



Strengthening European Food Chain Sustainability by Quality and Procurement Policy

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PILOT ACTIONS TO STIMULATE SHORT FOOD SUPPLY CHAINS FOR LOCALLY LANDED SEAFOOD IN NORTH-EAST ENGLAND

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EXECUTIVE SUMMARY

North Shields Fish Quay is one of the four busiest fishing ports in the UK. However, much of the fish landed here is sold to overseas markets before it has even reached the shore. The variety of native fish species caught and brought to shore is extensive, but local restaurants and consumers serve and cook with only a handful of the most popular fish, including the so-called ‘Big Five’ (cod, haddock, tuna, salmon and prawns), placing great strain on these stocks. For instance, langoustines native to waters around the North East coast rarely make their way into local restaurants as almost the entire caught quantity is exported in bulk to countries such as France and Spain.

Three main barriers to local seafood supply chains were identified: i) lack of public awareness about locally abundant species and key sustainability messages, leading to limited demand for local seafood; ii) poor knowledge and confidence in seafood cooking skills, including chefs and other kitchen staff, leading to a tendency to purchase pre-prepared fish fillets in the catering and restaurant trade; iii) and prevalence of dishes served in restaurants, and at home, using only a handful of, more popular, fish species.

This report summarises Strength2Food’s demonstration and innovation activities, led by Food Nation (a Social Enterprise SME inspiring people about good food), and Newcastle University, aimed at stimulating short fish supply chains in the UK (Task 9.4). These build on evidence-based insights on short food supply chains (SFSCs), using a mixed-methods approach, and combining qualitative, quantitative and participatory action research. Specifically, pilot actions were implemented to strengthen the development of new quality markets and SFSCs for locally landed seafood in North-East England. These involved stakeholder engagement, fish cooking and preparation skills masterclass, restaurant dinner clubs, and online educational resources. Prior market consultations confirm that focusing efforts on the restaurant trade in tandem with raising the profile of their sustainability efforts amongst consumers is the most promising strategy and a model which has potential to be scaled up in the future. The pilot actions brought together a local restaurant, the Fish Quay and various businesses within the fishing industry (including fishers, fishmongers, chefs, consumers, academics and other educational professionals) to engage in initiatives to stimulate high quality short fish supply chains in North-East England.

Work with the local restaurant involved a *Seafood Trainee Programme and Cookery Classes* designed for young trainee chefs, within the hospitality and catering sector, to improve their skills and confidence in preparing a wider number of seafood species, using different cooking methods and techniques. This training programme incorporated ‘meet the buyer’ style events with local fish industry stakeholders to create direct restaurant-to-fish-quay relationships. The programme was complemented by *Seafood Supper Clubs* organised at the same restaurant, to provide trainees with a platform to create, test and market their recipes, but also improve consumer exposure and perceptions towards a wider variety of underutilised and locally abundant seafood species, while raising awareness towards sustainable sourcing. *Online Resources for Seafood Education* were also developed to raise the profile of the local fishing industry and inform, inspire and engage the general public on purchasing and cooking a wider variety of fresh - seasonal - and locally landed seafood. Finally, *Home Recipe Kits with Seafood* were introduced to encourage families to cook different seafood dishes and increase their confidence in the kitchen, by providing convenient and pre-planned meal kits and recipe boxes.

This report provides a summary and evaluation of these pilot actions, highlighting opportunities, market strategies and practical implications on how de-localization can be

reversed in ways that add value to fishing supply chains. The key conclusions and lessons that emerge from the Strength2Food action research are summarised as follows:

- SFSCs do not have to depend necessarily on direct face-to-face contact between fishers and consumers;
- Initiatives to stimulate SFSCs should focus on under-utilised fish species and seafood where there is greater scope to add value and garner industry engagement;
- Underutilised fish species and seafood in the UK suffer from food neophobia;
- Presenting unfamiliar fish and seafood in a familiar context can help overcome neophobia;
- Seafood supper clubs provide another mechanism for reducing neophobia relating to underutilised fish and seafood;
- Social media offers a mechanism for reaching a large number of geographical dispersed consumers regarding fish and seafood;
- Home recipe kits with seafood provide another mechanism to overcome neophobia;
- Neophobia toward underutilised fish and seafood also affects the catering and restaurant sector;
- The activities illustrate the benefits of long-term collaboration in research and innovation between academic and non-academic partners.

Key areas for policy intervention for strengthening the development of new quality markets and SFSCs in fisheries, should target the following:

- Increase public awareness regarding sustainable seafood consumption and seasonality issues (e.g. via digital tools and resources);
- Enhance education from an early age regarding sustainable production and consumption of healthy seasonal (sea)food (for example so that food preparation and cooking skills for under-utilised fish and sustainable seafood species are embedded in the national curriculum);
- Promote codes of practice that support sustainable fishing and retailing;
- Encourage diversification, particularly for small-scale fishers, and support the establishment of SFSCs in coastal communities;
- Secure the regeneration of key fish quay sites and buildings and deliver infrastructure and locations to facilitate SFSCs for fish;
- Encourage better working practices for seafood businesses and the restaurant/catering sector, via modern apprenticeships and vocational qualifications, with an emphasis on seafood knowledge, skills development, marketing and communication strategies;
- Strengthen coastal communities' cultural heritage and natural capital and facilitate investment opportunities that empower communities to build resilience and thrive.

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LIST OF ABBREVIATIONS AND ACRONYMS

AFN	Alternative Food Network
CFP	Common Fisheries Policy
CLLD	Community Led Local Development
EEA	European Economic Area
EC	European Commission
EU	European Union
FARNET	European Fisheries Areas Network
FLAG	Fisheries Local Action Group
IA	Innovation Action
MMO	Marine Management Organisation
NSFQ	North Shields Fish Quay
SFSC	Short Food Supply Chain
S2F	Strength2Food
UK	United Kingdom

PILOT ACTIONS TO STIMULATE SHORT FOOD SUPPLY CHAINS FOR LOCALLY LANDED SEAFOOD IN NORTH-EAST ENGLAND

B. Tocco, J. Lacey, K. Whittle, R. Freeman, M. Gorton, C. Hubbard, J. Phillipson, G. Vittersø²

1. INTRODUCTION

The North Shields Fish Quay (NSFQ), a fishing port located close to the mouth of the River Tyne in the North East, is one of the four busiest ports in the UK. Nevertheless, much of the fish landed is sold to international markets, under contract, before it has even reached the shore. For instance, langoustines, native to waters around the North East coast, rarely make their way into local restaurants as almost all are sold for export in bulk. The variety of native fish species caught and brought to shore is extensive, but local restaurants serve and cook with only a handful of the most popular fish, placing great strain on these few stocks.

Whether this is a cause or consequence of limited consumer demand remains unclear – yet, buying local seafood does not seem to play a major role in consumer decision making in North-East England. Consumers often lack knowledge about local seafood, as evidenced by their heavy reliance on the so-called ‘Big Five’ common species, i.e. cod, haddock, tuna, salmon and prawns, which are typically imported, or farmed, to meet increasing domestic demand.

Adding value to local seafood supply chains requires an understanding of the challenges surrounding the industry, the governance mechanisms and engaging with stakeholders. It is with this purpose that SME Food Nation³ and Newcastle University carried out participatory action research and innovation action, in the framework of Strength2Food WP9 ‘Pilot Implementation and Demonstration Activities’, with the aims to:

- Strengthen the development of new quality markets and local food chains for sustainable seafood in North-East England;
- Maximise the impact of the project’s activities and achievements through effective knowledge exchange and communication with a wide range of relevant stakeholders on up-to-date sustainable practices.

The actions have been developed in parallel to, and build upon, evidence-based insights and best practices on Short Food Supply Chains (SFSCs), drawing specifically on seafood supply

² We would like to acknowledge the rest of the Food Nation team who contributed to shape the development of these pilot actions: Jamie Sadler (CEO), Nicola Cowell (Food Partnership Manager) and Chris Jewitt (former Non-Executive Director and founder of Food and Drink North East - FADNE). They contributed to the organisation of hybrid forums, and played a pivotal role in bridging strategic collaboration between Strength2Food and various local actors, businesses and organisations, including seafood industry experts, local restaurants, food partnerships, voluntary sector, schools, city council and the North of Tyne Fisheries Local Action Group. A particular note of appreciation to the Northumberland Seafood Centre, Collingwood Seafood and Caley Fisheries, for their engagement and sharing their expertise and insights.

³ Food Nation is a Social Enterprise SME, based in Newcastle upon Tyne, with a vision to inspire people about good food. It provides practical and innovative food education activities for the general public, schools and businesses across the North-East of England. To safeguard and further improve good food, nutrition and health, across Newcastle, Food Nation coordinates a multi-sector partnership that is part of Sustainable Food Places, known as Food Newcastle. The partnership acts as an umbrella organisation bringing together a diverse set of stakeholders working to improve the local food systems and tackle some of Newcastle’s most pressing social, economic and environmental problems through initiatives linked to food.

chains in North-East England and related knowledge-exchange with practitioners and the general public (Strength2Food WP2, WP7 and WP10). The empirical evidence shows how alternative business models can increase value along the supply chain. A shorter, and more direct, relationship with consumers, via alternative market chains, can significantly improve trading relations, market returns and bargaining power of small-scale fishers. The research identifies barriers to operational success of SFSCs, recognising the need to increase the scale of operations and improve convenience to consumers. It also sheds light on various supply- and demand-side barriers, from an economic and socio-cultural perspective, to establishing local-short fish supply chains in the region.

Three main barriers were identified as to why local fish supply chains were underdeveloped:

- i. Lack of public awareness about locally abundant species and key sustainability messages, leading to limited demand for local seafood;
- ii. Poor knowledge of how to prepare and cook fish. This includes a lack of confidence amongst chefs and other catering staff regarding their preparation skills, leading to a tendency to purchase pre-prepared fish fillets in the catering and restaurant trade;
- iii. Prevalence of dishes, served in restaurants and at home, using only a handful of, more popular, seafood species.

These problems are widespread in the UK fishing industry. The objective of these innovation actions is twofold. First, they seek to address aforementioned barriers and thus aim to:

- ✓ Increase public awareness and consumer demand for local - seasonal - sustainable seafood;
- ✓ Improve skills and confidence in the kitchen, from both catering and restaurant, as well as household, perspectives;
- ✓ Expand and diversify sourcing and consumption of seafood varieties.

Second, they aim at stimulating local-short seafood supply chains in the region, by strengthening regional cooperation and co-creation of knowledge within the local fish industry.

This report provides a synthesis of the pilot actions undertaken to fulfil these goals, including: fish cooking and preparation skills masterclass ‘Seafood Trainee Programme and Cookery Classes’, restaurant themed dinner nights ‘Seafood Supper Clubs’, online educational resources ‘Seafood Educational Online Resources’, convenient and pre-planned meal kits and recipe boxes ‘Home Recipe Kits with Seafood’, and various types of stakeholder engagement and knowledge-exchange activities. Therefore, it provides a summary and evaluation of these activities, highlighting opportunities and market strategies. In doing so, it demonstrates the potential of innovation actions to stimulate the development of new quality markets and local food chains.

2. MARKET BACKGROUND

2.1. The UK Seafood Industry: Landings, Trade and Sustainability

According to data from the Marine Maritime Organisation’s (MMO) annual sea fisheries statistics report for 2018, the UK’s fishing industry recorded a total value of £989 million. It comprised 6,036 fishing vessels (almost 80% being small-scale)⁴, and approximately 12,000

⁴ Small-scale fishing vessels defined by length of 10 metres and under.

fishermen: 5,057 in England, 1,193 in Wales, 4,857 in Scotland and 854 in Northern Ireland (MMO, 2019). Approximately 20% of fishermen were employed part-time.

In the same year, UK vessels landed around 698 thousand tonnes of seafood into the UK and abroad, with about two thirds of their total catches in the Northern North Sea and West of Scotland. The UK fleet accounted for the second-largest total catch (tonnes of landed weight) and the second-largest fishing fleet capacity (total gross tonnage) in the EU, following Spain as first-ranking for both measures (Eurostat, 2020)⁵.

The most valuable species were *shellfish* (accounting for 37% of the total value - with 138.9 thousand tonnes being landed), followed by *demersal fish* (36% of total value, 168 thousand tonnes) and *pelagic* (28% of total value, 385.9 thousand tonnes). Key species of catch were:

- *shellfish*: crabs (35 thousand tonnes), scallops (29 thousand tonnes) and nephrops, i.e. langoustines⁶ (26 thousand tonnes);
- *demersal fish*: cod (35 thousand tonnes), haddock (36 thousand tonnes) and anglerfish (20 thousand tonnes);
- *pelagic*: mackerel (191 thousand tonnes) and herring (100 thousand tonnes).

Regarding trade patterns, the UK has been a net importer of fish since 1984, despite year-on-year variations on both imports and exports (Uberoi, 2017). In 2018, the UK imported 674 thousand tonnes (with a value of £3.2 billion) and exported 448 thousand tonnes (value of £1.8 billion), leaving a trade gap of 226 thousand tonnes⁷ - worth £1.4 billion (MMO, 2019).

An overview of the major seafood traded species in the UK is illustrated in Figure 1.

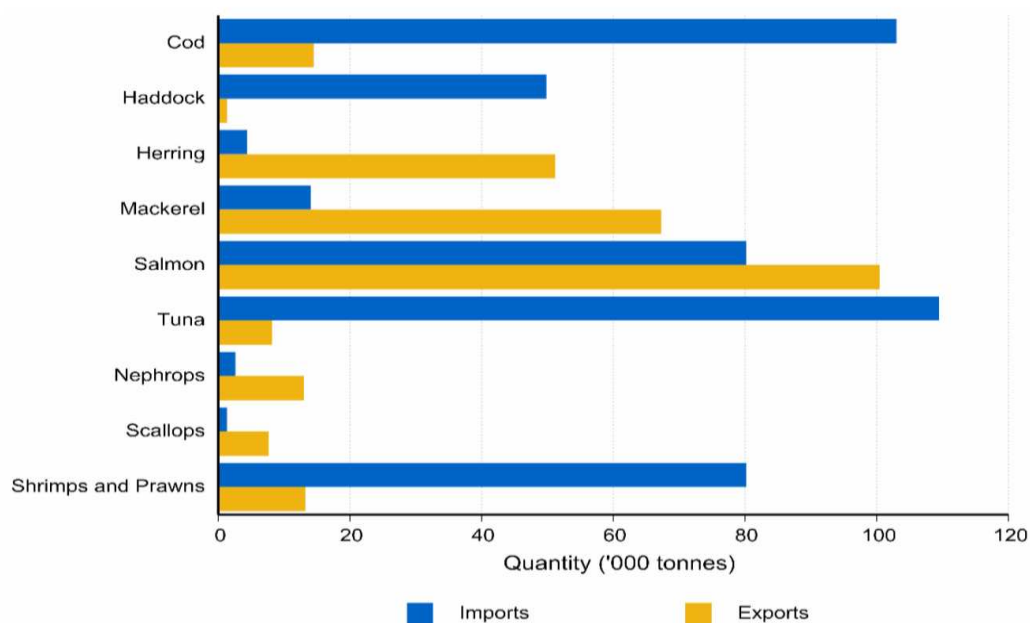


Figure 1. UK imports and exports by key species, 2018

Source: MMO (2019).

⁵ Non-EU countries, such as Iceland and Norway, had markedly larger catches, with Norway also being the largest in terms of fleet size in the European Economic Area (EEA).

⁶ The official biological name of this specie is *Nephrops (norvegicus)*. In the UK, langoustines are also commonly known as Norway lobsters, or Dublin Bay prawns, with most of the North-East fishers and fishmongers referring to these simply as 'prawns'.

⁷ Fish trade flows exclude fish products.

The UK most imported species, by weight, were:

- tuna (109 thousand tonnes – main exporters being Mauritius, the Seychelles and Ecuador);
- cod (103 thousand tonnes – predominantly from Iceland, China and Norway),
- salmon (80 thousand tonnes – predominantly from Sweden and Faroe Islands, followed by Denmark, USA and Canada);
- shrimps and prawns (80 thousand tonnes – over half from Asia, mainly from Vietnam and India).

The UK's main exports were:

- salmon (100 thousand tonnes – over 50% exports to the EU market, particularly France, followed by the USA)⁸;
- mackerel (67 thousand tonnes – major export destination being the Netherlands)⁹;
- herring (51 thousand tonnes – the Netherland as main destination market).

Overall, the main destinations for UK exports of sea fish were: France (78 thousand tonnes), the Netherlands (64 thousand tonnes), Ireland (52 thousand tonnes) Spain (42 thousand tonnes), and the USA (27 thousand tonnes). On the other hand, the largest exporters to the UK were: China and Iceland (with 63 thousand and 62 thousand tonnes respectively), followed by Germany, Denmark and Vietnam.

UK landings and trade patterns are also a result of the EU's Common Fisheries Policy (CFP), which sets fish quotas among EU Member States to manage fish stocks. Quotas among countries vary considerably across stocks: as summarised in Figure 2, the UK landed 93% of all North Sea haddock (26 thousand tonnes) and 83% of all North Sea nephrops (11 thousand tonnes). The total allowable catch for each fish stock and fishing area, and related quotas to EU Member States, follow fixed percentages based on historic fishing rights¹⁰. With the Brexit trade deal, which came into force on the 1st January 2021, EU fleets will still be allowed to fish in UK waters for some years, while the UK will retain a greater share of the total catch.

⁸ Salmon is mostly farmed in the UK which, together with imports, meet domestic demand for this species.

⁹ Substantial decreases in mackerel exports, and catches, due to reductions in mackerel quotas (MMO, 2019).

¹⁰ However, more than half the value of England's quota is foreign-owned.

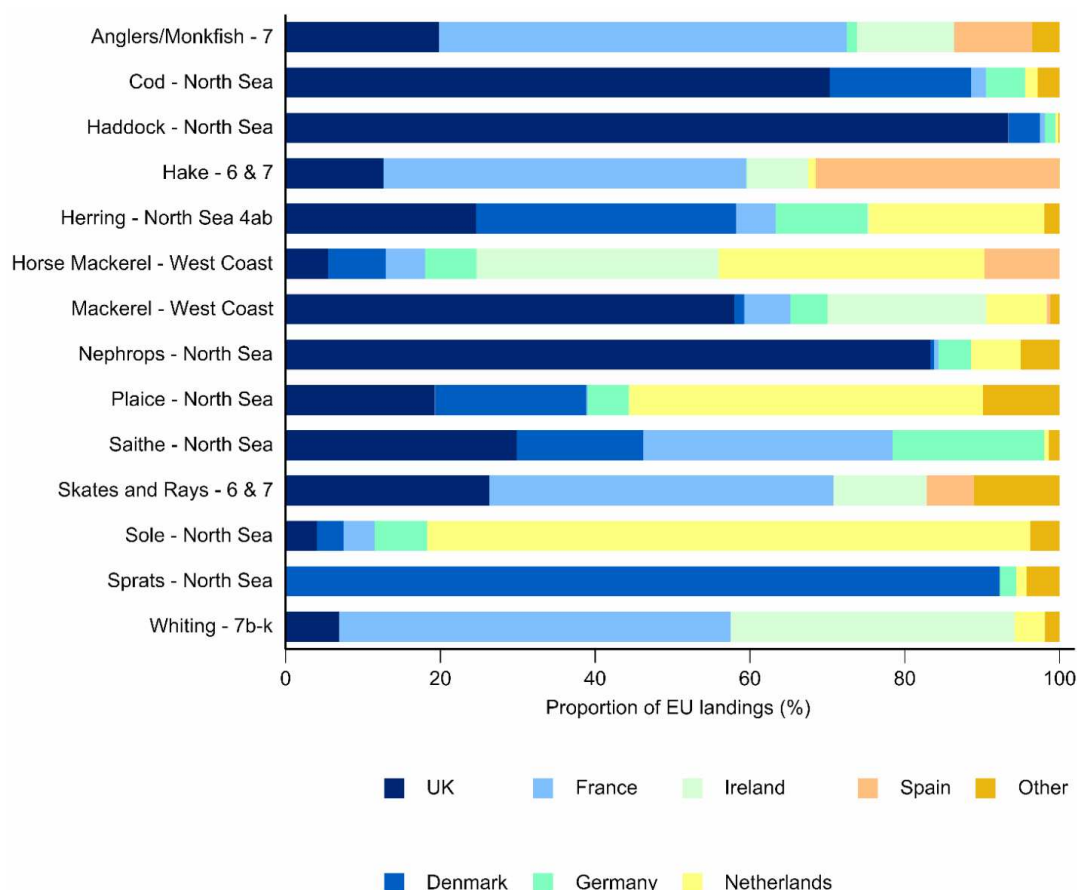


Figure 2. Share of landings of key stocks by EU Member States, 2018

Source: MMO (2019).

A recent sustainability advisory assessment of the state of the main UK fish stocks, conducted by the International Council for the Exploration of the Sea (ICES), indicates that, for the past ten years, most cod stocks suffered reduced reproductive capacity, with haddock stocks also facing this risk. In contrast, and albeit varying geographically, herring and mackerel, are at, or close to, full reproductive capacity (Uberoi, 2017).

To a large extent, the significant decrease in the number of registered UK vessels in the past two decades (by 29 per cent), and associated downward trend in the size of the fleet, are mainly attributed to reduced fishing opportunities, due to quota controls and decommissioning schemes aimed at reducing capacity/effort from fisheries (e.g. demersal or bottom trawling), to improve the sustainable management of fish stocks and lower the ecosystem impact. Similarly, the decrease in the number of fishermen since 2006 (by 9 per cent) is also a consequence of the reductions in fleet size and decreased fishing opportunities (MMO, 2017).

2.2. North Shields Fish Quay

North Shields is the busiest and most important fishing port on the East Coast of England, and among the top UK ports by value of landings. With a fishing fleet of 251 vessels in its administration and more than 75% of 10-metre-and-under (Figure 3), it also attracts a large amount of visiting vessels, predominantly from Scotland and Northern Ireland, but also from the Netherlands and Denmark, and several others in the closer vicinity (e.g. Amble, Blyth and Newbiggin-by-the-Sea).

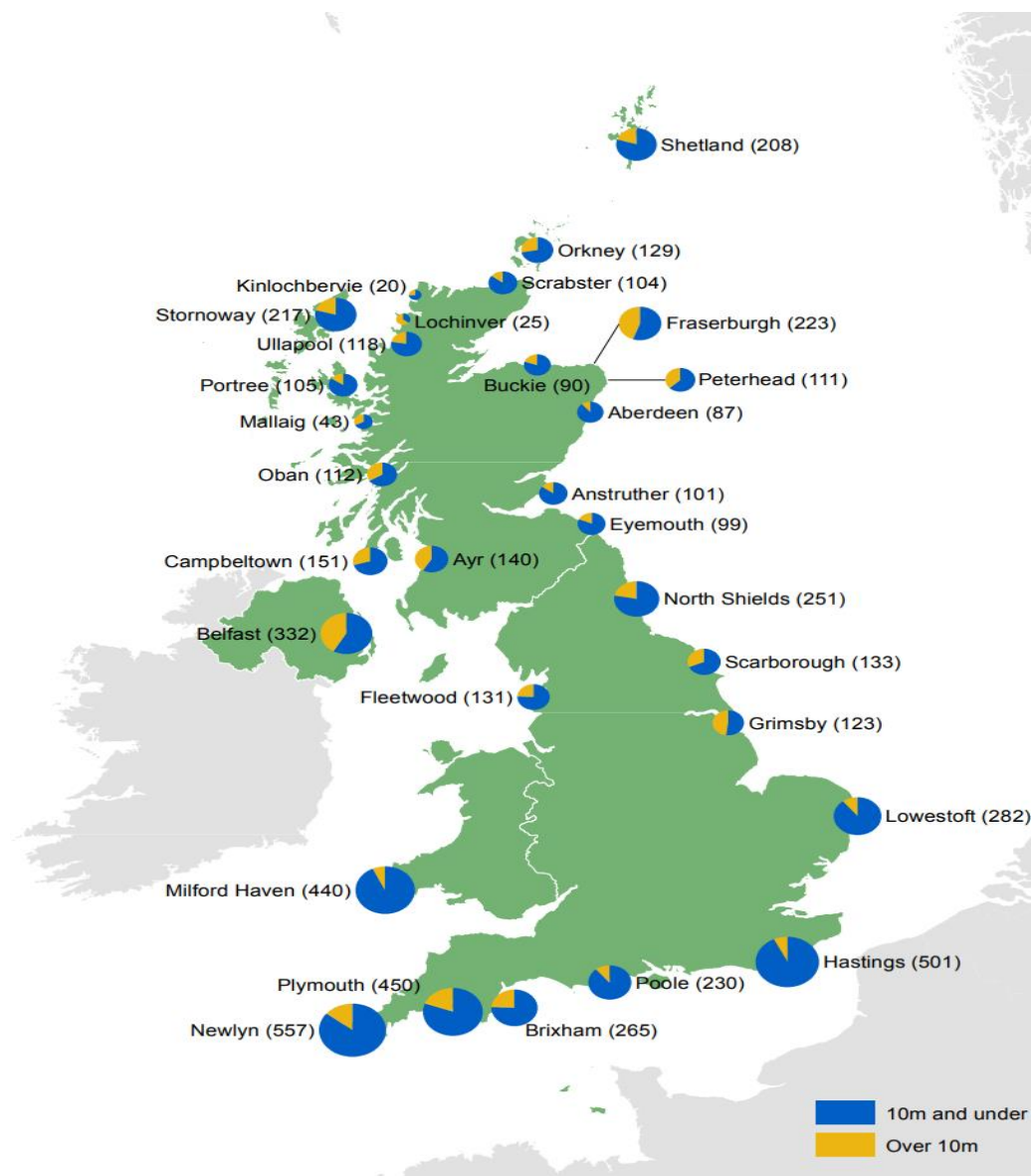


Figure 3. Number of fishing vessels by administration port, 2018

Source: MMO (2019).

The harbour town of North Shields is situated on the northern bank of the River Tyne - eight miles north-east of Newcastle upon Tyne, UK. The area has a longstanding association with shipbuilding and fisheries – in fact, the word ‘shield’ originates from Middle English and denotes a fisherman’s shed. While many nearby fisheries on the East Coast have been in steady decline, North Shields has continued to flourish due, largely, to the Farne Deep

langoustine fishery. Nearly all of the langoustines caught on England's East coast are landed at North Shields - in addition to a large quantity of whitefish and flatfish, such as turbot, sole, halibut, monkfish, cod and haddock. The Fish Quay market at North Shields, overseen by seafood wholesalers *Caley Fisheries*, operates via a traditional 'shout' auction and is served by local fishing vessels, with day boats landing a fresh catch of seafood. Buyers (auctioneers) are required to have a license to join the market, and thus predominantly include fish processors, wholesale fish merchants and local restaurants, rather than the general public.

As illustrated in Table 1, around 1 thousand tonnes of nephrops (langoustines) were landed in North Shields in 2015, with an overall value of over £3m, contributing the largest amount, by value, to the overall UK fishing sector. There is also a large variety of local fish landings, in terms of quantity and value, compared to national figures, with whitefish (e.g. whiting, cod, haddock), flatfish (e.g. plaice) and crustacean (e.g. lobsters) among the most important species landed at North Shields throughout the year.

Table 1. Summary of fish landings at North Shields, 2015

	NORTH SHIELDS		TOTAL ENGLAND	
	Quantity (tonnes)	Value (£ '000)	Quantity (tonnes)	Value (£ '000)
Whiting	401	279	1,569	1,129
Cod	146	210	1,310	2,227
Haddock	145	195	943	1,397
Plaice	92	62	1,823	2,339
Gurnard	85	33	1,000	740
Monks/Anglers	69	140	3,371	7,938
Hake	47	61	1,208	2,208
Coley/Pollock	39	33	155	149
Lemon Sole	26	38	1,145	4,913
Turbot	14	74	464	3,589
Witch	8	6	31	27
Skates/Rays	8	4	1,540	1,892
Brill	6	18	300	1,579
Sole	6	23	1,386	10,193
Other Demersal	3	4	1,304	2,139
Ling	3	3	224	252
Halibut	2	19	7	55
Megrim	...	2	954	2,323
Bass	...	1	578	4,828
Total Demersal	1,101	1,206	21,562	52,423
Mackerel	16	16	2,587	1,985
Herring	1	...	3,097	1,036
Total Pelagic	18	17	14,774	5,920
Nephrops	926	3,085	2,118	7,040
Scallops	76	136	14,323	25,899
Crabs	66	75	14,091	18,857
Squid	19	50	525	2,215
Lobsters	17	174	1,700	17,846
Other Shellfish	1	1	756	1,621
Total Shellfish	1,104	3,522	64,882	102,922
TOTAL ALL SPECIES	2,223	4,745	101,218	161,265

TOP 5 NSFQ Landings by Quantity and Value, 2015

Species	Quantity (tonnes)	Species	Value (£ '000)
Nephrops	926	Nephrops	3,085
Whiting	401	Whiting	279
Cod	146	Cod	210
Haddock	145	Haddock	195
Plaice	92	Lobsters	174

Source: MMO (2016).

2.3. UK Seafood Consumption and Market Channels

In 2019, UK weekly seafood consumption (both in and out of home) was approximately 153g per person, which is roughly about half the amount of seafood intake recommended by health professionals (Seafish, 2020). This equated to £8.6 billion consumption expenditure, with an estimated £3.8 billion on grocery retailing and about £4.8 billion on the ‘out-of-home market’, including pubs, restaurants and cafes.

Seafood consumption has been on general decline since the 2007 recession, largely driven by a fall in retail (seafood eaten ‘in home’). However, looking at historical trends, seafood consumption experienced a high demand peak just after the Second World War, at roughly 300g per person per week, as result of the rationing of other animal proteins (Seafish, 2020). In the aftermath, consumption trends significantly declined, with the lowest levels experienced during the recession in the 1970s. Consumption levels started to rise back in the 1980s, as result of higher levels of prosperity in the country, growing awareness of health benefits associated with seafood, and breakthrough technology developments in aquaculture which brought salmon and prawns into mainstream diets. This steady growth lasted until the 2007/8 financial crisis, with a substantial decline afterwards.

As direct-to-consumer seafood sales are rare in the UK, most consumption goes through extended channels with multiple intermediaries (Greenwood, 2019). The majority of seafood consumption, by weight, is purchased via retail, with nearly 70% expenditure from supermarkets and multiple retailers, and the remaining 30% via food service outlets, including pubs, restaurants and cafes (*ibid*). In particular, the quick service restaurant channel (QSRC), which incorporates fast food and fish and chip shops, is the dominant channel for seafood.

Within supermarkets, 95% of seafood is sold prepack, rather than from the traditional fish counter. This decline is driven by two major factors:

- Time and convenience, with shoppers wanting to be in and out the store as quick as possible, and looking to minimise handling and preparation efforts;
- Intimidation and ‘fear’, with shoppers being daunted by having to ask the fishmonger.

In the UK, shoppers and consumers have a unique relationship with seafood. Unlike many European countries which possess a coastline, seafood can be a daunting choice. Although 85 per cent of UK consumers eat fish or shellfish, the average consumer is failing to eat the recommended two portions of seafood a week (Mintel, 2017). The most popular species in the UK are cod, haddock, tuna, salmon and prawns (commonly known as the ‘Big Five’), which account for around 60-75 per cent of all domestic seafood consumption. To meet the

high local demand towards these ‘over-utilized’ species, a large share is imported (refer to Figure 1).

The large pressure on these species on both local and global scale, and their overfishing, imply they are under a high threat of extinction. For the UK market, this has meant that other local and more abundant species, which are fresh and of similar good nutritional quality, e.g. whiting, dab and coalfish, are not highly valued and without a stable and viable market. The shortage of local markets for native fish species implies that between 70-80 per cent of UK landings are being exported (MMO, 2019). A further undesired consequence of this undervalued demand is that numerous untargeted species are often thrown back (dead) in the sea, resulting in high discard practices by fishers.

The popularity of these ‘Big Five’ reflects the ‘unadventurous’ food culinary habits of UK consumers (British Sea Fishing, 2018) and their ‘fear of the unknown’ (Mintel, 2017), with a strong preference for ‘safe’ seafood, that is already tried and tested. Existing consumer surveys and market reports (British Sea Fishing, 2018; Mintel, 2017) suggest that consumers’ seafood purchasing decisions are based on:

- Convenience - lack of time and ease of cooking, towards already filleted, marinated and ready to eat;
- Lack of skills and low confidence - in preparing the whole fish, e.g. gutting, filleting;
- Sensory challenges and perceptions - dislike of fish taste, intimidated by fish bones, averse to the smell of fresh fish and its ‘slimy’ touch;
- Price factors – seeking cheaper and discounted options.

Recent empirical evidence conducted with UK adolescents, confirmed that, while many may like seafood, consumption levels largely vary and preparation typically takes a less healthy form (e.g. fried and battered fish and chips). Key drivers of seafood consumption included health and taste, while barriers were typically associated with the sensory qualities of seafood such as dislike of taste, bones, smell and texture (Birch et al., 2018). In this respect, some studies suggest that family setting and family habits on seafood consumption are important factors in influencing the formation of sustainable eating habits from an early age (Musarskaya et al., 2018).

It is for these reasons that only a minority of the fish purchased comes whole (e.g. unfileted fish) and from a wet fish counter, with the majority of the fish purchased been processed. Popular choices at supermarkets include: already filleted cod and haddock from sealed packages (often with breadcrumbs and accompanying batter), fish fingers, fish cakes or other processed forms; canned tuna and salmon, with smoked salmon ready-to-eat particularly popular; fresh or frozen prawns which are already peeled and pre-cooked. Cost factors are typically highlighted as a key barrier in consumer surveys, suggesting that almost a third of UK adults who eat one or less portions of fish a week claim that “it is the cost of fish that prevents them from eating more fish”, so that “value for money is key” (Seafish, 2020).

In recent years, health concerns and nutritional benefits (e.g. omega-3 fatty acids) have become more salient for some consumer segments. In parallel, more ‘socially’ responsible choices and premium sales have emerged. This has led to two key trends:

- Premium quality retailers in the UK, such as M&S and Waitrose, have grown their share in seafood sales;
- Increased awareness towards environmental issues, shaping industry practices and consumer perceptions about the sustainability of fisheries. For instance, concerns

about endangered fish species (e.g. Bluefin tuna and Atlantic cod), destructive fishing methods (e.g. trawling as opposed to line caught fish), and the impact on the marine environment (e.g. dolphin safe/friendly), have resulted in supermarkets increasingly selling more sustainable certified seafood than ever before, with sales of Marine Stewardship Council (MSC)-certified seafood up by 60 per cent in recent years (The Independent, 2018).

Although three-quarters of UK consumers indicate that ensuring the sustainability of seafood is the responsibility of brands and retailers, current market evidence suggests that only half of the British population check for sustainable labelled seafood when shopping in supermarkets (Mintel, 2017). There remains high consumer confusion and low awareness of labels and certification standards which reinforce consumers' focus on the 'Big Five' (Tetley, 2016). Attempts to affect consumer seafood demand include: environmental groups' awareness (e.g. Greenpeace, 2018), retailer initiatives (e.g. Sainsbury's Switch the Fish and Fishmonger's Choice), celebrity chefs' campaigns (e.g. Hugh Fearnley-Whittingstall and Jamie Oliver), and conservation groups attempts, such as MCS. Although these consumer-focused high profile media campaigns may have contributed to widening consumer interest towards different types of fish, they may have led to some counterproductive effects – an overall increase in the total demand for fish, due to the increased publicity, without considerable declines in the sales of the 'Big Five' (Business Green, 2012)

2.4. Supply Chain Innovation in Fisheries via Short Food Supply Chains as Community-Led Local Development Strategy

SFSCs in fisheries are typically characterised by limited scale and a small 'niche' customer base. This is despite increasing popularity of online shopping and delivery service, such as digital food platforms and fish box schemes, which have transformed the UK retail scene particularly during the outbreak of Covid-19, since March 2020.

In this context, the development of an innovative short supply chain delivery system of local seafood is often seen as a strategy to bridge the gap between customers and small-scale fishers, whilst also encouraging sustainable fishing practices in local areas. Community-Led Local Development (CLLD), under the European Maritime and Fisheries Fund, offers opportunities for supply chain innovation through Fisheries Local Action Groups (FLAGs), public-private partnerships between local fisheries actors and other stakeholders. The role of FLAGs is to design and implement bottom-up local development strategies that address local areas' economic, social and/or environmental needs, and for many, adding value to local fisheries through the development of local markets and SFSCs is a strategic priority (Miret-Pastor et al., 2020).

Established in 2016, the North of Tyne FLAG was one of 19 FLAGs operating in the UK, and the 367 across the EU (FARNET, 2020)¹¹. Officially launched in North Shields in March 2017, it envisioned four key priorities (North of the Tyne FLAG, 2017):

- I. Engaging with fishers, the fishing industry and communities to produce projects that support the sustainable development of fishing and aquaculture;

¹¹ In 2020, the UK left the EU. As a result, the official number of FLAGs decreased to 348. Despite leaving the EU, the UK FLAGs remained operational until completion of the 2014-2020 programming period (Miret-Pastor et al., 2020).

- II. Bringing together a partnership of public, private, voluntary and community sector representatives to support the delivery of the strategy, and delivering a community-led local development approach in the context of fishing and aquaculture;
- III. Ensuring the economic viability of fishermen's livelihoods, supporting the diversification of local economies dependent on fisheries and aquaculture into other sectors of the marine economy, and driving sustainable economic growth;
- IV. Fostering implementation of the reformed common fisheries policy (CFP), particularly unwanted fish (discard ban, landing obligation), supporting small-scale fisheries, improving data collection, and promoting sustainable fish stocks.

The North of Tyne FLAG aimed to support programmes of activity that add value to fisheries' products; access existing and new markets for North of the Tyne fisheries; and enable fishers to market, brand and sell seafood and aquaculture products.

Five years since its inception, the FLAG has funded a series of projects which have supported the development of SFSCs in the area, many of which aimed to improve consumer awareness and perceptions of seafood. Examples include projects focused on training chefs on locally landed seafood and its preparation (see forthcoming discussion in relation to Strength2Food pilot actions), the purchase of smokers and other processing equipment for local fishmongers wanting to diversify their product range, and on the development of seasonal food events around the valorisation and promotion of local seafood across the region.

2.5. Brief Literature Review on Short Food Supply Chains in Fisheries

From a theoretical perspective, the vast majority of literature on SFSCs and other alternative food networks (AFNs) is grounded in agricultural and rural contexts (Venn et al., 2006; Kneafsey et al., 2013). There are, however, important distinctions between agriculture and fisheries which may have an impact on how we think of, and define, food systems. These include the mobile and wild nature of sea fisheries compared to more domesticated land-based food resources. While some freshwater fisheries are privately owned, sea fisheries are common-property resources, thus susceptible to overexploitation and depletion of fish stocks – a classic example of the 'Tragedy of the Commons' (Gordon, 1954). While the literature on local or short fish supply chains is scarce, we would assume that the supply chain management applications from a farm business context can also be relevant to the sea fishing industry, in their potential to deliver important socio-economic benefits to both fishers and consumers (Chiffolleau and Dourian, 2020). However, as the emergence and success of SFSCs largely rely on socio-cultural, institutional and economic contexts in which these food systems operate and are governed, the fishery context provides a rather unique setting compared to more traditional land-based agricultural food systems (Olson et al., 2014; Desrivieres et al., 2017).

In particular, the governance and organisational arrangement within which fish supply chains operate entail specific implications for logistics and distribution. While some supply chain mechanisms remain the same, such as direct sales, community supported fisheries, direct-to-consumer seafood businesses and box schemes, some other mechanisms shift from theoretically 'short' to realistically 'long' chains in practice, when compared to other sectors. For instance, cod landed in North Shields may have been caught some 400 miles away in Icelandic waters, attracting criticism as to what is inferred by 'local' and 'short'. Marsden et al. (2000) and later Renting et al. (2003) discuss supply chains as still being short even if

there is significant geographical distance with the product's origin, provided the supply chain still closely connects producers and consumers.

Currently, market chains rarely directly connect fishers with end-consumers - typically, there is a fishmonger or specialist shop acting as intermediary, which may source local seafood via merchants and wholesalers, rather than straight from the fishers themselves (Greenwood, 2019). The use of collection points to pick-up fish boxes, via a farm shop or restaurant for instance, may also further increase the physical and social distance between fisher and consumer meaning that nearly all short fisheries supply chains in the UK are 'proximate' as opposed to 'face-to-face'. Home deliveries and mail orders, via fishmongers, are similar examples, which shift from a direct face-to-face to a proximate mechanism. In the case of shellfish, e-commerce platforms have enabled consumers to buy more directly from producers, although these types of SFSC often involve little or no face-to-face interactions at all, despite the initial digital producer-consumer connection.

Regardless whether short supply chains manifest as 'face-to-face', 'proximate', or 'spatially extended' (if products are not only sold locally but in different regions as well), a common feature that characterise them is the cultural heritage connection to a geographical place, being the place of origin – the place of landing – or the place of processing, which in turn shapes the connection between fisher and consumer. For example, cod might be caught in non-UK waters, but the fact that it is being landed in a local port and its connection to local gastronomy, still imparts some elements of the supply chain being 'short'. Similarly, herrings have not been landed in the North East for decades, yet Craster Kippers is still regarded as a local product, and available in direct-to-consumer chains across the region. For some, however, including the French School of Proximity (Kebit and Torre, 2013; Praly et al., 2014), such chains would not be considered as short due to the geographical distance of the source product (the herring) before it is processed. The perceived embeddedness of local food (Hinrichs, 2000) is an important factor for fisheries products (FARNET, 2013).

The empirical evidence from Strength2Food provides the basis for understanding current drivers and barriers to local-short food supply chains across different contexts in Europe, and sheds light on the operational challenges and perceptions of various actors within the local food system (Malak-Rawlikowska et al., 2019b; Vittersø et al., 2018). A more direct relationship with consumers can improve trading relations, market returns and bargaining power of small-scale fishers (Malak-Rawlikowska et al., 2019a). However, the operational success and resilience of SFSCs are often curbed by limited scale and inadequate convenience for consumers (Malak-Rawlikowska et al., 2019a; Vittersø et al., 2019).

Interview evidence from North-East England suggests that small-scale fishers may be reluctant to change the current *status quo* and engage in SFSCs, due to complex dynamics in the industry, fear of retaliation, and demand uncertainty (Amilien et al., 2019). Case study evidence from both the Sandeford area in Norway and North-East coast in the UK confirm that, in both geographical contexts, the value placed on local seafood appears controversial, with mixed consumers' perceptions and lack of general awareness regarding provenance, seasonality and sustainability issues (Amilien et al., 2019; Vittersø et al., 2019). The cultural dimension is thus fundamental, and educational campaigns may be pivotal to inform consumer decision making and trigger behavioural change. In particular, restaurants can play an important marketing role, in promoting a wider variety of, lesser-known, local seafood on consumer plate (Amilien et al., 2019).

The following section sheds light on the complexity and disconnect of the North-East fishing industry, illustrating methods and evidence-based insights gathered to guide the development of pilot actions.

3. METHODOLOGY AND DATA COLLECTION

3.1. Research Design

In order to stimulate SFSCs for locally landed seafood in North-East England, pilot action initiatives have been implemented to test innovative solutions and validate market strategies to enable organisational and behavioural change. The conception, development and implementation of these pilot actions are the result of a five-year collaboration between SME Food Nation and researchers at Newcastle University. Figure 4 illustrates the iterative action research process, comprising cycles of planning, acting, observing and reflecting (and repeat).

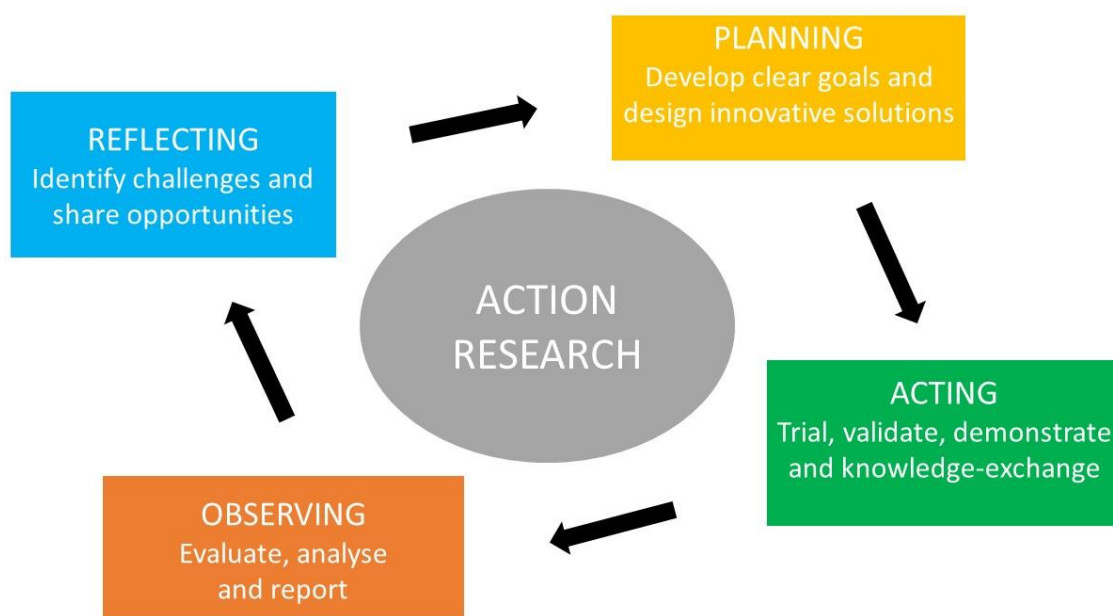


Figure 4. Action research cycle

Source: Own representation.

In terms of responsibilities, Newcastle University was primarily involved in Strength2Food's pan-European research on SFSCs (WP7), while Food Nation actively engaged alongside researchers in multi-actor dialogues and knowledge exchange activities (WP2). A mixed-methods research design was adopted to unravel the complexity of the seafood sector, and better understand local barriers and opportunities, from an economic and socio-cultural perspective, on the paucity of local-short fish supply chains in North-East England. To this purpose, various research methods and techniques have been used.

To inform the development of the pilot actions, we relied on secondary data collection, based on a literature review and market research summarised in previous sections, and primary data collection via qualitative, quantitative and participatory action methods. Specifically:

- i) Semi-structured interviews with fishers, managers/retailers and consumers to understand motivations, barriers and opportunities of developing short fish supply chains;
- ii) Business surveys with fishmongers to assess engagement in different short and long market chains;
- iii) Customer surveys to understand drivers and practices for purchasing via short fish supply chains;
- iv) Hybrid forums - public dialogues with seafood practitioners and the general public, to understand the complexity of, and disconnect within, the fishing industry, shed light on different stakeholders' perceptions and attitudes towards local seafood, and identify opportunities for SFSCs and innovative pilot actions;
- v) Fieldwork visits with local seafood business.

Table 2 provides a summary of the research methods, illustrating the sampling strategy and key references for further details on methodology, aims and evidence insights.

Table 2. Key Strength2Food research methods informing UK pilot actions

Research method	Sampling strategy	Key reference
Semi-structured interviews with users of short fish supply chains	<ul style="list-style-type: none"> • 4 fishers • 3 managers/ retailers • 5 consumers <p><u>Case study:</u> 'Creel Fish Club', fish box scheme, Amble.</p> <p><u>Period:</u> July 2017-Feb 2018</p>	Vittersø et al. (2018)
Customer surveys with users of local-short fish supply chains	<ul style="list-style-type: none"> • 30 customers of local fishmonger (19 of which using fish box scheme) <p><u>Case study:</u> Northumberland Seafood Centre and its Creel Fish Club, Amble.</p> <ul style="list-style-type: none"> • <u>Period:</u> Dec 2017-Feb 2018 	Vittersø et al. (2018)
Business surveys with fishmongers	<ul style="list-style-type: none"> • 20 fishmongers <p><u>Case study:</u> fishmongers in North-East England (Amble, Berwick, Craster, Hartlepool, Newcastle, North Shields, Scarborough, Seahouses, Sunderland).</p> <p><u>Period:</u> Sept 2018-Nov 2018</p>	Malak-Rawlikowska et al. (2019b)
'Hybrid forums' – multi-actor public dialogues	<p>3 events bringing together various stakeholders (fishmongers, merchants, restaurant chefs, academics, voluntary sector, schools and consumers):</p> <ul style="list-style-type: none"> • Locally Landed Seafood on the Menu: How do we create a Supply Chain to Achieve This? Sep 2017, North Shields, 26 participants • A Seafood Conversation and Trainee Takeover – Short Fish Supply Chains and Opportunities for Local Action. April 2019, 	Roos et al. (2021)

	<p>Newcastle Harissa Kitchen restaurant, 20 participants</p> <ul style="list-style-type: none"> • Creating Sustainable and Healthy Food Procurement: What is the Role of Local Foods? March 2020, Newcastle civic centre, 18 participants 	
Fieldwork visits	Information gathering and knowledge-exchange via North Shields Fish Quay shouting action, local fishmongers, seafood businesses, restaurants, seafood industry experts and wholesalers, North of Tyne FLAG.	

The evidence-base insights gathered from the above research will be discussed, in the following sections, according to the main thematic themes: observation of local restaurants' menus, industry dynamics and supply side challenges, consumer purchasing habits and demand side challenges, innovative businesses and best practices.

The implementation of the demonstration action research and the respective pilot actions with trainee chefs, seafood practitioners and consumers are outlined in Section 4, which also discusses respective monitoring and evaluation methods used, e.g. pre- and post- evaluation surveys and social media engagement metrics.

3.2. Observation of Local Restaurants' Food Menus

Initial market research carried out by Food Nation includes observation of local restaurants' food menus, to develop an understanding of the seafood being served, potential barriers to providing more locally landed/sourced options and preparation methods.

The screening criteria consisted in selecting restaurants which are in the close proximity to North Shields Fish Quay, and advertise on their menus fish or seafood dishes. Initial consultation took place, via online menus and in-site visits, to establish the species of seafood on their menu. Typical fish included prawns, squid, salmon, haddock, cod, tuna and mussels with only few restaurants also offering flat fish such as turbot, plaice and sole.

Ten restaurant businesses owners were interviewed to discuss their procurement strategy and sourcing principles in relation to seafood. Nine out of the ten restaurants reported that they sourced their seafood from a single supplier. Suppliers are local wholesalers who purchase fresh fish from the North Shields Fish Quay auction. Although most businesses emphasised the local sourcing aspect, further investigation shed light on the provenance of seafood, with the vast majority coming from other UK ports, and other species (e.g. prawns) being imported from abroad. This suggests a lack of understanding, and confusion, around the procurement system of seafood via wholesalers. The businesses were proud to be supporting local fish wholesalers, without feeling the need to distinguish locally landed seafood and recognise the seasonality of different species.

In regards to fish preparation skills, all restaurants demonstrated confidence, stating that their own kitchen teams had the skills required to prepare and cook fresh seafood. It is unclear, however, in what state of processing different types of fish were being delivered to these restaurants, given the typical expectation of delivering filleted fish, unless specifically requested as whole and unprocessed.

Only one of these ten restaurants declared to be purchasing fish directly from the Fish Quay auction. This business, which in fact specialises in seafood, demonstrated a deeper understanding of seasonality factors, provenance and skills required for processing and handling seafood. The restaurant has a seafood only menu, which changes on a daily basis in response to the fresh off the boat produce that lands on the day.

Additional market research, conducted via informal discussions with the local fishing industry (e.g. local fishmongers, wholesalers, industry experts, other seafood businesses), shed further light on the overall, limited, availability and variety of local seafood on restaurant menus (e.g. Amilien et al., 2019; Amilien et al., 2021). This deeper understanding of the challenges within the local industry enabled us to identify opportunities for innovative pilot actions in a restaurant setting:

- ❖ **Understanding local supply to alter customer demand.** Although langoustines seem to be the most marketable and available species landed at NSFQ, there are a number of barriers for consumers. The price of langoustines is high, and therefore typically only purchased by high-end restaurants and most are exported on contract which provides a reasonably secure income for fishers. There was thus little appetite on the part of fishers and local restaurants to focus the pilot action on langoustines. Rather, a focus on abundant species with currently limited demand, and sold at much lower price points, was of far greater interest for restaurants as well as fishers. Two species landed in large quantities and not commonly sold locally are, for instance, whiting and gurnard.
- ❖ **Understanding restaurant requirements to inform menu planning and sales strategy.** In order for restaurants and other businesses to sell a wider range of seafood species, there are numerous factors that determine the viability of particular dishes on the menu. What are the incurred costs and resulting profits? E.g. Are fillets going to be large enough to be considered a reasonable portion size? Is the (staff) cost of processing smaller species too high? A specific example relates to the impact of changing menus on a regular basis, which may impact many aspects of the business. Whilst a new menu item can be put together by a kitchen team relatively quickly, the knock-on effect is in the time required by the restaurant management team to: a) calculate the cost of the dish and apply an appropriate mark-up for the customer price; b) update and re-print menus in print and online, if a ‘special board is not common practice’; c) add the menu item to the till and point-of-sale systems; d) train the front of house team on the main characteristics of the dish. For many restaurants, the additional time and resources involved with changing menu items is achievable, though not always viable or common practice.
- ❖ **Understanding local knowledge to improve awareness, confidence and skills in the kitchen.** Local restaurants’ knowledge of provenance and seasonality factors appears limited, as typically based on the seafood that is available to them through the wholesalers rather than the catch coming in from fresh from the boats. A further issue relates to confidence and skills: restaurants typically tend to purchase seafood that they know how to handle in the kitchen and they know will sell to their customers, based on past experience and ongoing food trends. This promotes continuity in restaurant menus. At present, many restaurants do not see the viability of having an often-changing menu and this therefore limits their ability to be able to react to the fishing industry, which is unpredictable in terms of the size, quantity and species caught from one day to the next. With respect to skills, there are many highly skilled chefs working across restaurants in the local area, as well as many ‘unskilled’ staff,

particularly in relation to seafood processing¹². In order to build confidence in the kitchen and expand consumer plate, seafood skills and recipe sharing may be a good strategy to engage both restaurants and households.

3.3. Industry Dynamics and Supply Side Challenges

Qualitative semi-structured interviews conducted with local (small-scale) fishers and fishmongers shed light on the functioning of, and dynamics within, the seafood industry.

Fish supply chains are dominated by a small number of relative large buyers. Due to their strong and long-lasting market presence, including large-scale distribution and logistics, they represent the main market channel for the majority of local fishers. In the absence of own/family fish shops, fishers typically sell their daily catch to merchants, which procure on fishers' return to the harbour¹³. As a result, only a small minority of the catch may get sold directly to local fishmongers and restaurants, depending on specific arrangements in place (e.g. existing contracts with wholesalers and species included), and opportunities via local networks.

Overall, sales via 'alternative' market channels and SFSCs were perceived as a particularly risky business, due to the market power of wholesalers, and possible retaliation effects arising from selling to other buyers: (Fisher 2: "*The people you sell to, they're not over keen on you selling to other people as well*"; Fisher 3: "*If he catches you selling much stuff anywhere else he might tell you to get lost and there wouldn't be anything you could do*"). Despite the higher profit margins which may arise via engagement in more 'direct' market channels, fishers' risk aversion often results in reliance on existing contracts (Fisher 2: "*I'm sure some people do have contracts with local restaurants. But obviously they've probably been doing that for years and they probably stick to who they know*"; Fisher 4: "*They don't sell to other people like their original buyers and that's it*").

The typical payment arrangement consists of weekly remuneration - although fishers particularly valued receiving stable cash inflows and security for their operations (e.g. Fisher 3: "*You are guaranteed your money every week*"), they indicated a lack of bargaining power to negotiate conditions or dictate prices (Fisher 3: "*We just get what we are given*"). The numerous middlemen operating at different steps within the industry (merchants, wholesalers, processors, distributors, suppliers, retailers) also imply that the upstream and downstream prices considerably differ, with ordinary long supply chains delivering extremely low returns to fishers (Fisher 2: "*There's a lot of middlemen and the prices that the lobsters go for, sort of like at restaurant level is so disproportionate to what we get... We don't get a lot for our catch, really*"; Fisher 4: "*The wholesalers are the worst (in terms of price margins), the bottom, that's the bottom price*"; Fisher 3: "*If you think a farmer has it bad you want to see what we have got*").

¹² It has not been possible to identify exact skills or confidence levels across restaurants via consultations with kitchen teams. When asking restaurants' staff about any lack of skills or confidence, it became clear that the team will typically report to having the appropriate skills and confidence to put together the menu they have developed. It also became clear that a restaurant team will not necessarily know what specific skills they are missing unless a process of formally testing specific skills sets was being rolled out. For the purpose of this background data collection, we therefore relied on our qualitative judgement of the overall menu, seasonal variations, and skills required, as *de facto* proxies to restaurants' levels of skills and confidence.

¹³As indicated by the same fishers, the majority of their catch is destined for the export market, predominantly France and Spain, and more recently China and USA as well, with only a minor share being sold to local wholesalers and available for purchase in the region or across the country.

This general discontent is further exacerbated by antagonism towards larger vessels, and conflicts between static gear fishers and fishing trawlers. Competition with large/foreign-owned vessels appears to be a major limitation to small-scale fishers' operations, specifically in the context of fishing quotas (Fisher 3: *"There was nobody allowed to catch the prawns or whiting yet all of the big boats and trawlers were carrying on all the time...it was one of the times when I was fuming...There are a lot of big companies now who are buying up the quotas. In a short time, there will be about five businesses who will own 99% of the fish and prawns in the sea. That's true and it's happening everywhere"*).

An important constraint for the direct selling of seafood live products is the lack of chilled storage facilities, e.g. fridge van, holding tanks for lobsters and crabs (Fisher 2: *"It's difficult selling your produce because it's live. You've got to get rid of it fairly quickly... You don't really have much opportunity to sell to anybody else unless you've got some facilities to store the lobsters yourselves"*). A related issue is thus the lack of guarantee of selling all their catch (Fisher 1: *"They can only get rid of a certain quantity. They can't take all the fish we catch"*; Fisher 2: *"In the summer when the lobsters are in season and a fishing boat might land two hundred lobsters and [the local restaurant] might want five or six, so it's only a very small percentage"*; Fisher 3: *"We would be in trouble and stuck with a lot of money's worth of catch that we wouldn't be able to get rid of"*). The lack of financial security further explains why only a very small share of the fish landings is typically sold via SFSCs (Fisher 3: *"If they could get rid of everything then people would give them the chance"*).

Income variability and low margins represent major challenges for the survival of some of the small local fishers in the area (Fisher 2: *"It's just so hard to make a living that you're struggling to keep your head above water... We don't earn as much as it is"*). Income levels are subject to fluctuations in the market due to seasonality and demand variations. Overall, seasonality and climatic factors is a major supply chain challenge, limiting fishers' market operations and associated revenue – e.g. in winter, and with bad weather, fishing may be limited to one day per week (Fisher 2: *"In the summer season when there are plenty of lobsters about, you don't get as much for your catch because the market's flooded. Whereas winter time when there's not a lot of boats at sea because of the weather and the lobsters aren't that active you get twice as much for them because there are just not that many on the market. It's like a commodities market, really"*).

As the majority of the local catch gets exported, exchange rates and trade barriers are major factors contributing to price volatility (Fisher 3: *"You do get a little upset when things go wrong or you have had a poor day"*). Regarding future plans, fishers displayed mixed perceptions – some mentioned that they were planning to continue existing operations until greater clarity was provided, e.g. in light of Brexit, whereas others seemed quite pessimistic about their future, due to low incomes, limited access to external funding and heavy burden of regulations (Fisher 2: *"The future is not looking too good I'm afraid...I always wanted to be a fisherman all my life and my dream came true...but it looks like I'm going to have to sell up. I've tried my best but it's just everything's working against us at the moment"*).

Lastly, some fishers expressed concerns about the future - the once-thriving local fishing industry will eventually disappear due to the lack of interest in the profession – in the absence of heirs to take over existing activities, the survival of the industry will depend on its attractiveness to new/young entrants (Fisher 1: *"In the past, there were plenty of people, plenty of kids wanting to go fishing; now there are next to none...Once I pack in, there is nobody to carry on my boat. And the other boats now are the same. So the fishing in Amble, it will eventually die out...But I think a lot of it is that the kids just aren't interested...because"*

it's not an easy job to do, fishing...You've got to be brought up to it, and you have got to want to go fishing...It will eventually die out").

3.4. Consumer Purchasing Habits and Demand Side Challenges

Qualitative evidence from the first two hybrid forums (refer to Table 2) highlighted a series of consumer perceptions and attitudes with respect to seafood. These are summarised as follows:

- Mixed consumer perceptions and preferences towards (local) seafood
- Consumers typically lack knowledge about what is local, fresh and seasonal
- Limited display and availability of locally caught species in shops and supermarkets (some exceptions, e.g. fishmongers)
- General disconnect with the fishing industry, exacerbated by the lack of direct contact and interactions with fishers
- Preference towards familiar species (e.g. largely salmon, prawns and cod), low-efforts in cooking (e.g. already filleted, smoked/cooked, ready-to-eat)
- General reluctance, and fear, to try something different and new
- High price sensitivity, with low value typically placed on various local species
- Poor confidence, creativity and skills to cook, and experiment, with different varieties
- Importance of restaurants' roles in inspiring consumers, showcasing lesser-known species and diversifying the consumer plate, via tasty and creative recipes

In-depth interviews with local consumers and managers/retailers of short fish supply chains, further confirmed the above issues, shedding light on various demand side barriers faced by the local seafood industry.

Overall, as local / British people tend to purchase fish they are already familiar with, consumption is limited to a very few species. Previous market research confirms how unfamiliarity with seafood constitutes an important barrier to consumer demand, which is historically rooted in cultural traditions and family practices: *“people have a real tendency to eat what they were given as children, or you know, what was cooked by their parents, whereas they'll eat snakes or kangaroos or buffalo or anything else”* (Manager 1).

It seems that a vast majority of the local seafood is not even available for purchase in local shops – this may be justified on low consumer demand for it, in the first place, but also that various species (e.g. langoustines, lobsters) are destined to the export market:

“Majority of the fish of the North Sea that is caught from the shores here in Northumberland are all going abroad...The local shops tend to go for crowd pleasers... they just want cod and haddock and salmon” (Manager 2);

“One of the sad things is that a lot of our local fish is exported so it goes over to France rather than stay in this country because we're not very good at trying different types of fish” (Consumer 5);

“I always thought they [langoustines] were French, funnily enough because I've only ever eaten them in France and I assumed that they were from a warmer water” (Consumer 2).

A notable exception concerns restaurants, which can act as good introductory mechanism to widening people's taste and sense of adventure, and encouraging consumers towards repeat-purchase of the same fish.

The emerging opportunities, identified as part of the first two hybrid forums, were as follows:

- ❖ **Restaurants could play a role** - small tapas-style plates and special events could help in giving consumers a first taste and increasing awareness of what is locally available. Whiting fish can become an opportunity: by putting it on restaurant menus, in the form of croquettes as a starter, it can become accessible and appealing to the public (see case study below).
- ❖ **A gap between consumers and fishers/suppliers needs to be bridged**, with better coordination in the industry to promote seafood as a valuable, healthy and delicious food.
- ❖ **Trigger behavioural change via innovative actions**, e.g. improve consumer exposure and perceptions towards different species, as well as their knowledge regarding seasonality and sustainable sourcing.
- ❖ **Importance of strengthening local networks within the sector**, which can provide mutually beneficial outcomes for stakeholders within the supply chain, from fishers to end-consumers, but also deliver important economic, social and environmental benefits for the wider local economy.

These insights informed the first pilot action of the project - putting an under-utilised fish species (whiting) on the menu of one restaurant (see case study example below). This pilot action was designed to illustrate what may be possible with under-utilised fish species and to identify also the barriers that exist.

CASE STUDY from Harissa Kitchen

HOW WE GOT WHITING ON THE MENU!

Harissa Kitchen is a restaurant and takeaway, a sister company to the social enterprise Food Nation, and a business with the ambition of demonstrating what a sustainable and socially minded restaurant can achieve.

One of our aims is to support the local economy and use ingredients that are sustainable, local and seasonal, including fish and seafood.

Over the past few months we've been making a few steps that will see our local fish and seafood on the menu at Harissa.

The new addition!

Whiting Croquettes were added to the 'Small Plates' section of our Autumn menu. We are proud that we are giving our customers a taste of a fish they may not have typically chosen. We have a great supply of fish like Whiting on our doorstep and we're keen to encourage more people to know about it, taste it and love it!

Why did we choose Whiting?

Through our links with the Strength2Food Programme we have learnt about the abundance of Whiting landed at North Shields Fish Quay. Seeing all of that fish being exported away from the North East seems like a missed opportunity for restaurants who want to showcase the daily catch in the North East.



What did we do?

There are a few barriers to getting fish such as Whiting on restaurant menus...

- they're pretty fiddly to fillet as they can be quite small
- they're a bit too small for serving up as a fillet like you would with the classic Cod or Haddock
- you need quite a lot of fish to get enough flesh for a menu item, which takes quite a bit of time from the kitchen prep

A little bit of creativity was needed and so came the idea of croquettes where a simple flavoured fish can be made into an exciting tasty dish.

We source our Whiting from a local fishmonger on the Fish Quay where it can be filleted and boned ready for the restaurant to then prepare fish croquettes for the days ahead.

The croquettes have sold well in the restaurants with similar sales figures to other small plates. The story to go with the dish is a great selling point for many customers who are keen to support people and organisations working with the great produce we have available to us in the North East.

What's next?

Up next we are keen to keep demonstrating to our fellow Restaurateur's that locally landed seafood can make an appearance on any menu. We change up our menu quite often and will be continuing to come up with ways to use Whiting, whilst keeping the very popular Monkfish on our menu over the coming months in various forms. The next ambition is to find a way to get the seafood, of which our local fish quay is known for, Langoustine on the menu whilst ensuring a viable profit margin and an affordable dish for our customers.

HARISSA KITCHEN, 31 STARBECK AVENUE, SANDYFORD, NEWCASTLE UPON TYNE, NE2 1RJ, UK
@harissakitchen

3.5. Innovative Businesses and Best Practices

Throughout the course of the pilot actions, Strength2Food engaged and collaborated with innovative seafood businesses promoting short fish supply chains, to understand key success factors, existing challenges and market opportunities. The following sections focus on two notable businesses in North-East England, which have inspired and engaged with Strength2Food, to share best practices and design appropriate market strategies.

3.5.1. *The Northumberland Seafood Centre's Creel Fish Club*

The Northumberland Seafood Centre, located in the Amble Harbour Village on the North Sea coast of Northumberland, operates via three main market channels: harbourside sale, wholesale and the Creel Fish Club.

The Creel Fish Club, introduced in 2016, is a fish box scheme which aims at promoting local seafood and increasing awareness around quality, seasonality and sustainability issues. Its main ambition is to take the strain off overfished stocks, introduce customers to new types of fish and seafood and help support the inshore fishing fleet. The Creel Fish Club represents a remarkable example of a short and local food supply chain whereby the local shop (e.g. the Northumberland Seafood Centre) acts as only intermediary between fishers and consumers. This initiative was selected as UK case study for empirical analysis on SFSCs (refer to Vittersø et al., 2018) and helped to inform the development of pilot action activities.

The variety of fresh fish and shellfish displayed on the fish counter, confirmed the abundance of local catch possibilities from the North Sea, including: brill, brown coalfish¹⁴, conger eel, crab, cod, cuttle-fish, dab, dover sole, grey mullet, gurnard, haddock, hake, halibut, herring, john dory, langoustines, lemon sole, ling, lobster, mackerel, monkfish, octopus, oysters, plaice, pollock, red mullet, red sea bream, sea bass, sea bream, sea trout, skate, squid, turbot, velvet crab, whiting, wild salmon, witch, wolf fish. Processed seafood, such as crab claws, dressed crab and kippers are also available.

From a consumer perspective, the idea of the fish box scheme, can be an effective strategy to stimulate consumer behavior change, and *“present different fish to different people in a way that they would try them and hopefully come to appreciate these over time”* (Manager 1). The box scheme implied that consumers would have no choice or direct control of what is inside the box: their direct exposure with unusual species would either results in an increased demand towards that fish or, at least, in a conversation over their dislikes: *“discovering new fish that they had never heard of before, finding that some of the things that they had never encountered before are actually ones that they now actively go out and seek, which is really the essence of what we’re trying to achieve”* (Manager 1).

Reflecting on this initiative and its existing customer base, it is clear that the scheme has resulted in a loyal and niche audience with an inquiring kind of food culture, generally more curious and adventurous than the ‘average’ consumer. For instance, when setting up the scheme, the manager was hesitating whether it would be worth communicating the content of the fish box to its customers, prior to the order dispatch, to facilitate their planning logistics over ingredients and recipes – the overall negative response confirmed the extent to which surprise was seen an intrinsic feature to this initiative (Manager 1: *“People actually wanted to open the box and say: ‘Oh!’ and that challenge of ‘what do we do with that?’”*; Manager 2: *“People don’t know what they’re getting inside the box, they actually are saying they have to start thinking outside the box”*).

Membership to the fish box scheme contributed to a better appreciation of local and less-known fish species, including some which may be ‘ugly looking but delicious tasting’, e.g. monkfish and gurnard. It was interesting to confirm that most customers are not even aware that some local species, e.g. langoustines, are locally caught (Consumer 2: *“I always thought they [langoustines] were French, funnily enough because I’ve only ever eaten them in France and I assumed that they were from a warmer water”*). This reflects the limited availability of local species in typical retail outlets, with some of the most valuable catch destined for exports rather than local sales (Consumer 5: *“One of the sad things is that a lot of our local fish is exported so it goes over to France rather than stay in this country because we’re not very good at trying different types of fish”*).

Overall, the fish box scheme is a remarkable initiative which presents a market opportunity to close the gap between fishers and consumers and add significant value in the local fishing industry. The key success factors of the Creel Fish Club include:

- ✓ Promotion of fresh, local, seasonal and good quality seafood
- ✓ Support of local fishers and the local community
- ✓ Increased consumer knowledge on sustainable fish consumption and local variety of species
- ✓ Strengthening of local networks and social capital - ‘local embeddedness’

¹⁴ This fish is also known as ‘coley’ or ‘saithe’.

However, its small-scale operation and niche customer base are major challenges for the long-term sustainability of this business model and in ensuring a safe and viable market for local fishers. Specific recommendations to improve current operation and success of the scheme include:

- Improvement of current distribution and convenience factors - e.g. widening the delivery radius, expanding the number of collection points, home delivery, etc.
- Provision of recipe cards, and/or interactive videos with cooking tips and creative ideas – how to cook whole fish; how to use different parts such as head and seafood shells; how to make fish stock, etc.
- Provide more information on seasonality and sustainability factors;
- Content of newsletter to be expanded – maintain events and awards but include types of fish to be expected in that season, creative recipes, sustainability of fish stocks;
- Run courses on fish filleting at Northumberland Seafood Centre – this may further encourage people to join the scheme, while improving confidence and attitude towards fish;
- Organise cooking workshops – focus on less-known fish species, shellfish and different cooking methods;
- Introduce more sustainable packaging - e.g. own recyclable box, reusable ice pack, etc.
- Set-up an online shop to order additional seafood via the website;
- Advertise different fish species available for purchase with market prices on the Centre’s shop window and website to improve transparency and attract customers;
- Marketing and public relations – e.g. strengthening the Amble Harbour Village as a community gathering space and advertisement of Northumberland Seafood Centre’s operations in order increase footfall and attract customers in winter / during the week; publicize the Creel Fish Club at food festivals and local markets in the region; conduct a small customer survey to better understand customer satisfaction and other areas of improvement from existing members.

A more recent project of the Northumberland Seafood Centre relates to its lobster hatchery, which aims to ensure the future stocks of shellfish and protect local berried hens (i.e. female lobsters) and their eggs until the young lobsters are ready to be released back in the sea. The hatchery also constitutes a visitor attraction for the area, aimed at differentiating Amble from other harbor villages along the coast, but also an opportunity to carry out further marine conservation research on lobster and engage with other local activities (e.g. release of lobsters with a local diving club).

3.5.2. Collingwood Seafood

Fishmongers Collingwood Seafood, located by North Shields Fish Quay, opened in 2018. The reputation of the business in the local surroundings has been outstanding, due to the passion and energy of staff and their extensive knowledge of local seafood species.

Visits to the shop and conversations with the manager and its team, as well as local customers, revealed the importance of an enthusiastic and positive vibe for attracting a particularly wide, and young clientele, and for standing out among various seafood selling

businesses. The highly skilled and recognised fishmongers take pride in their business and are keen to connect with customers, providing an engaging and enjoyable experience. The successful marketing strategy relies on strong digital presence via social media, consisting in both informative and entertaining promotion, via pictures and videos on Instagram and Facebook. The attractiveness of the online material may contribute to attract new customers and break down any barriers that local people may have in entering an ‘unknown’ fishmonger shop and choosing to buy something local, and perhaps different, over a convenient stop at the supermarket. The digital promotion showcases peculiarities of daily catch and special species (e.g. [large sizes of catch](#), [blue lobsters](#)), introducing staff and special/ celebrity customers (e.g. [BBC television chef Hairy bikers’ Si King](#)), fishmonger skills in action (e.g. [filleting and cooking](#)), and overall promotion of initiatives in the region.

Collingwood Seafood contributed to the development of Strength2Food pilot action initiatives, on understanding some of the local barriers in the industry and illustrating simple but effective marketing strategies. It became the main seafood supplier to Food Nation’s Harissa Kitchen demonstration venue, and played an active part in increasing public awareness around local seafood and fish skills via informal educational content (e.g. refer to Section 4). Building relationships with enthusiastic businesses in the industry, such as Collingwood Seafood, can play a significant role in increasing the local demand of some of the lesser known and used species landed locally and bring about positive behavioural change.

4. PILOT ACTIONS AND MONITORING TOOLS

The research summarised in previous sections identified existing challenges and market opportunities around the following needs:

- **Improve pricing strategy and convenience factors**, which remain key drivers for consumer purchasing decisions, to make SFSC initiatives more accessible to the wide population;
- **Unlock consumer knowledge, perceptions and skills** – behavioural nudge to improve consumer attitudes (food education from early years at school, in less advantaged areas, via social media and TV), improving skills/confidence in cooking (from scratch, easy/quick recipes, etc.);
- **Foster innovative solutions to showcase seasonal, local and abundant seafood** – facilitate a closer connection with fishers (e.g. events bringing together fishers-consumers-chefs), stimulate consumer curiosity and sense of adventure towards ‘unknown’ species (creative and original experiences, e.g. lunch/dinner clubs, tasting events, festivals, competitions, etc.);
- **Increase visibility of sustainability campaigns** – positive impact of community-driven initiatives, known personalities / celebrities chefs, national information campaign and local marketing promotion;
- **Attract new / young motivated entrants in the fishing industry** – via start-up grant schemes to support purchases of equipment and storage infrastructure, training on business entrepreneurship and marketing skills;
- **Strengthen local partnerships and social community networks** – promotion of local food initiatives and regional traditions, via better access to development grants (e.g. crowdfunding opportunities) and more equitable measures to support small fishers and local businesses.

To respond to identified opportunities and stimulate new local and high-quality seafood markets in North East England, Strength2Food designed various pilot actions to demonstrate innovative potential and test marketing strategies. These include:

- **Seafood Trainee Programme and Cookery Classes** - to empower aspiring chefs with skills and confidence in the kitchen.
- **Seafood Supper Clubs** - to inspire consumers towards underutilised and locally abundant seafood species and test new product development. These themed dinners would be run by some of the trainees, to showcase their skills and test their creativity in a real restaurant setting.
- **Online Resources for Seafood Education** - to raise the profile of the local fishing industry, improve awareness around local and seasonal seafood and inspire people with easy and tasty recipes.
- **Home Recipe Kits with Seafood** - to encourage families to cook different seafood dishes and increase their confidence in the kitchen, by providing convenient and pre-planned meal kits and recipe boxes.
- **Stakeholder engagement and knowledge-exchange** - to strengthen local networks and collaborations within the seafood industry, bridge the gap between the fish industry and the wider public, and deliver economic, social and environmental benefits for the wider local economy. These ran throughout the 5-year action research and were used to design – guide – and demonstrate above activities (refer to Figure 4 and Table 2). As such, these have been discussed throughout respective sections of the report.

These pilot action activities and their monitoring tools are summarised below. The evaluation of their impacts will be discussed in the subsequent section.

4.1. Seafood Trainee Programme and Cookery Classes

The Seafood Trainee Programme were delivered by Food Nation for a period of 12 months, between January 2019 and December 2019, in partnership with the North of Tyne Fisheries Local Action Group (FLAG). In total, 15 trainees enrolled onto the programme with the aim to improve their skills and confidence in the catering and hospitality industry as well as increase their employment opportunities. Trainees were young people who had an interest in food and in entering the hospitality sector but were facing barriers to employment. Their recruitment was aided via local charity groups and social media, targeting people with learning difficulties, disabilities, health issues, as well as more vulnerable and isolated people. The key supporting charities include: YMCA, Junction42, Connexions, Talent Match NE, NTW NHS Mental Health Services, Moving on Tyne & Wear.

A specific focus of this programme was placed on upskilling and empowering the trainees with handling fresh seafood, from sourcing, to cleaning, cooking and serving in a restaurant environment, teaching them effective teamwork skills and day-to-day operations of the business. The cookery classes, illustrated in Figure 5, consisted of practical fish preparation and dedicated workshops, demonstrating different cooking skills and techniques (e.g. gutting, filleting, using typical fish discards), using various types of seafood (e.g. whole crabs, langoustines) and less commonly known species (e.g. gurnard, whiting, ling). Some of the trainees were also involved in delivering Seafood Supper Clubs (see below) to put into practice the skills learnt as part of the programme.

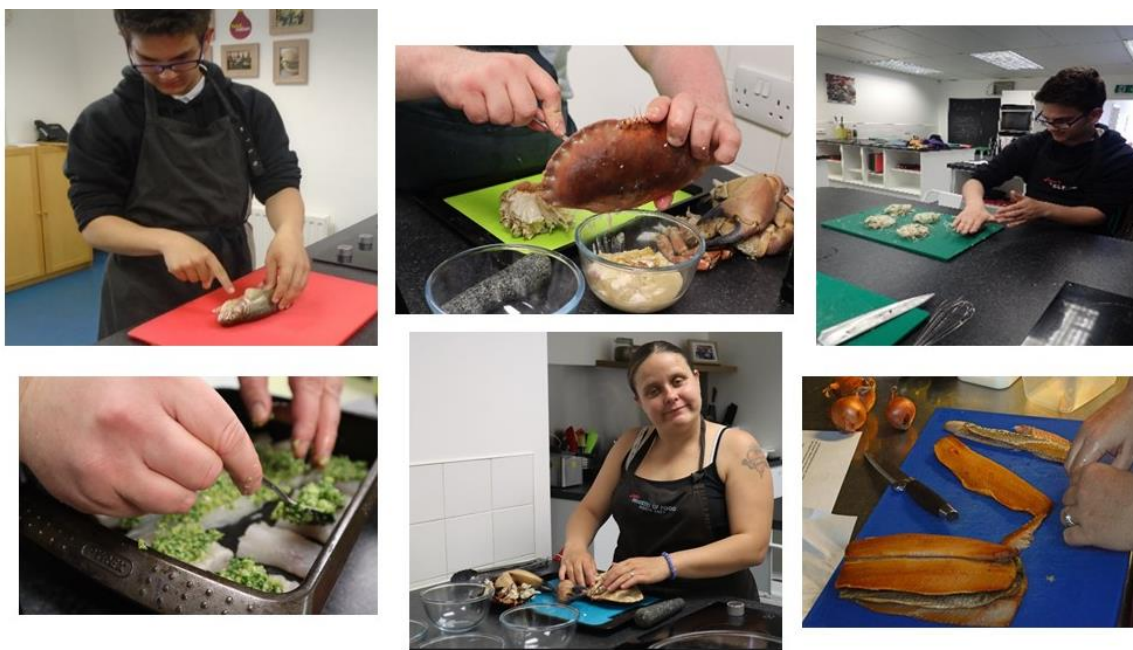


Figure 5. Trainees practicing seafood preparation skills

Source: Own composition from action-research.

Various seafood industry visits were also arranged in Newcastle and North Shields, including to: local fishmongers, a fishcake factory and seafood businesses, as well as the shouting auction at North Shields Fish Quay.

Additional seafood cookery classes were arranged with local supporting organisations, e.g. Talent March North East, an employability programme testing innovative approaches to supporting long-term unemployed 18-24 year olds, managed by the Wise Group, a social enterprise working to lift people out of poverty. For instance, the 'seafood in catering training programme', illustrated in Figure 6, was designed to run for one full week – it was more intense but covered the same main areas of the chef trainee programme, to allow different young people to take part, who may not be able to commit to a longer time period due to other commitments or who needed to find work employment sooner in order to support themselves.

Seafood in Catering Training Programme - Case Study

Food Nation have collaborated with *Talent Match North East* & *The Wise Group* to run a one week intensive *Seafood in Catering* Training Programme. The *Seafood in Catering* Training Programme began in January 2019 and is due to finish in December 2019. The aims of the programme are to:

- Increase **employability skills** of trainees
 - Teach **seafood preparation & cooking skills**
 - Increase **consumer awareness of seafood**, particularly local seafood
 - Increase **awareness of jobs** within the local seafood industry
- Participants have taken part, and will take part in a wide range of activities whilst on the training programme. These include:
- **Fish preparation workshops**, allowing trainees to develop skills such as filleting and skinning
 - **Fish cooking workshops**, allowing trainees to develop skills such as safe handling and correct cooking of fish
 - **Vegetable preparation workshops**, allowing trainees to develop chopping skills such as julienning
 - **A visit to a fish cake factory** to experience a career path within the local seafood industry
 - **Planning a menu for an event**, helping the trainees to develop employability skills such as teamwork and communication
 - **Preparing and cooking the food for an event (a pop up restaurant at *The Wise Group* offices) as well as running it**, allowing the trainees to experience large-scale food preparation, cooking under time pressures and helping them to further develop employability skills such as teamwork and time management



Hi XXXX,
Some feedback for Trainee X who visited today with the food he had skilfully prepared.
Today I had a client with me who happens to be chair of Newcastle Disability Forum. My client was extremely impressed with the food Trainee X had created. She particularly enjoyed the mussel stew - so much so, that she would be keen to offer occasional work to Trainee X to cater event buffets which the organisation hold from time to time, if this is something which Trainee X would be interested in, in the future.
Well done Trainee X - I think you certainly have a great career ahead of you!

XXXX

XXXX
Specialist Coach

Figure 6. Working with employment initiatives: seafood in catering training

Source: Own composition from action-research.

Similarly, as part of Food Nation's food education for schools, bespoke seafood training workshops were delivered to two school groups of 14-19 years old pupils, including fish preparation skills and visits to seafood industry businesses (e.g. Northumberland Seafood, Collingwood Seafood, North Shields Fish Quay action, fish cake factory) to develop new seafood skills and shape career aspirations. Figure 7 illustrates these school workshops.

School Groups

- 2 School groups completed the Programme.
- Fish Prep - 100% of participants filleted & skinned a fish. This task was really important for the students confidence & self esteem as well as for the knowledge & skill set. Their ability to successfully complete a task that they had never done before & that was scary, resulted in an increased self belief. This could be observed in their attention to tasks & confidence when cooking.
- During the programme the schools visited the Fish Quay – many of whom had never been there & we even saw a Seal in the river! At the Lobster Hatchery students helped to move baby lobsters & learn about the importance of sustainability.
- 100% of students learnt new cooking skills & acquired knowledge about the local fishing industry, were able to identify an increased number of species of local seafood.
- Through giving students the opportunity to try something they had no experience of, it raised their awareness of jobs linked to the Seafood Industry & raised career aspirations.

Hi Kristy,
I would like to say a massive Thank you on behalf of myself, the class team and our students, for organising the seafood programme meals and visits to the allotment and the Northumberland seafood centre. The students and staff have all enjoyed the activities and have benefitted greatly learning new skills and having the opportunities to participate in the allotment and visit the lobster hatchery. I know myself included that they found this visit very interesting, especially since some of the students have never experienced anything to do with the sea or sea life before. You have shown them new and healthier ways to make fish giving them the life skill to do this for themselves at home in the future. We look forward to any future ventures and courses you may be able to provide in the future, that will also support their learning and development. Thank you again. Your help and expertise was much appreciated. We have all had a fantastic time working alongside you and your team.

Susan and the 14-19 team and students.



Figure 7. Schools' food education programmes: seafood training

Source: Own composition from action-research.

Impact monitoring tools: Seafood trainees' change in knowledge and confidence levels were identified as key outcome variables for impact monitoring of this pilot action. A 'Fish Skills Checklist' was developed by Food Nation, with the support of Newcastle University, to assess and monitor the trainees' skills before and after the training programme (see Appendixes 1 and 2). The development of the skills checklist was also devised as a tool that could help other catering businesses in measuring the experience and confidence of members within their team. Informal conversations with the trainees and instructor were conducted to gather feedback on the programme.

Brief phone interviews with trainees were also conducted about nine months after completion of the training, to understand the longer term impact of the programme (refer to Appendix 3).

4.2. Seafood Supper Clubs

In total, 11 Seafood Supper Clubs were organised and hosted at Food Nation's Harissa Kitchen, a local social enterprise restaurant in Newcastle used as a pilot demonstration venue for cooking courses and demonstration activities. The general public was invited to purchase event tickets and enjoy local seafood themed menus prepared by the trainees. The dishes favoured seafood that is local, seasonal and sustainably caught. Inspiration for recipes was also drawn from in season produce harvested from the restaurant allotment. Figures 8 and 9 illustrate examples of unique menus and recipes, that were specifically created to experiment with different ingredients, cooking methods and styles of dishes, to introduce trainees to new tastes and skills required to deliver them. Each event was themed with a different cultural dimension, showcasing Italian, British, and Spanish influences.



Figure 8. Examples of menus, ingredients and cooking techniques

Source: Own composition from action-research.

The Seafood Supper Clubs had multiple aims: 1. to provide practical experience for the aspiring chefs; 2. to connect seafood suppliers directly to the catering sector; 3. to inspire consumers, enabling them to experiment, via sensory attributes of (sea)food - taste, texture, smell and appearance - a wider variety of locally caught, and lesser-known species.

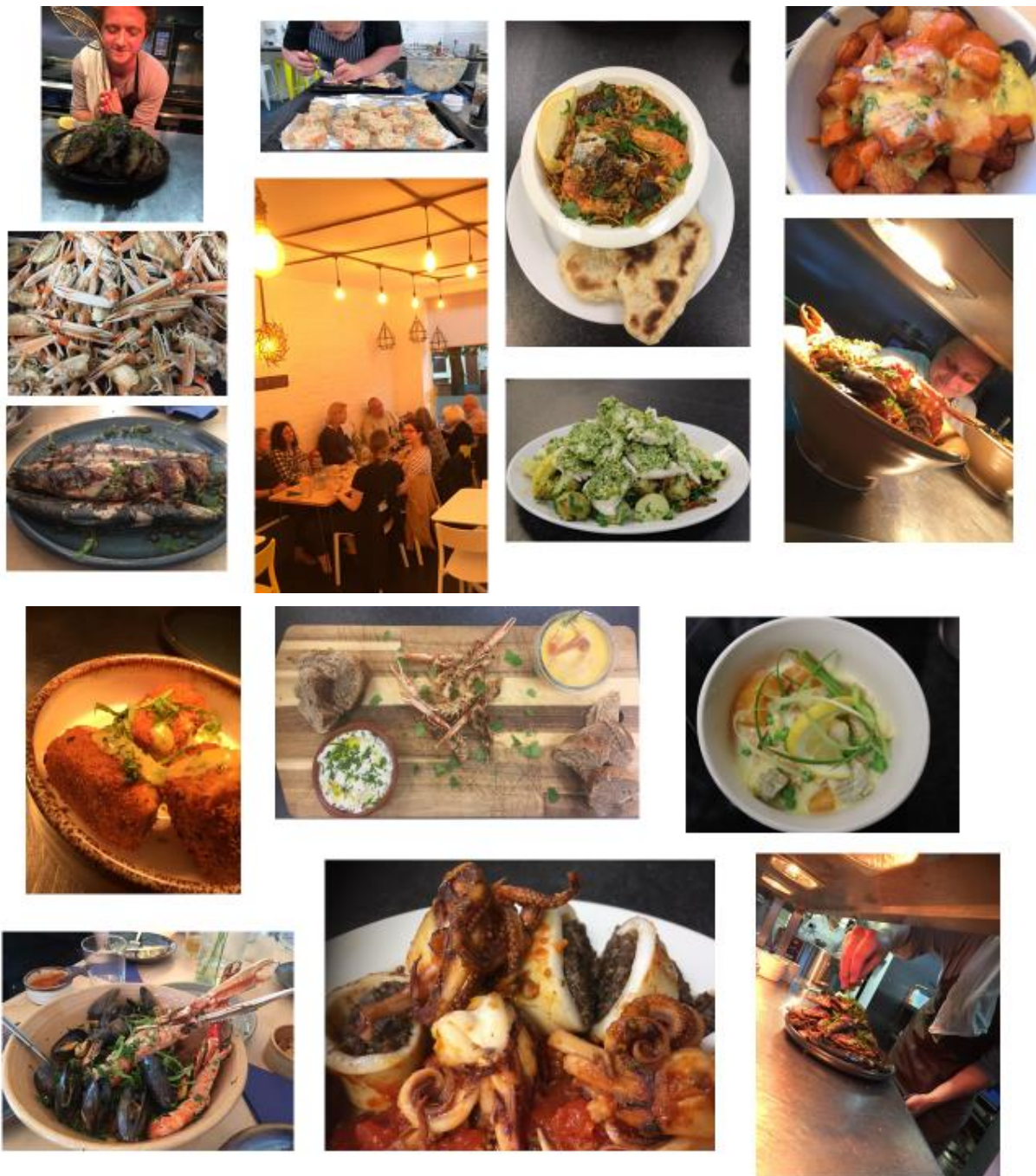


Figure 9. Example of Seafood Supper Clubs' dishes, Harissa Kitchen

Source: Own composition from action-research.


Impact monitoring tools: Key evaluation outcomes for this pilot action are changes in consumer perceptions and behaviour towards local seafood. Thus, post-event evaluation surveys for diners were distributed (see Appendix 4), capturing aspects of consumer perceptions, behaviour and knowledge of seafood.

4.3. Online Resources for Seafood Education


To increase the visibility of the local seafood industry and promote Strength2Food pilot action activities, a short film was developed “[Stimulating a short fish supply chain in North-East England](#)” and published on Youtube in September 2019 (Strength2Food, 2019). The video focuses on the disconnect between the fish industry and the wider public, and provides a summary overview of existing barriers and opportunities for local - short fish supply chains in North-East England. The video was widely promoted via social media and online platforms. Other short videoclips have been developed to showcase local businesses, supplier/retailer interactions and accessibility of sourcing and cooking fresh unprocessed fish from scratch (see for instance <https://vimeo.com/336551300>).


During the Covid-19 outbreak and lockdown, Food Nation established their own YouTube channel to support their mission in getting people to love food and cooking from scratch, sharing skills and encourage people to cook healthy and quality food at home (see Food Nation, 2021). In the context of Strength2Food and the seafood pilot actions, a series of ‘Skills and Recipe Share’ demonstrations were specifically developed, to demonstrate specific skills techniques and stimulating recipes (see Figure 10). These consisted step-by-step instructions and video content designed to make cooking seafood easy and accessible for all.

The material was consequently shared via Food Nation’s social media platforms (e.g. Facebook and Twitter), with the aim to inspire and encourage more people ‘to get fishy in the kitchen’, and increase consumers’ confidence in purchasing and cooking a wider variety locally landed seafood. These online educational resources were expected to increase consumer demand for fresh, less processed fish whilst also raising awareness of local fishmongers, therefore strengthening and promoting local and short fish supply chains.



SKILLS SHARE: Filleting.
27 March, 2020

 Food Nation

520 Views · about 3 months ago · 

Fishy Fridays coming to you from Kristy's FoodNation@Home kitchen. First up...fish filleting following a nice home delivery from Collingwood Seafood this week. ... Get hold of some whole fish and practice a brand new skill (don't forget to share your pics with us!) #fishyfridays #redmullet #fishskills #learnsomethingnew #foodnationathome

Available at: <https://bit.ly/2Yhscma>







 <p>FISH SKILLS CAN YOU COAT A FISH FILLET?</p>	<p>SKILLS SHARE: Coating RECIPE SHARE: Fish Goujons 3 April, 2020</p> <p> Food Nation April 3 · 🌐</p> <p>RECIPE SHARE: Fishy Friday Goujons Time for Kristy to share her fav Fish Finger recipe with you all!</p> <p>... Big shout out to all those fishmongers doing home deliveries, today's fish is from one of our local North Shields Fish Quay businesses, Collingwood Seafood.</p> <p>... Our challenge: Use different fish types and make Pick-n-Mix goujons, taste the difference and choose your favourite.</p> <p>A few versions of fish goujon recipes are here for you *Food Nation Cornflake Goujons - https://www.foodnation.org/wp-content/uploads/2020/04/Food-Nation-Cornflake-Fish-Goujons.pdf *Fish Nuggets https://www.bbc.co.uk/food/recipes/fish_goujons_and_tartare_10220</p> <p>Share your pics and tell us what you cooked! #fishskills #fishgoujons #fishfingers #supportlocalbusiness #healthyeating #fish Strength2Food See Less</p>
 <p>JAMIE'S MINISTRY OF FOOD (SUPER) QUICK SALMON TIKKA</p>	<p>RECIPE SHARE: Salmon Tikka 8 April, 2020</p> <p> Food Nation is 🐟 feeling fishy. 8 April · 🌐</p> <p>Calling all people who are yet to find their love for fish. This recipe this a complete game changer and is so quick and easy.</p> <p>🐟 QUICK SALMON TIKKA 🐟</p> <p>- Our fish today is from Collingwood Seafood home delivery, and the veggies are from a Grainger Market home delivery.</p> <p>- Recipe from our Jamie's Ministry of Food, North East course and is right here https://www.jamieoliver.com/.../quick-salmon-tikka-with-cucu.../</p> <p>#cookfromscratch #healthyeating #fish #foodnationathome Strength2Food</p>
 <p>FOOD NATION FISH SKILLS CAN YOU POACH A FISH?</p>	<p>SKILLS SHARE: Poaching RECIPE SHARE: Spicy Moroccan Stewed Fish 17 April, 2020</p> <p> Food Nation 17 April · 🌐</p> <p>FISH SKILLS! Can you poach a fish?</p> <p>Keeping you all in tip top healthy eating status with an awesome quick fish recipe. Use any white fish you like and poach away!!</p> <p>The recipe can be found here https://hotcooking.co.uk/.../jamie-oliver-moroccan-stewed-fis...</p> <p>#fishskills #cookfromscratch #healthyeating #fishfriday Strength2Food</p>

Figure 10. Examples of skills and recipe share videos

Source: Own composition from action-research.

Impact monitoring tools: Engagement metrics and interaction insights with video content are key outcome variables for evaluating this pilot action. Tools used include metrics from social media platforms (e.g. estimated reach, type of interaction with video content, audience, etc.).

4.4. Home Recipe Kits with Seafood

During the Covid-19 crisis, Food Nation started to deliver simple and nutritious recipe kits to Newcastle residents, including fresh basic ingredients and easy-to-follow recipe cards, with a link to an online video tutorial. This activity was initially supported by grant fund relief by UNICEF UK to support those in need during the first lockdown period, and who were eligible for food banks' parcels. Families were identified via local charities and support groups (e.g. Active Newcastle, Byker/Walker community centres, Food Poverty Group at Food Newcastle, etc.). The economic hardship and food poverty which rose during the pandemic, saw Food Nation raise additional crowd-funding to expand emergency meal delivery services for vulnerable, elderly and low income people. The home recipe kits, each providing four servings, are also available for purchase at any point (£5 per kit) to any interested families, whereby profits would subsidise free kits alongside grant funding.

In the context of Strength2Food, this presented a further opportunity to add fresh, locally landed seafood onto consumer plates, while nudging families to try new recipes and increase their experience, and confidence, in the kitchen. This strategy sought to address directly consumers' lack of time and 'fear' of cooking, while also taking into account price perception and value for money, by providing convenient, budget-friendly and pre-planned meal kits. Since May 2020, various seafood based home recipe kits were delivered, with Collingwood Seafood used as main supplier.

Impact monitoring tools: Feedback questionnaires via conversations with recipient households and comment cards were used to evaluate this pilot action. These were complemented by social media comments and reviews on Food Nation's Facebook page.

5. IMPACT EVALUATION AND OUTCOMES

This section provides an evaluation of the pilot actions and discusses specific outcomes. Specifically, we address the following question: to what extent did these pilot actions contribute to stimulate SFSCs and encourage behavioural shift of perceptions and attitudes towards local seafood?

5.1. Seafood Trainee Programme and Cookery Classes

Prior to the start of the programme, only one out of 15 trainees had prepared fish – during the programme, all trainees had to fillet and skin flat and round fish, and acquired considerable experience with frying, poaching and baking fish. Regarding seafood, none of the trainees had previously prepared or cooked crab, only 1 had prepared langoustines before, about a third had not prepared mussels, and only half had cooked prawns.

The documented impact from this training programme, illustrated in Figure 11, indicates a significant increase in the level of skills and confidence from all participants (from 'Not at all confident' to 'I know what to do') in executing a variety of seafood preparation techniques (e.g. skinning, filleting, gutting, pan frying, deep frying, poaching, oven cooking and using typical fish discards).

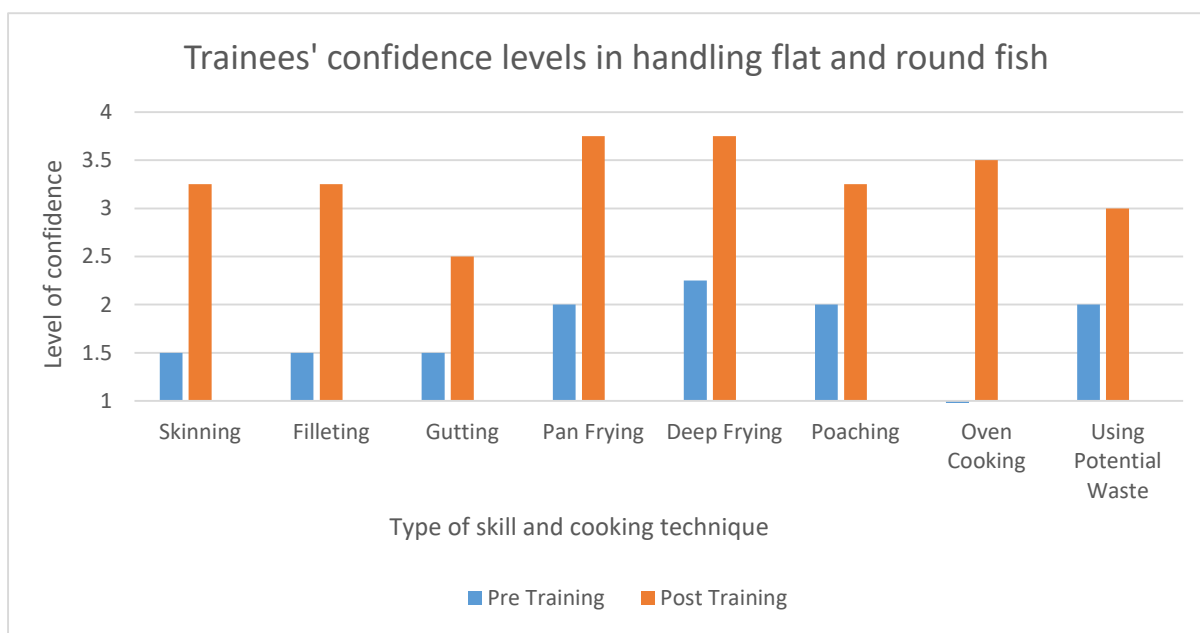


Figure 11. Trainees’ confidence level with various fish skills and techniques

Note: Level of confidence measured on a scale (1 = ‘not at all confident’ to 4 = ‘easy!’) – see Appendix 2.

Comparison of the pre- and post- survey, also confirmed an increase in the level of confidence in handling and preparing seafood, in particular langoustines, mussels and crabs, as illustrated in Figure 12.

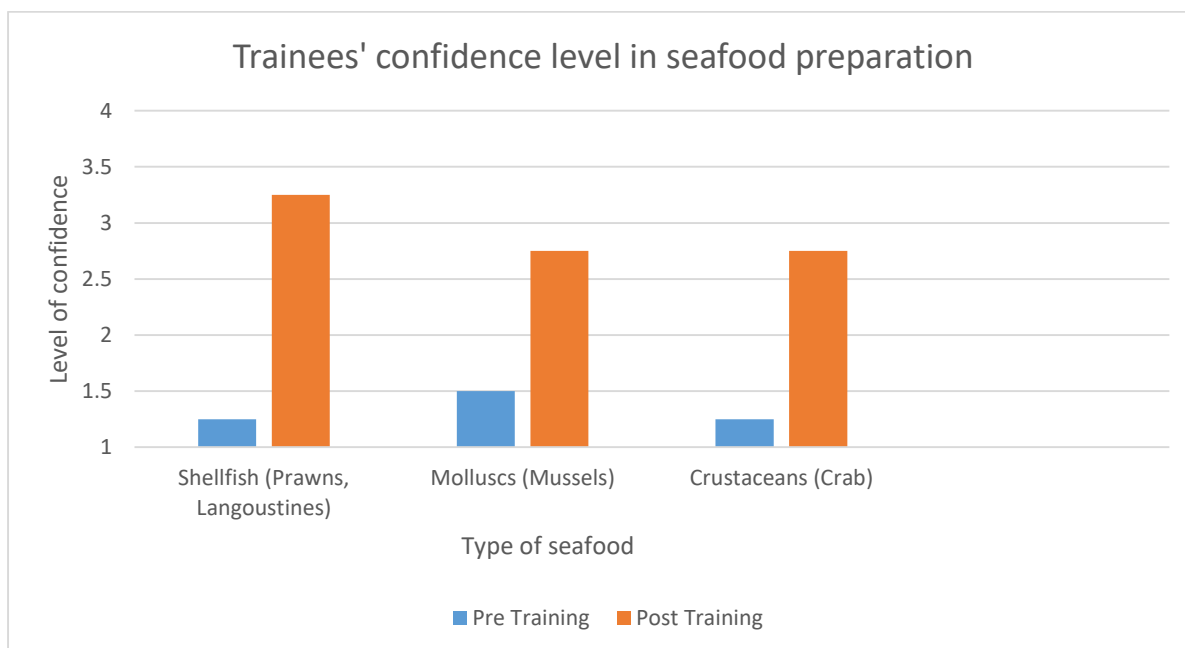


Figure 12. Trainees’ confidence level in handling different seafood species

Note: Level of confidence measured on a scale (1 = ‘not at all confident’ to 4 = ‘easy!’) – see Appendix 2.

Overall, all trainees gained considerable experience in deshellng prawns/ langoustines, in cooking prawns (frying, grilling, poaching), with 80% gaining experience in cleaning and cooking mussels. Improved levels of confidence and skills were also captured by respective quotes from both trainees and instructor:

“Food Nation has been a good help to me to expand my cooking skills. The staff have been very helpful to me, I have progressed in the kitchen, I love coming here to cook.” (Trainee 4)

“Food Nation is class, I enjoy it and learn to cook” (Trainee 1)

“It helps brush up on my cooking skills and it’s a friendly place to work” (Trainee 7)

“I want to be at Food Nation cooking every day, so I can learn more and practice my skills” (Trainee 6)

“Working at the supper clubs is lots of fun and the kitchen is a friendly environment to work in” (Trainee 9)

“The Crab sessions gave mixed results from the Trainees... Some struggled to handle the delicacy of the task or the constant focus required. Trainee 5 especially excelled in this task. Trainee 5 is usually loud and bouncing off the walls, but this task gave her the opportunity to focus solely on one job at a time and she approached this in a quiet, calm, considered and thorough manner. The quiet place and focus that she found during numerous crab prep sessions, could then be seen in future cooking sessions. Her attention to detail increased as well as the ability to concentrate on her work and not be distracted by others.” (Instructor)

This demonstrated that completing skills workshops can have a huge impact on improving chef confidence and attitude in the preparation of local seafood, and in executing different types of skills and cooking techniques, including handling molluscs and crustaceans, and confirmed the opportunity to work with a wider variety of seafood that would otherwise be purchased in a fully processed, and often pre-cooked state.

Overall, the programme also enabled young people to gain the confidence, personal skills (e.g. communication, team work and reliability) and mindset to succeed in finding a job. Upon completion of the programme, 1 person enrolled on a chef training programme abroad, 2 have begun apprenticeships (of which, 1 food-related), 3 have gained employment (2 food-related), 1 has re-entered the education system, 2 are unemployed and seeking work, 2 are not looking for work due to health reasons¹⁵.

A further follow-up assessment was carried out about nine months after completion of the training programme, via phone interviews, to examine the longer-term impact, in terms of skills retention and confidence. Key achievements are summarised in the below case study.

¹⁵ The remaining trainees have not been contactable after completing the programme for reasons unknown to us.

SEAFOOD TRAINING PROGRAMME FOR YOUNG CHEFS: CASE STUDY

What is the Programme?

The programme aims to train aspiring chefs on how to identify, buy, prepare, and use local seafood. Through increasing the skills and confidence in seafood cookery, the programme also helps young trainees to achieve their career ambitions in the catering industry and encourages them to think creatively about the seafood they use, developing more sustainable and shorter food supply chains. 15 trainees took part in a series of practical workshops gaining the skills required to plan and run their own 'Supper Clubs'.



The Challenges

When the trainees joined the programme, they faced several barriers to employment in the catering industry ranging from a lack of practical and social skills to wider issues of low confidence and self-esteem.

As the trainees had been unemployed for several years, they had limited work experience, and most had not applied for a job in over a year. A key challenge, therefore, was boosting the trainees' confidence in their own ability. Through attending the practical workshops, the trainees became part of a reliable team and were able to support each other building self-esteem as they developed skills on the programme.

Another challenge was a lack of familiarity with seafood among the trainees. Many had limited experience in buying and eating seafood, let alone preparing and cooking it. As such, training in identifying and selecting seafood species was required, alongside increasing their skillset in preparation and cookery.

Actions Taken

A central part of the programme was giving the trainee practical experience in a commercial kitchen. This took place at the Harissa Kitchen in Newcastle upon Tyne, where trainees gradually built up working hours over several weeks as they attended workshops with the restaurant's team. Over the course of the programme, the trainees succeeded in becoming reliable and dependable 'members of staff', and eventually took the lead on developing their own 'Supper Club' menus at the restaurant.

The trainees were trained in a wide range of new skills, including filleting and skinning different species of fish, as well as preparing other seafood such as squids, mussels, langoustines, crabs, and prawns. Through their training and integration within the restaurant team, the trainees' developed the professional and social skills required for going on to achieving employment within the industry.

Key Achievements

Nine months after completing the catering programme, the trainees were interviewed and said that they still remember and use a lot of the seafood recipes they had learnt. However, they also indicated that their confidence in the specific skills they had learnt had decreased since finishing the scheme, as most of the trainees could not practice their skills while unemployed. One of the trainees, however, has managed to continue to practice most weeks and now feels even more confident in filleting fish as well as cooking calamari and prawns. This is still an incredible result, showing this trainee's increased resilience and a strong desire to work.

Covid-19 has impacted the trainees in different ways - one trainee is now a carer for their mother, while another one cannot work due to mental health issues. Some said that they do not get the chance to cook seafood at home due to financial reasons or having no one to cook for. But a further major impact of Covid-19 has been in restricting their employment opportunities. One trainee had been offered a catering position in March but was unable to start work due to the crisis. Even now, the former trainee still has not been able to start their job as the restaurant was unable to operate as normal. Instead, they are working as a cleaner at the restaurant and will join the kitchen team when things return to normal.

Overall, the trainees enjoyed their time on the programme and took away job specific and transferrable skills, increasing their employability:

"I would certainly recommend the programme to others looking to gain professional experience in a real kitchen. Not only I was able to develop new skills, but I met some great people and enjoyed myself. The sessions are interesting and I learnt a lot about seafood".

"The programme was a really good laugh, I particularly enjoyed being able to develop my own menu for one of the restaurant's Supper Clubs. I knew nothing about local seafood before the programme, but now I have good knowledge of what to buy and how to prepare it properly".



5.2. Seafood Supper Clubs

The 11 Seafood Supper Clubs served 95 people in total. Specific data gathered ahead of the dinners suggests that only 14% of diners regularly cook seafood, 14% do not cook seafood as often as they would like due to time constraints, with 10% typically experimenting with different seafood species or new cooking techniques.

The post-event evaluation surveys, completed by 56 diners, confirmed the positive impact of these events in improving consumer perceptions, behaviour and knowledge of seafood. Overall, 91% of the diners rated the quality of the food served as good or very good, and 95% agreed that they would like to attend another seafood supper club in future. All respondents (100%) declared to have been inspired to eat/cook a different type of seafood as a result of attending the Supper Club, with 43% stating that they would try to recreate specific recipes at home.

Additional feedback gathered directly from diners focused on their suggestions to encourage people to eat a wider variety of seafood – summarised in Figure 13. These include the need to increase access to, and associated knowledge of, local seafood, improving awareness on sustainability, seasonality and localness issues, while also marketing the related health benefits of eating a wider variety of fish. Key emphasis should be placed on removing aversion towards, and the ‘mystery’ around, seafood, which could be achieved by incorporating a larger amount, and variety, of seafood on school food menus from an early age. In this respect, diners mentioned that it was a good to have the opportunity to try various different small plates of seafood, to be able to taste different flavours and try different ingredients, without ‘committing to a full dish’.

How to Encourage People to Eat a Wider Variety of Seafood?

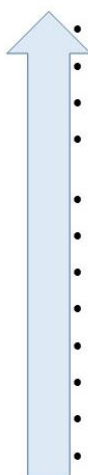
- 
- Accessibility / knowledge / experience of simple seafood cookery
 - Get the message across that seafood doesn't have to be expensive
 - More focus on sustainability
 - Need to remove the mystery from around seafood - what to buy, when to buy it, where to buy it from, how to prep/cook it
 - Increase awareness of the UK fishing industry
 - More events like the seafood supper club
 - Aim more marketing at Pescatarian's
 - Market the health benefits
 - More easily accessible info about availability
 - Support from TV chefs
 - School lunches should include more seafood
 - Have a better social media presence

Figure 13. Suggestions from diners of Seafood Supper Clubs

According to Food Nation's long established experience with cooking demonstrations and engagement with the local community, there are two factors that remain crucial in encouraging people to eat a wider variety of seafood:

- Showing people that seafood does not have to be expensive;
- Demonstrating simple seafood recipes.

5.3. Online Resources for Seafood Education

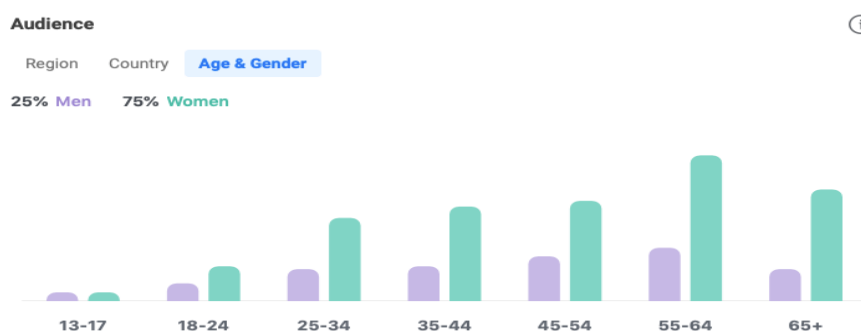
Engagement metrics on social media (Facebook and Twitter) were extracted to assess outreach and socio-demographic engagement with online resources, and thus number of views, likes, comments, and shares. Key Facebook metrics from Food Nation account are listed in Table 3.

Table 3. Key engagement metrics from Food Nation’s Facebook account

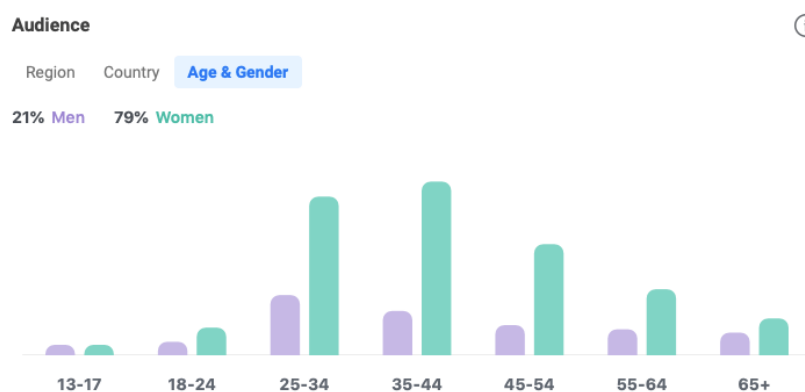
Video Title	Type of video	Publish date	Number weeks post active	Post engagement	Estimated Reach	Total Clicks
Fish and Chips	Recipe Share	24 Aug 2020	11 weeks	23	1800	149
Quick Salmon Tikka	Recipe Share	8 Apr 2020	31 weeks	22	2300	107
Can you fillet a fish?	Skill Share	27 Mar 2020	33 weeks	19	1400	98
Fish Goujons	Skills Share	3 Apr 2020	32 weeks	10	402	21
Can you poach a fish?	Skills Share	17 Apr 2020	29 weeks	5	347	14

These metrics suggest that the number of weeks that a post has been active for, has little impact on post metrics, as the majority of their engagement occurs within the first few days of being posted. Overall, posts that are promoting recipes tend to perform better compared to those sharing a skill.

What is particularly interesting to observe are the age and gender profile of users, as illustrated in Figure 14. This suggests that women consistently engaged more actively with these social media posts. However, the age profile revealed mixed evidence – for instance, older women seemed more keen to watch a filleting the fish skills share video, with middle-aged women enjoying the salmon tikka recipe video.



Video: Can you fillet a fish? Type: Skills share



Video: Quick Salmon Tikka. Type: Recipe

Figure 14. Age and gender profile of social media audience

Additional promotion from Strength2Food’s social media accounts occurred, via EUFIC, to support the promotion of the material via wider/European networks, and complemented by paid advertising campaigns. Key engagement metrics are listed in Table 4.

Table 4. Key engagement metrics from Strength2Food’s Twitter and Facebook accounts

Twitter posts:

Video title	Date	Impressions	Total engagements
Seafood Skills and Recipe news	22 July 2020	1534	3
How to fillet a fish	27 March 2020	2,092	16

Facebook posts (organic):

Video title	Date	People reached	Total engagements
Seafood Skills and Recipe news	22 July 2020	147	20
How to fillet a fish	27 March 2020	99	7

Facebook posts (paid):

Video title	Type of video	Date	People reached	Total engagements	25% video watched	50% video watched	75% video watched	95% video watch	Total clicks
Fish Goujons	Skills share	Jan 2021	235,256	140,222	1,414	840	623	452	1,069
Can you poach a fish?	Skills share	Jan 2021	21,944	12,509	890	680	525	383	300
Quick Salmon Tikka	Recipe share	Jan 2021	51,264	43,686	1,072	714	572	161	884
Salmon Tacos	Recipe share	Jan 2021	17,640	9,585	655	497	419	247	327

Although paid Facebook marketing considerably increased total reach and engagement performance, it is important to note how only a small percentage of the targeted sample watched the videos in full. In general, females and people over 65 years old engaged more with the videos, and watched them for longer – for a detailed listing of engagement metrics by post refer to Appendix 5.

Throughout the course of the project, Food Nation continued to post regularly across different social media channels to promote varying seafood pilot actions and activities, and strengthen collaboration with other stakeholder partners - to date, the page records 1,679 users. Since the Covid-19 outbreak, Food Nation's Facebook page has been extensively used to host, and promote, digital seafood cookery classes, recipe/skill share videos and home recipe kits' tutorials.

5.4. Home Recipe Kits with Seafood

Since its inception, around 130 recipe kits a week have been dispatched by Food Nation to the local community, including disadvantaged families, schools and general public.

Up until April 2021, 73 different recipes have been developed and over 5,050 kits distributed to households, equating to approximately 20,196 meals being cooked by households in Newcastle.

Key impacts of this action are listed as follows:

- Enable families' nutritious food that they would otherwise not have tried;
- Make healthy changes in home eating habits (e.g. increasing fruit and vegetable intake, seafood, wholegrains, nuts, etc.);
- Provide a bonding activity for the family, which may help combatting anxiety and other mental health issues exacerbated, or brought up, during lockdown.¹⁶

General positive feedback was gathered from families via feedback cards and social media:

"The stability of having something new to try each week and spending time together cooking something"

"Food Nation has changed our life massively, especially as me or S. wouldn't even touch fruit or veg!"

"My child is tube fed and eats very little so having a fun activity to do together around food is really beneficial for her especially since she's a child in shielding. She does not cope with going to organised activities so this gives her the opportunity to take part without the anxiety of being there"

"It's been good to keep our minds busy during lockdown and has also helped with access to food at these times."

With respect to seafood recipe kits, these have been typically well received by families, with the most popular dishes including: salmon tikka tacos, fish and chips, and crunchy fish goujons. Families reported to have enjoyed trying new seafood dishes and being able to learn new skills. Specific related quotes include:

¹⁶ Previous research also confirms the importance of eating together as a family, in increasing children's consumption of fruits and vegetables, their willingness to try new dishes, and reducing likelihood of eating disorders or depression.

“Fish is not something I would normally cook but this recipe is great and really easy to do!”

“It was so delicious and a great new recipe that really inspired me to try new flavours and fish.”

“We would never have eaten salmon before but we really enjoyed the tacos, as did our 2 years old!”

As recipe kits were provided to families who had low engagement in cooking, and particularly little interest in seafood, it demonstrates strategies to change trends in consumer behaviours and encourage families to use wider species of seafood. There is therefore an opportunity to build on the success of these recipe kits and increase the level of public awareness around issues of provenance, seasonality and locality, connecting consumers directly to the fish quay and local seafood businesses.

Despite the positive prospects, the share of seafood recipe kits going out on a weekly basis is rather limited. Food Nation team’s suggested that on the supply side, there are two main barriers:

- Food safety and hygiene issues around fresh seafood transport and storage - the packaging of the recipe kits and their delivery may not occur on the same day, and often households will not cook the kit until after few days;
- Tight budgets with putting together the kits – fresh seafood can be relatively more expensive than other ingredients used for recipe kits, especially considering these kits are aimed at people facing financial distress, and that each kit has a cost of under £2 on average.

On the demand side, taste preferences and habits remain strong challenges to introducing new products into the market with the fear of alienating potential customers. Consequently, successful behavioral change is far from a simple process:

“We’re developing up the concept of Recipe Kits that can utilise fresh fish, although we are not sure how successful it will be with people having to buy it. Whilst there are still some big barriers to increasing people confidence with fish preparation at home, the cost of a Recipe Kit may cause an engagement problem. Especially as our target audience at present are those households with limited budgets. If Fish Skills Recipe Kits were free, I think we’d have a greater number of people willing to give it a go.”

“Post-Covid social distancing restrictions, I do believe that face-to-face fish-based cookery classes would be a success. As a result of the Recipe Kits we have had the opportunity to really build up people’s confidence in ourselves, as home cooking trainers, and in people’s confidence of themselves and what they can achieve in the kitchen without any prior experience.”

“Throughout lockdown we have learnt a lot about what people are willing to do or not do, and know that the introduction, and transition, to some food groups and cooking styles is a slow process. Working with people on a consistent basis over a long period of time (12 months) is how we have seen confidence to try new things and foods develop.”

6. CONCLUSIONS AND RECOMMENDATIONS

6.1. Key Lessons from Action Research

The key conclusions and lessons that emerge from the Strength2Food action research conducted in North-East England are summarised as follows:

- *SFSCs do not have to depend necessarily on direct face-to-face contact between fishers and consumers.* In the fishing sector, a division of labour between chain actors, such as between fishers and fishmongers, is beneficial. Intermediaries (e.g. fishmongers, box scheme managers) can add value and reduce some consumer barriers to purchasing fish, and fishers typically lack the time and infrastructure to directly connect with consumers.
- *Initiatives to stimulate SFSCs should focus on under-utilised fish species and seafood where there is greater scope to add value and garner industry engagement.* The work presented in this report initially focused on langoustines, as the most valuable catch at North Shields Fish Quay, which is sold almost entirely for export. However, research with restaurants suggested that langoustines were too expensive for their clientele and fishers were reluctant to break their most valuable contracts. Consequently, establishing a SFSCs for langoustines held little appeal. In contrast, interest in under-utilised and cheaper species was much greater, as the financial incentives for establishing a SFSC for fishers, fishmongers and restaurants were far more promising.
- *Underutilised fish species and seafood in the UK suffer from food neophobia – consumer reluctance to try and eat foods which are unfamiliar to them.* The work presented in this report presents several initiatives to reduce neophobia relating to seafood and to stimulate consumption and behavioural change.
- *Presenting unfamiliar fish and seafood in a familiar context can help overcome neophobia.* The social psychologist K. Lewin (1943) sought to increase consumption of then unfamiliar organ meats in the USA during the Second World War. He found that incorporating the unfamiliar element (organ meat) within a context familiar to consumers (e.g. meat pie, meatloaf dishes) helped overcome food neophobia and led to their successful incorporation into meals. This informed our work with whiting, an underutilised fish species. While largely unappealing on its own, by presenting the whiting in a more familiar croquette form, helped successfully introduce it to a restaurant menu. This demonstration can inform future attempts to increase the uptake of underutilised fish and seafood by retailers and restaurants.
- *Seafood supper clubs provide another mechanism for reducing neophobia relating to underutilised fish and seafood.* Offering diners, a range of ‘small plates’ at a supper club increases willingness to try different fish and seafood and reduces the risks associated with selecting a single, main meal. Feedback from the supper clubs demonstrates that they can inspire diners to sample and eat different kinds of seafood compared to their usual dishes. However, while supper clubs can stimulate behavioural change at an individual level, they may be difficult to upscale to the point where substantial collective change in consumer behaviour is achieved.
- *Social media offers a mechanism for reaching a large number of geographical dispersed consumers regarding fish and seafood.* The evidence suggests that both fish preparation skills and recipes can be communicated and shared via social media. However, social media channels are crowded and despite widespread interest in food, there is no guarantee that fish-based content will be widely shared. Our experience is that paid Facebook marketing can increase reach, but engagement may be largely superficial. At this stage, there is little evidence regarding if and how social media activities can increase the consumption of underutilised fish and seafood. It is recommended therefore that future activities consider how to increase the virality of fish related communications on social media, with a focus on underutilised fish and seafood. This could draw on lessons from the wider marketing literatures on

electronic word of mouth and the factors that influence sharing behaviour (Berger et al., 2021; Berger and Milkman, 2012).

- *Home recipe kits with seafood provide another mechanism to overcome neophobia*, encouraging families to cook different seafood dishes and increase their confidence in the kitchen, by providing convenient and pre-planned meal kits and recipe boxes. The evidence from Food Nation’s recipe kits indicate that by providing fish in a convenient form, simplifying food preparation and cooking, stimulates fish consumption and garners positive feedback. However, the extent to which recipe kits can be supplied on a commercial basis remains unclear and demonstrating how fish and seafood can be “good value for money” for consumers remains critical to their wider uptake. At present SFSCs that focus on underutilised fish and seafood, like the Creel Fish Club, have a relatively small customer base. The consumer evidence from our pilot actions suggests that upscaling such SFSCs will depend on the extent to which they can improve convenience (such as home doorstep delivery), overcome neophobia (e.g. integration into familiar recipes, clear preparation and cooking guidance), while also meeting the price points that consumers are willing to pay. Without these three elements being in place, consumer facing SFSCs for underutilised fish and seafood are likely to remain small-scale.
- *Neophobia toward underutilised fish and seafood also affects the catering and restaurant sector*. While there are commercial pressures to offer only meals with a known demand on restaurant menus, pilot action evidence suggests skills regarding how to prepare and cook fish and knowledge of locally caught species remains, amongst catering and kitchen staff as a whole, weak. This is an important barrier to shifting the restaurant and hospitality sectors away from the “big 5” toward underutilised fish and seafood. The pilot action demonstrates that a seafood trainee programme and cookery classes, designed for young trainee chefs, can improve their skills and confidence in preparing a wider range of fish and seafood species, using different cooking methods and techniques. Training materials used on the programme are freely available. At present the coverage of fish and seafood within wider generic chef, catering and hospitality training in the UK is uneven. Incorporation of materials and lessons from the seafood trainee programme can help upskill future staff.
- *The activities illustrate the benefits of long-term collaboration in research and innovation between academic and non-academic partners*. Academic staff benefited from involvement with action-oriented research and conducting field experiments. The relatively long time period of the research compared with the typical length of externally funded projects meant that the lessons from initial work (on langoustines) could inform beneficially later activities. Involvement in Strength2Food also benefited Food Nation, through the utilisation of academic insights into their practical operations, and also by widening the reach of their activities. For example, by being conducted over a five-year period, Strength2Food fieldwork activities enabled Food Nation to develop strategic networks within the North-East fishing industry and secure funding from the North of Tyne Fisheries Local Action Group (FLAG), to enhance the seafood training programme, to raise the awareness and profile of local and lesser-known fisheries products, and tackle youth unemployment.

6.2. Policy Recommendations

Key areas for policy intervention for strengthening the development of new quality markets and SFSCs in fisheries, should target the following:

- Increase public awareness regarding sustainable seafood consumption and seasonality issues (e.g. via digital tools and resources);
- Enhance education from an early age regarding sustainable production and consumption of healthy seasonal (sea)food (for example so that food preparation and cooking skills for under-utilised fish and sustainable seafood species are embedded in the national curriculum);
- Promote codes of practice that support sustainable fishing and retailing;
- Encourage diversification, particularly for small-scale fishers, and support the establishment of SFSCs in coastal communities;
- Secure the regeneration of key fish quay sites and buildings and deliver infrastructure and locations to facilitate SFSCs for fish;
- Encourage better working practices for seafood businesses and the restaurant/catering sector, via modern apprenticeships and vocational qualifications, with an emphasis on seafood knowledge, skills development, marketing and communication strategies;
- Strengthen coastal communities' cultural heritage and natural capital and facilitate investment opportunities that empower communities to build resilience and thrive.

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APPENDIX 1: PRE-TRAINING QUESTIONNAIREPre-Training Questionnaire

SEAFOOD IN CATERING TRAINING PROGRAMME

2019

This questionnaire was designed to determine what you already know about the training theme. We will ask you to complete a questionnaire again at the end of the workshop so that we can assess what you have learned.

This is not a 'test' and you will not be 'graded' on your performance.

You should complete all questions on your own and to the best of your ability.

Name:

What previous work experience do you have?

.....

In 6 months I would like to be:

Learning something new In work

Other (please specify)

In 1 year I would like to be:

Learning something new In work

Other (please specify)

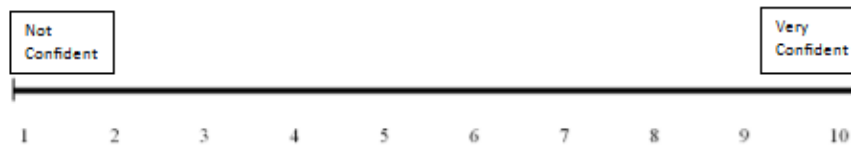
Which further training & career/job do you have in mind?

.....

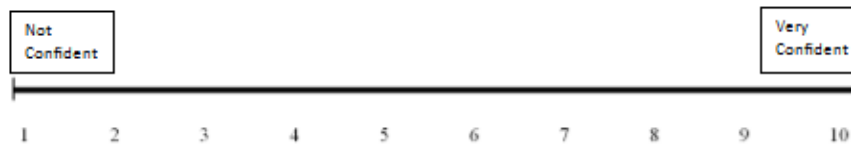
What do you need to do in order to get the job in that career area?

.....

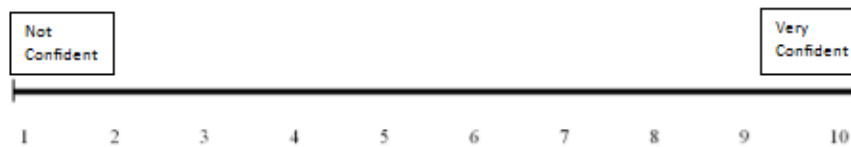
On a scale of 1 – 10, how confident are you in your current work experience?



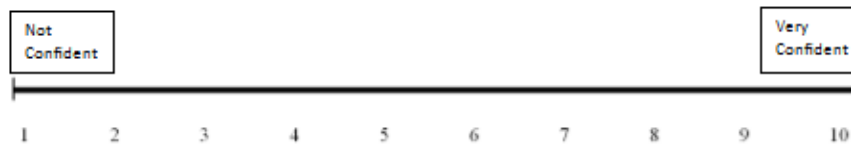
On a scale of 1 – 10, how confident are you in your personal skills? (e.g.: communication, listening, team work, reliability)



On a scale of 1 – 10, how confident are you feeling about starting work?



On a scale of 1 – 10, how confident are you that you have enough experience to secure a job?



How do you rate yourself in the following areas? (1 being weak & 4 being very strong)

Teamwork

Communication

Reliability

1 2 3 4

1 2 3 4

1 2 3 4

Can you explain what the following Fishing Industry roles are?

Fishermen Y/N

.....

Seafood Processors Y/N

.....

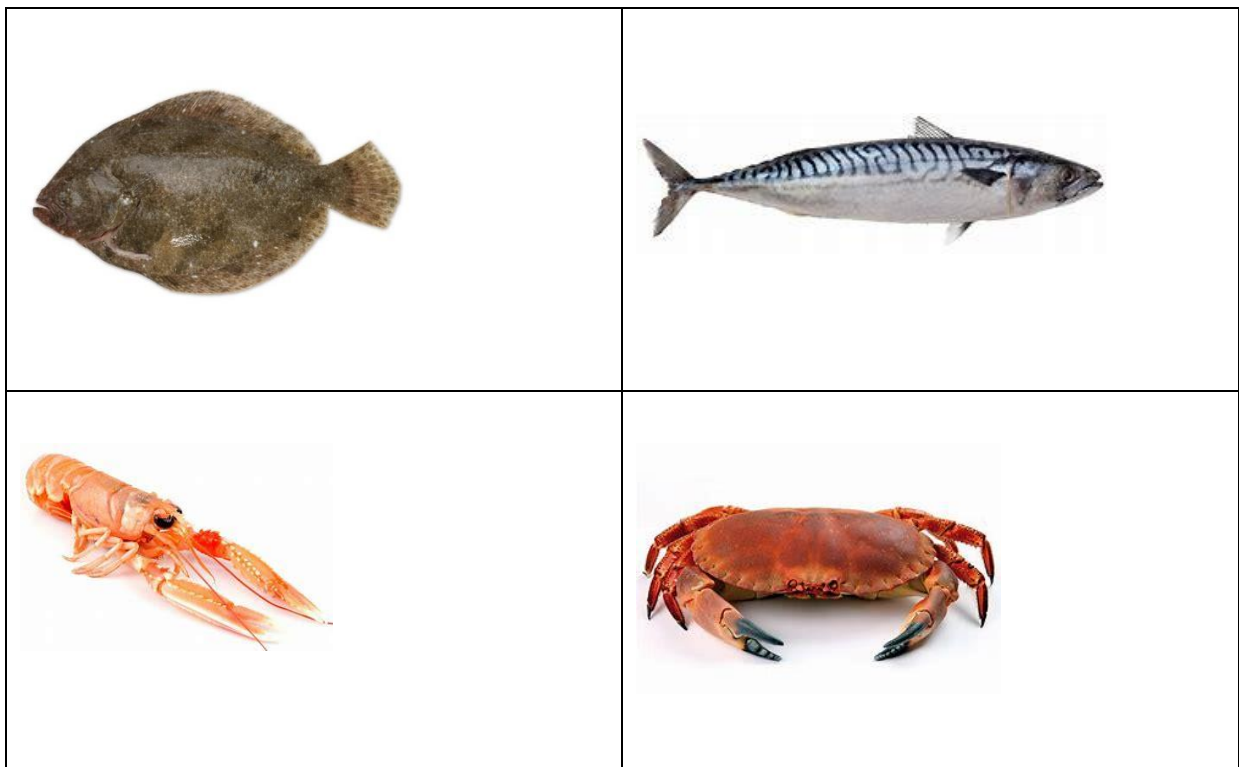
Brokers Y/N

.....

List as many species of locally caught seafood that you can:

.....

Can you identify the following species?



How often do you eat seafood?

.....

How often do you cook seafood?

.....

What are your favourite ways to prepare & cook seafood?

.....

APPENDIX 2: FISH CHECKLIST

HOW WELL DO YOU KNOW YOUR FISH?

FISH TYPE: **LARGE ROUND FISH**

A large round fish has a round cylindrical shape body which tapers to a tail (a typical fish shape you might say!)

Common large round fish that you come across in the catering and hospitality industry include Cod, Haddock, Trout and Bass.

Some less commonly known species include Gurnard, Ling and Wrasse.

Think about this type of fish and answer the questions here.

SKILLS AND TECHNIQUE	Have you ever learnt about this? (Yes/No)	Have you ever done this outside of any training session? (Yes/No)	How confident would you be to do it by yourself?			
			1 (not at all confident)	2 (I could give it a go)	3 (I know what to do)	4 (easy!)
Scaling						
Gutting						
Filleting						
De-skinning						
Pan Frying						
Deep frying						
Poaching						
Oven cook methods						
Food storage essentials						

USING POTENTIAL WASTE	What could you do with this?	Have you ever done this?	How confident would you be to do it by yourself?			
			1 (not at all confident)	2 (I could give it a go)	3 (pretty confident I know what to do)	4 (easy!)

Bones						
Skin						
Head						

Type of Fish	Skills needed	Have you ever learnt about this? (Yes/No)	Have you ever done this outside of any training session? (Yes/No)	How confident would you be to do it by yourself?			
				1 (not at all confident)	2 (I could give it a go)	3 (pretty confident I know what to do)	4 (easy!)
Small round fish	Scaling Gutting Filleting De-skinning Pan Frying Deep frying Poaching Oven cook methods Food storage essentials Sustainability principles Using waste product (i.e. bones)						

Type of Fish	Skills needed	Have you ever learnt about this? (Yes/No)	Have you ever done this outside of any training session? (Yes/No)	How confident would you be to do it by yourself?			
				1 (not at all confident)	2 (I could give it a go)	3 (pretty confident I know what to do)	4 (easy!)
Flat fish	Gutting Filleting De-skinning Pan Frying Deep Frying Poaching Oven cook methods Food storage essentials Sustainability principles Using waste product (i.e. bones)						

Type of Fish	Skills needed	Have you ever learnt about this? (Yes/No)	Have you ever done this outside of any training session? (Yes/No)	How confident would you be to do it by yourself?			
				1 (not at all confident)	2 (I could give it a go)	3 (pretty confident I know what to do)	4 (easy!)
Shellfish (Prawn, Shrimp, Langoustine)	De-shelling techniques Pan-frying Poaching Grilling Oven cook methods Food storage essentials Sustainability principles Using waste product (e.g. shell)						

Type of Fish	Skills needed	Have you ever learnt about this? (Yes/No)	Have you ever done this outside of any training session? (Yes/No)	How confident would you be to do it by yourself?			
				1 (not at all confident)	2 (I could give it a go)	3 (pretty confident I know what to do)	4 (easy!)
Lobster	Food storage essentials Sustainability principles Using waste product (i.e. shell)						
Crab	Food storage essentials Sustainability principles Using waste product (i.e. shell)						

Type of Fish	Skills needed	Have you ever learnt about this? (Yes/No)	Have you ever done this outside of any training session? (Yes/No)	How confident would you be to do it by yourself?			
				1 (not at all confident)	2 (I could give it a go)	3 (pretty confident I know what to do)	4 (easy!)
Oyster	Food storage essentials Sustainability principles						
Scallop	Food storage essentials Sustainability principles						

APPENDIX 3: FOLLOW-UP INTERVIEW WITH TRAINEES

Post - Training Follow-Up Questionnaire Completed 9 months after end of training programme

- 1) Can you remember any of the tasks and skills that we did in our training workshops? *To find out what information they have retained and therefore if a practical training programme has a lasting benefit on someone's learning.*
- 2) Do you think if someone asked you to do it again you would be able to? e.g. if someone gave you a crab do you remember what to do with it? *To assess their level of confidence in the skills that they developed - and therefore the longevity of a training programme like the one we ran.*
- 3) Would you mention that you had these seafood skills if you were asked by someone at a job interview or if you were going to do some volunteering where it could be useful? *To assess their confidence in their own ability, if the training programme has kept their self-confidence high enough for them to use that information in gaining new opportunities.*
- 4) Do you currently work in a catering/restaurant setting? Or will you consider applying for such job? *To gauge association with skills learned (and/or confidence) and employability prospects.*

- 5) Have you applied such skills in other cooking contexts perhaps (home / with friends / family)?
To see confidence and self-esteem in replicating a dish, esp if trainee not involved in catering type of job.
- 6) Would you do the training again / would you recommend it to a friend? Why? *Indirect way, to assess usefulness of training.*

APPENDIX 4: POST-EVENT EVALUATION CARD FOR DINERS

A SEAFOOD SUPPER CLUB

1. Please rate the quality of the food received at the Supper Club

2. I would like to attend Fish Supper Club events in future

3a. I feel this evening inspired me to eat/cook different seafood compared to my usual dishes

3b. If you agree, what & why?





4. In what ways do you think people can be encouraged to eat a wider variety of seafood?

NORTH OF TYNE
Partnership Local Action Group

Marine Management Organisation

APPENDIX 5: AGE AND GENDER PROFILE OF SOCIAL MEDIA ENGAGEMENT

Facebook engagement via Strength2Food account – by gender:

Ad Name ↑	Post Engagement	Video Plays at 25%	Video Plays at 50%	Video Plays at 75%	Video Plays at 95%	Clicks (All)
 Crunchy cornflake fish goujons	140,231	1,415	841	624	453	1,069
Female	107,290	1,096	649	482	349	800
Male	30,970	303	181	136	102	259
Uncategorized	1,971	16	11	6	2	10
 Fish tacos	9,589	655	497	419	247	327
Female	7,184	479	365	313	191	243
Male	2,300	165	124	99	54	80
Uncategorized	105	11	8	7	2	4
 Poach a fish	12,512	890	680	525	383	300
Female	8,967	598	455	346	253	211
Male	3,352	280	216	174	126	86
Uncategorized	193	12	9	5	4	3
 Salmon Tikka	43,690	1,073	715	573	161	884
Female	35,128	850	568	462	125	704
Male	8,048	208	141	107	36	174
Uncategorized	514	15	6	4	–	6

Facebook engagement via Strength2Food account – by age group:

Video: Fish Goujons


<https://www.facebook.com/143660352835494/posts/942346556300199>



Ad Name	Post Engagement	Video Plays at 25%	Video Plays at 50%	Video Plays at 75%	Video Plays at 95%	Clicks (All)
 Crunchy cornflake fish goujons	140,230	1,415	841	624	453	1,069
65+	16,495	621	439	346	260	357
55-64	22,120	279	196	146	108	208
45-54	28,662	167	79	53	31	153
35-44	33,656	156	75	46	32	161
25-34	28,678	130	35	24	16	146
18-24	10,619	62	17	9	6	44

Video: Can you poach a fish?

<https://www.facebook.com/143660352835494/posts/942331346301720>




Strength2Food
Published by Carlos Abundancia · January 15 at 10:28 PM ·

⋮

👤 🍲 Learn how to poach white fish 🍲 👤

With this adaptation of [Jamie Oliver's](#) recipe, you will learn a few tips on poaching fresh fish in a sauce and prepare a spicy Moroccan stewed fish.



...and a little squeeze of lemon...
Click to expand

⏸ 1:18 / 2:51 ⚙️ 📺 🔍 🔊

👍 9

🔗 1 Share

Ad Name	Post Engagement	Video Plays at 25%	Video Plays at 50%	Video Plays at 75%	Video Plays at 95%	Clicks (All)
Poach a fish	12,510	890	680	525	383	300
65+	5,922	507	399	307	230	166
55-64	3,506	221	166	133	93	81
45-54	1,508	84	63	53	37	24
35-44	957	46	31	19	12	10
25-34	469	21	15	8	6	11
18-24	148	11	6	5	5	8

Video: Quick Salmon Tikka

<https://www.facebook.com/143660352835494/posts/942917232909798>




Strength2Food
Published by Carlos Abundancia · January 16 at 9:30 PM · 🌐

⋮

👤 🍴 Learn how to make [Jamie Oliver's Salmon Tikka](#) 👤 🍴

Looking for a quick way to eat more fish and add healthy fats to your diet? Then look no further! Find the recipe here: <https://www.foodnation.org/.../Quick-salmon-tikka-with...>




👍❤️ 74
4 Shares

Ad Name	Post Engagement	Video Plays at 25%	Video Plays at 50%	Video Plays at 75%	Video Plays at 95%	Clicks (All)
---------	-----------------	--------------------	--------------------	--------------------	--------------------	--------------

 Salmon Tikka	43,689	1,073	715	573	161	884
65+	9,053	498	390	323	81	413
55-64	8,877	280	184	149	44	212
45-54	8,357	128	70	52	15	115
35-44	9,231	95	43	30	14	81
25-34	6,578	52	19	12	6	51
18-24	1,593	20	9	7	1	12

Video: Salmon Tacos

<https://www.facebook.com/143660352835494/posts/942919036242951>



Strength2Food
Published by Carlos Abundancia · January 16 at 9:35 PM · 🌐

👍 🍌 Learn how to prepare the best Fish Tacos 👍 🍌

This winning recipe uses salmon which is full of all those healthy fats and protein that we need to eat - not forgetting it is delicious too!

You and 18 others 2 Comments 1 Share

👍 Like 💬 Comment ➦ Share

Ad Name Post Engagement Video Plays at 25% Video Plays at 50% Video Plays at 75% Video Plays at 95% Clicks (All)

 Fish tacos	9,587	655	497	419	247	327
65+	3,107	296	237	203	119	140
55-64	1,941	161	123	104	54	70
45-54	1,540	80	56	49	33	37
35-44	1,638	65	46	35	25	53
25-34	1,067	40	26	19	9	21
18-24	294	13	9	9	7	6



The Strength2Food project in a nutshell

Strength2Food is a five-year, €6.9 million project to improve the effectiveness of EU food quality schemes (FQS), public sector food procurement (PSFP) and to stimulate Short Food Supply Chains (SFSC) through research, innovation and demonstration activities. The 30-partner consortium representing 11 EU and four non-EU countries combines academic, communication, SMEs and stakeholder organisations to ensure a multi-actor approach. It will undertake case study-based quantitative research to measure economic, environmental and social impacts of FQS, PSFP and SFSC. The impact of PSFP policies on nutrition in school meals will also be assessed. Primary research will be complemented by econometric analysis of existing datasets to determine impacts of FQS and SFSC participation on farm performance, as well as understand price transmission and trade patterns. Consumer knowledge, confidence in, valuation and use of FQS labels and products will be assessed via survey, ethnographic and virtual supermarket-based research. Lessons from the research will be applied and verified in 6 pilot initiatives which bring together academic and non-academic partners. Impact will be maximised through a knowledge exchange platform, hybrid forums, educational resources and a Massive Open Online Course.

www.strength2food.eu

