual skippers or larger commercial entities, who have invested in securing additional FQA units for their activities over and above those freely gifted at the outset (Cardwell, 2015) In one respondent’s view this is a consequence of them making sound commercial decisions under the system, as **Interviewee C** states *“that’s business, that’s tough shit. I made up my mind to go to the bank, borrow millions, to make up my own quotas, and many people stood and looked at me as though I was stupid...the quota became so expensive, and they didn’t know how much money they were going to get, and they’re going ‘oh look at him, he’s got plenty quota’, and it’s no, no, everybody had the opportunity to buy quotas the same time as us. As I say we borrowed millions from the bank to buy”* although another felt that the lack of controls over the sale of their fishing rights was the root of the problem **Interviewee D** *“however you want to sell it that’s a right that I have as a business but I don’t think it’s a right that I should have, as a businessman, to be able to sell it to whoever the highest bidder is because I think that asset belongs to the to the people of the nation”*.

One respondent is clear that the FQA system was imposed upon them and they have merely adapted to the situation that was handed to them and that the faults in the system that have been exposed are as a result of their actions but commercially they had no choice **Interviewee C** *“We didn’t create it, we didn’t want it, no it was pushed upon us by the powers of the day and it’s far from perfect no question and many people will look on and say it is unfair but I keep going back to say it’s not what we wanted, it’s what the government of the day pushed upon us. We just had to adapt to the system and get hold of it and try and create a business as*

*much as best we could*". This view, that the system has inherent problems, but they cannot be blamed for making decisions under a system that they neither asked for nor endorsed is common through the four themes of the results.

This consolidation within the industry is a barrier to entry. The price of quota itself is high and this is compounded by the appetite of the larger commercial enterprises to secure more quota for their activities which in turn drives the price higher **Interviewee D** *"More consolidation and it makes it even harder because the price goes up and once you're of a certain size, you can then start to pay funny money for quota because if you dilute it against your current asset it becomes viable. If I say well I need to buy 10 tonnes of cod as a small businessman I can't because the sums just don't add up for me"*

The consolidation highlighted by the respondents must be seen in the context of the long-term decline in the UK fleet size and the decommissioning exercises to reduce fleet capacity run in 2001-2, 2003, 2007 and 2008-9. These were designed to improve the long-term sustainability of the fleet by removing capacity. The UK fleet size has reduced from 8,667 vessels in 1996 to 6,036 in 2018 with corresponding decreases in gross tonnage and power of the fleet (MMO, 2018). The decommissioning scheme coupled with the ability to retain and trade ownership of FQA units after decommissioning a vessel are central to the consolidation within the industry (Hatcher & Read, 2001).

### 3.3 Barriers to entry and 'Slipper Skippers'

A consequence of this consolidation was that, in the respondents view, FQA had raised a significant barrier to entry for those wishing to join the industry, especially younger members of the fishing industry who might hope to skipper their own boat in the future. This is shown in this response from **Interviewee C** *"Quota has become such a valuable asset. There are very very few people or organizations who can afford to buy our quota. Our quota would be valued at something like three or four million pounds"*.

In part a by-product of the decommissioning schemes to reduce the size of the European fleet, the system allowed for the separation of quota from fishing licences and the boats themselves. This allowed quota to be held by those without an active interest in the catching operation. The respondents know these by the term 'slipper skippers' i.e. those who hold quota but do not fish themselves, merely profiting by leasing the quota to others who require it to sustain their catching efforts, **Interviewee C** *"so if you go back in the history of it all when the first decommission started, there was a Labour government in power and they said you'll decommission your boat, you'll be decommissioning a license for X amount of tonne, but you'll get to keep your quota for three years and then you'll have to dispense with it. Well they never followed through on that part so many skippers are sitting at home with a quota, handing it to me to be catching it to be legal"*.

The holding of FQA units is therefore a profitable enterprise and this is compounded by the nature of the North Sea demersal fishery. As it is a mixed species fishery it is often not known until the nets are raised what the trawl contains. A situation can then arise where a skipper has a mixed haul of commercial fish where some either exceed their quota or for which they do not have quota. In order to land this catch the skipper urgently requires quota and through negotiation with those who hold quota will temporarily lease the required amount. The uncertainty and urgency create a seller's market where the skipper has to accept the terms offered, within reason, in order to ensure that they cover the costs of the trawl and hopefully deliver some profit. **Interviewee H** *"Some slipper skippers are massive corporate entities. They just own it as an asset and it is theirs. You want fish? There you go. You can get fish, but it's now going to cost you £3,000 a tonne"*. The situation regarding these 'choke' species,

those with low or no quota available, has been exacerbated by the introduction of the Landing Obligation as part of the reform of the CFP, phased in between 2015 and 2019 (Catchpole et al., 2017; Sobrino & Sobrido, 2017). The requirement to land these species has increased the costs associated with leasing quota to cover these species (Catchpole et al., 2017; Hoff et al., 2018).

This has resulted in FQA units becoming a valuable asset and the view of the respondents is that, unless a family business is left to someone, the barrier to being able to set up as a skipper is simply too high. Even if financing can be achieved to procure a boat and fishing licence, the quota required to ensure the boats profitability would be unaffordable as illustrated by **Interviewee C** *"I want to see young lads being able to come back in, because unless you're left a family business now, or you go to a fishing agency and you take a share in the boat, you've no chance"*.

Respondents suggested solutions where some quota, potentially from new fishing opportunities after Brexit, was reserved for new entrants to the market or that new quota should in some way be linked to the coastal community. However, having invested considerable sums in their own FQA units most did not suggest either a major overhaul of the system or its replacement with any other form of input or output control. Two interviewees put forward ideas for minor changes to address some of the problem;

**Interviewee E** *"A scheme where maybe there was a bit of fish to take back for you guys, maybe 5, 10% of the quota is kept back for new entrants, young guys can be incentivised to get new boats. That's my kind of idea"*.

**Interviewee C** *"I think the quotas should be divided into lots, allows the smaller man. Maybe two or three PO's, or two or three fishermen would have the money to buy the quota yeah, I think I think any quota going back from Brexit should be set aside for your inheritance"*.

An example of where a scheme has been introduced is in Denmark through the 'Fish Fund'. When the Danish VTQ system was set up in 2007 it included a small portion of reserved quota. New entrants to the market can loan quota for species from this fund for the first eight years of their fishing activity. This scheme had encouraged 20 new entrants in its first two years of operation (Nordic Council of Ministers, 2009).

**Interviewee H** came closest to suggesting a major change in the system. That every 5 years quota should be rebased to fishing activity. So 'slipper skippers' would lose quota that they had not fished themselves, with safeguards in place to ensure that short term reasons for not fishing such as buying a new boat, do not disadvantage anyone. *"So, if you're a quota holder and you just sat there, and you just lease out your fish...at ridiculous high prices, and you've heard that, and you say every 5 years you're going to rebase it, they're going to rebase it on track record. So, I've been renting fish from you for 5 years, and they rebase the track record I get, what's wrong with that? You can have a model that works, you can have a model that says if I was renting to you, for example, if I was buying a new boat, and I don't have a boat for a year, and I'm renting the fish out to you, then it would be totally wrong for you to get that fish wouldn't it? They need to create a model that says, we're going to address these anomalies. This guy's found a new boat, he's sold his boat, 2 years for his to come, he's going to lease his fish out for 2 years. He can't lose that fish, but why wouldn't you rebase your numbers? I would"*

One respondent believed that the current system required changing to one that invested in the next generation but would require a measure of sacrifice on the part of those currently fishing **Interviewee D** *"so I think that is something that needs to be addressed because how are we going to get young people into this industry? Young people are the future, we need*

*experienced businessman, we need business to continue, but we must continue to invest in the next generation and not be self-indulgent” “the only way you can make that work is if Paul was prepared to give up some of his rights to Peter, so again I don’t know the answer, I can only pick out where I think it has gone wrong”.*

**Interviewee F** proposed a solution to the problem, within the current system, whereby larger fishing enterprises partner with young skippers *“Go in partnership with them, bring them along these guys gradually. If they want to step up let them step up and go with them. Give them support and if they feel is too much they can come out and somebody else can, something like a buddy, something, to be there behind themselves sort of thing, to give them the support that they need. Get them to do their own thing but give them the support, they can make mistakes that’s the best thing to happen for learning maybe, make mistakes, but given there is a backstop.”*

The age structure of the industry in 2018 backs up the respondents points with nearly 50% of skippers in 2018 aged over 50. The average age of employees on fishing vessels was 38 contrasting with an average of 50 years of age for owners (Seafish, 2018). A case study from Cardwell (2015) also demonstrates the size of the barrier. Owners of a fishing vessel shared between seven owners needed to replace four retiring members in 2005. The vessel and quota were valued at over £15million meaning that a prospective owner would require £2million to buy into the venture. This was not possible so a fish-processing company invested in the vessel and became part-owner. This significant barrier to ownership has led to a decline in Scottish workers wanting to become fishers. Their replacement by foreign workers ensures that the industry continues to function but it reduces the attachment to the community and concentrates the wealth generated from the industry among fewer beneficiaries (Anderson, 2008; Arnason, 2005; Cardwell, 2015).

### 3.4 Allowed investment

The respondents in general saw the FQA units, and their nature as an asset, as a positive as it had allowed for investment in the industry. This was not without concerns that link back to the barriers to entry and consolidation within the industry. Quota is accepted as collateral when securing financing for new boats and was seen by the respondents as central to the current success of the industry. It had allowed for businesses to be expanded and in turn had allowed them to afford more quota **Interviewee G** *“most of the industry here in Scotland is in favour of the FQA units because that’s why we built up businesses and the businesses have become profitable because we’ve acquired extra quota”.*

This was highlighted by one respondent as an issue as it was a cycle that led to further consolidation as these businesses grew and could then afford to invest in more quota even at inflated prices. **Interviewee D** highlighted an area of consolidation where companies traditionally invested in pelagic fishery were moving into the demersal whitefish sector *“The pelagic fleet who have built up these massive pelagic ships yep huge ships are able to go out into the marketplace and buy whitefish licenses to get their tonnage to a size that for the new ship, for the new build. So, they’re able to aggregate whitefish licenses on to a pelagic license to make that business. That has reduced our ability to be able to get...a new whitefish license then because the pelagic which is a very valuable sector, it’s pushed that price way beyond, so again because government allowed this to happen it’s pushing me farther to the side”.*

Another respondent, however, warned that any significant change to the current system, given the amount of debt secured against these quota assets, could cause the withdrawal of finance from the industry and lead to significant difficulties as illustrated by **Interviewee C** *“I mean*

*many people are sitting with bank loans, using the quota as security for that bank loans, so if you take that asset out of the business out of the equation many of the bigger larger boys invested millions buying new boats, it would just go belly-up” and Interviewee H “Our industry is heavily indebted as a general thing. It’s heavily indebted, supported by big clearing banks, and they recognise the quotas as an asset. So, government have to be careful how they’re gonna manage that, cos’ you can’t change... if you chase the clearing banks away, working capital goes out the business, that’s just how the way it works, the harshness of economic life. You need to retain their confidence so give people stakeholder rights to that quota. Recognise that. You’ve got a right to that quota.”*

What is clear from the research is that quota is a central focus for the industry and that, while providing a basis for investment in the industry it has led to a commercially driven consolidation. This risks breaking the connection between the industry and its coastal communities by closing off the industry to new entrants and damaging its future performance if fishing is not seen as a viable career path for those in these communities.

#### 4. Discussion

To understand the issues related to FQA, interviews with operating with FQA Units within the FPO system are highly valuable in gaining insights that an analysis of the catching and commercial performance of the industry would not identify. The stakeholders outline a system that has benefited the industry but also potentially threatens its long term stability.

The stakeholders represent only one sector of the fishing industry, albeit a powerful and commercially important one, and their views may be biased by this. However, the dominance of this sector on the industry, in terms of landings by volume and value, means that their voice is likely to influence future management of the overall industry.

Rights based management of fisheries and the privatisation of the resource have commonly led to the outcomes identified by the stakeholders. ITQ systems have driven efficiency and investment in fisheries but issues concerning the balance between the economic performance and the wider community have continued to surface (Chu, 2009; Eythórsson, 2000; McCay et al., 1995; Young et al., 2018). Concerns regarding controlling the market power in an ITQ system to prevent monopolies or excessive shares, ensuring co-management of the resource and understanding the impact of increased efficiency on the wider community are common across ITQ implementations globally and the experience of these stakeholders aligns with this (Anderson, 2008; Arnason, 2005; Chu, 2009; Kasperski & Holland, 2013; Solís et al., 2020).

The issues identified around consolidation and barring new entrants from the industry are common to countries who have quota systems that are based on the principle of ITQs and the concerns regarding the distributional effects of such management are well established (Cardwell, 2015; Cross, 2021; Eythórsson, 2000; McCay et al., 1995). Indeed the eight stakeholder’s representation of 58 vessels and therefore a significant portion of the catching power of the Scottish and UK fleets demonstrates the concentration of power that the FQA system allows in the UK.

Iceland introduced ITQs to the Herring fishery in 1976, the demersal fishery in 1984 and by 1990 all of Iceland’s fisheries operated under the ITQ system (Arnason, 1993). Consolidation within the industry followed with one study finding that over the period 2001/2 to 2014/15 the 25 largest fishing concerns increased their share of regular quota from 39% to 74% (Agnarsson et al., 2016). This increase in efficiency in the pelagic sector has led to a decrease in employment amongst the catching sector and in the processing sector, with the heaviest impact on the communities that have traditionally looked to fishing for employment (Saevaldsson & Gunnlaugsson, 2015).

A similar study in New Zealand found that under their ITQ based Quota Management System (QMS), established in 1986, consolidation had developed after implementation. Dependant on fishery, 80%-99% of quota was held by the 20 largest firms (Agnarsson et al., 2016; Stewart & Callagher, 2011) having experienced a drop in quota holders, between 1986 and 1999, of 13% in the deep sea fishery and 30% in the inshore fishery (Yandle & Dewees, 2008). New Zealand, however, instituted a change in 2001 with the introduction of the Annual Catch Entitlement (ACE) system. ACE allowed fishers to receive a right to fish a certain quantity of species without holding quota. The introduction of ACE has coincided with an increase in participation in the inshore fishery with limited impact on the mid-water and deep sea fisheries (likely due to other barriers to entry such as setup costs and the requirement for significant scale in order to be viable). The New Zealand experience with ACE presents a possible future for the UK that would allow more entrants into inshore fisheries. However, it does not address the issue of consolidation in mid-water and deep sea fisheries discussed in this paper (Stewart & Callagher, 2011). While New Zealand's system led to a reduction in overcapacity, this concentration of rights amongst a smaller group of stakeholders has led to concerns that the system has not increased sustainability in either biological or socioeconomic measures (Hersoug, 2018).

In North America a variety of studies of ITQ systems across species and regions report similar themes. These show consolidation in the West Coast and Alaskan catch share fisheries in the USA's EEZ (Kasperski & Holland, 2013) and concentration of ownership leading to increases in the cost of catch shares in the US Gulf of Mexico red snapper fishery (Solís et al., 2020). An analysis by Chu (2009) of 20 stocks managed by ITQ across Australia, North America, The Netherlands, Iceland, Chile and New Zealand showed that ITQs alone did not aid in the maintenance of stocks at appropriate levels (only 12 of the 20 stocks experienced improvements) as other factors, especially the setting of an appropriate TAC, had an impact on performance. It was therefore suggested that, along with establishing a TAC that supports the system, additional management measures such as monitoring, enforcement and the introduction of ecosystem based management are required (Chu, 2009).

It is beyond the scope of this research to identify whether consolidation is an inherent characteristic of ITQ systems but the global experiences suggest that, without intervention, it will continue to pose a significant challenge for the UK industry into the future.

Even if these two issues are accepted as a threat to the future stability of the industry, addressing these may have unacceptable short term consequences. The positive feature that was identified, of the FQA system allowing the industry to invest, has driven efficiency and has embedded FQA units within the financial framework that supports the industry. If any proposed change to FQA units, or changes that potentially devalue them, risks the economic collapse of the sector then the industry, as a powerful lobby, is likely to have significant influence with the UK government. The UK government has so far indicated that the system will remain in place following Brexit but as yet has not set out how any increase in the TAC will be apportioned. The Fisheries Act 2020, put into law by the UK Government in November 2020 lays out the future framework for fisheries management across the UK, including the devolved administrations. The Fisheries Act 2020 gives no indication that a change to the fishing rights system currently in place is likely. It simply confirms that the Secretary of State (or Minister in a devolved nation) has the power to impose catch and/or effort quota and that any distribution is fair and transparent and includes criteria related to environmental and socio-economic factors (UK Government, 2020). It is an open question as to whether any increase will be apportioned to current holders of FQA units, will be made available on the open market or allocated in a new way. If the first two options are taken then it would suggest that the issues of consolidation and barriers to entry will be compounded.

The current focus of the stakeholders on securing enough quota to build their business and to operate legally, especially with those involved in the demersal mixed fishery, is tied to the FQA system. It requires participants to have access to FQA units to land their expected catch but crucially to also have short notice access to FQA units when a trawl returns an unexpected mix of species. The Landing Obligation, introduced to combat high grading and discards, that the EU has been phasing in since 2015 (Sobrino & Sobrido, 2017) has compounded this issue in an industry that has limited control over its catch composition (Arnason, 2005; Squires et al., 1998). The potential for a haul of fish to contain significant quantities of species that either have minimal or no quota available to the vessel operator is an economic risk. These 'choke' species lead to a potential increase in the demand for quota trades by fishers, inflating the cost, to avoid vessels being unable to fish in order to avoid catching these species (Catchpole et al., 2017; Hoff et al., 2018). This has the potential to do significant economic harm to the industry and compound the problem of the industry focussing on quota management above all else.

The FQA system has sustained this sector of the industry and allowed it to invest and increase efficiency but that has not been without issue that may threaten its long-term survival. This presents UK fisheries managers with some complex questions;

Is the FQA system allowed to carry on in its current form with fisheries managers adopting a laissez faire approach to the private ownership and trade of fishing rights, with the increased efficiency of the industry seen as the primary goal? Or should interventions be made in the system to raise the importance of the socioeconomic improvement of coastal communities around these ports as a goal and ensure that these privately held fishing rights deliver a public good?

## 5. Conclusion

This research concludes that the FQA system provides for the short-term needs of the over 10m sector of the commercial industry as a whole and has allowed for necessary investment in the industry, albeit while shifting the focus of the industry to quota management. The experience of the UK against the global background suggests that the experience of the respondents is in-line with the experience of ITQ systems generally and that government intervention in the privatised system would be required in order to address the issues raised. The longer-term implications of the system are complex and whether further consolidation is acceptable or not is one for not just UK fishery managers to balance. Fish are a renewable national resource ostensibly managed on the public's behalf by government. In reality however, fishing rights has been privatised within a system that has allowed for consolidation by a relatively small group of stakeholders. These views from one powerful sector of the industry indicate that even those who have benefited directly from the system understand that there are significant potential downsides.

What is clear from the judicial review in 2013 is that, having given the quota away to the industry, the UK Government has limited scope to amend the system without the agreement of the FPOs who have demonstrated that they will assert their property rights and defend them through the courts (Royal Courts of Justice, 2013).

This paper did not seek to capture the views of those in the UK that operate outside of this system. Those classed as 'non-sector' i.e. 'under 10m' vessels and those 'over 10m' outside of an FPO. These account for the largest number of vessels in the UK but a relatively small

proportion of the catch, especially when considering quota species. This in itself has been an area of contention since the introduction of the system, with a view that this system is unfair. Due to the perceived underestimation of the catch from these vessels when the system was introduced, in the absence of a historic track record as they were not required to report catches, the under 10m pool representing 78% of the catching workforce in the UK is supported by only 2% on the UK's TAC. This has forced the fleet to move to targeting non-quota species (Anbleyth-Evans & Williams, 2018; Cardwell, 2015; Williams, 2018). These issues are of importance to the wider question of UK management of fishing opportunities but fall outside of the scope of this paper as it sought to understand the views of those involved in the ownership and lease of FQA units within the 'over 10m' sector. Future research on this topic should therefore seek to capture experiences of those in the industry that operate without FQA units to identify benefits and issues within those sectors.

The respondents have highlighted significant systemic issues with FQA, despite them being the beneficiaries of this system. This paper concludes that the UK is broadly in line with the global experience of ITQ and should take steps to address the issues raised. Policy makers will have to consider the legal issues raised by the assertion of the rights of the FQA unit owners, the financing of the industry that is built upon it and the improvements in efficiency and economic performance of the industry. But within these constraints there is opportunity to encourage new entrants to the industry by lowering barriers to entry, ensuring that any additional quota is linked to the biological sustainability of the stocks, the socio-economic sustainability of the fishing communities, improving the co-management of the fisheries and redressing the balance between the over 10m sector and the under 10m pool.

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