

Fish as Food:

A review of developments in UK seafood consumption, implications, and practical responses



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1. Introduction and requirement



This horizon review report is focused on the changing consumption of seafood in the UK. It considers the major industry impacts arising from key drivers of UK consumption and sets out areas where responses from industry, Seafish or wider stakeholders may be required.

- The report has been produced to help industry navigate seafood consumption challenges:
- There are immediate challenges relating to ‘what’s currently happening in the market’ including the current macro pressures such as inflation and the Russia/Ukraine conflict. These challenges are used as the starting point for this work.
- Immediate challenges could lead to significant structural change for the industry, so there is a requirement to understand the consequences of longer-term changes in seafood consumption. Reviewing trends and anticipating trends and pathways provides an initial focus for navigation, and this can be used to explore responses.
- As these changes evolve, close dialogue with industry stakeholders can achieve a better, and shared, understanding of the emerging challenges to seafood consumption.

Seafish horizon scanning work looks at how changes in the industry landscape can present longer-term, strategic challenges for the seafood industry. In 2021, the seafood horizons industry steering group identified changing “fish demand” as having high impact for industry noting that “changes in fish demand are well underway driven by Covid-19, Brexit and other factors”. More recently, macro pressures have brought these challenges into sharp relief.

Horizon review reports explore changes on the seafood horizon with high impact for the UK seafood industry to identify opportunities and threats. This special review report, focussed on changes affecting UK seafood consumption, is an important part of understanding and responding to changes in seafood demand.

Drawing on desk research and consultation with industry stakeholders, this review report opens with a brief description of the current challenges facing seafood consumption. A review of longer-term trends is then provided, an anticipated pathway is described, and the report concludes with high level recommendations. Appendices are included for reference.

The report is intended as an initial benchmark, a snapshot in time, that prompts some significant questions (e.g. around the price of seafood, the preferences of Generation Z, etc). Larger seafood businesses may wish to engage in a strategic conversation around those significant questions, for example:

- This review can be updated, as the situation unfolds, in the manner of an industry peer-reviewed paper. Stakeholders could provide ongoing input so the review can be monitored and refreshed every six months for the next three years.
- Monitoring and refreshing the review can be supported with Seafish data, but also any specific reports others are willing to share, with further addendums.
- As impacts are more fully understood, the industry may - in time - consider collaborative responses to ensure seafood is the protein of choice in the UK.
- Smaller seafood businesses could be engaged with updates arising from this work e.g. through Seafish and other channels.

This document combines data, opinions and conjecture and is a position paper at the time of press. It is important to bear in mind that evidence today might suggest trends that turn out to be very different in the longer term.

2. UK seafood within wider protein consumption

UK seafood is consumed alongside other proteins and foods. UK seafood consumption therefore sits within the wider protein and food consumption world. See figure 2.1. In this world there are several major features, these include: consumer food interest; product solutions; and range of outlets.

Consumer interest in food¹ is often based on: *function* - where food is viewed as a source of fuel/nutrition; *convenience* - where a quick meal or protein source is required; and *an experience* - where needs are focussed on pleasure or a special occasion.

The protein landscape includes seafood but also white meat, red meat and meat substitutes². These proteins, when processed into products, offer a spectrum of solutions to the chef or consumer:

- **Basic** products meet functional ‘food as fuel’ needs.
- **Added value** products meet ‘convenience’ requirements.
- **Premium** products meet a particular need for ‘an experience’.

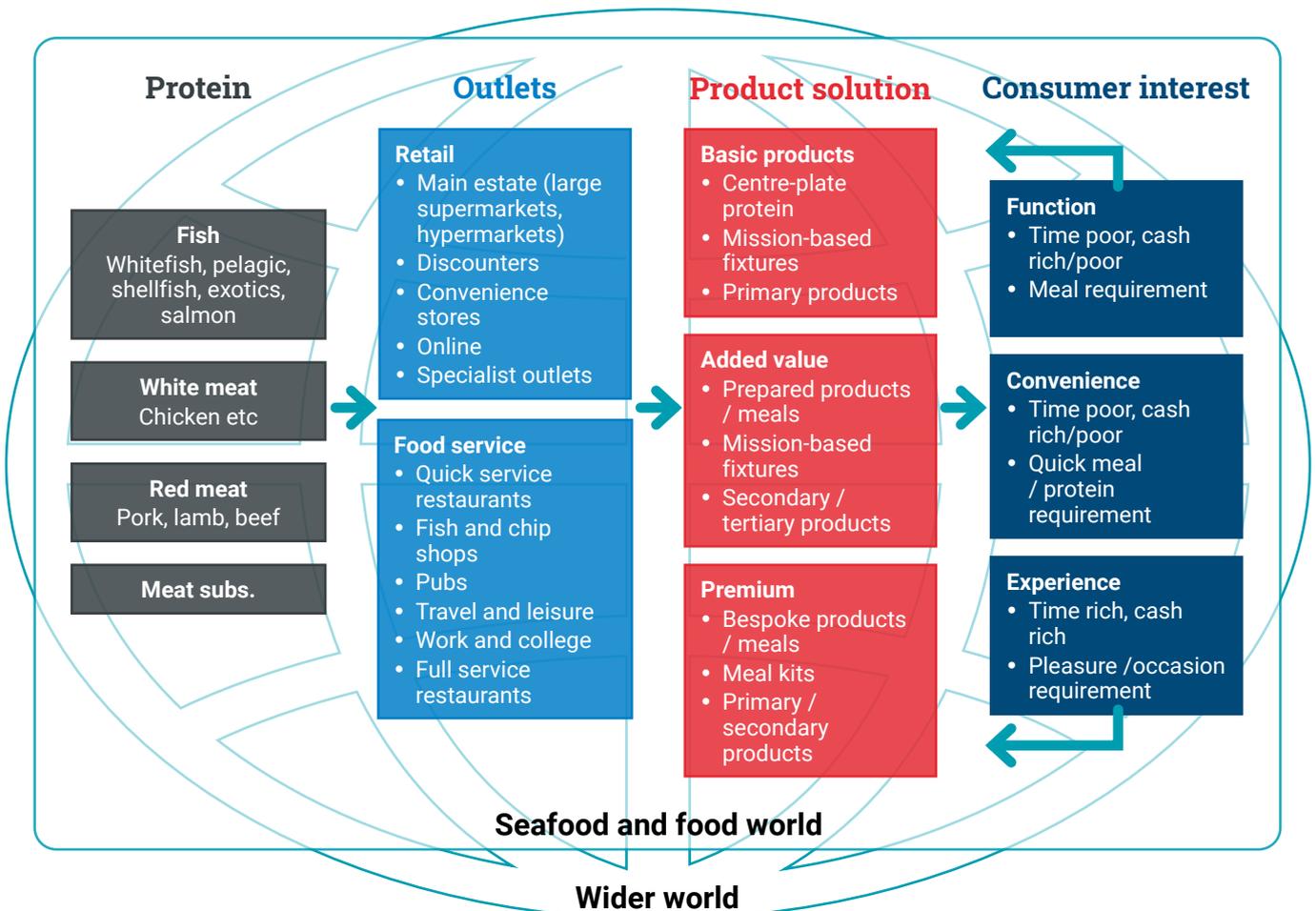


Figure 2.1 UK seafood and protein landscape, showing the relationships between consumer interest, product solutions and outlets

1 see appendix 3

2 see appendix 4

Products are made available to consumers through a wide range of outlets, oriented towards consumers interested in food function, convenience, or experience³. Outlets can be broadly categorised as retail (in-home consumption) and food service (out-of-home consumption). Retail 'main estate' outlets tend to support the widest range of products, discounters and convenience stores offer a more limited range, specialist outlets offer more unique products to those seeking 'an experience'. Food service outlets similarly serve a range of products to meet consumer interest and are often an 'innovation-engine' for the development of retail products.

Consumer attitudes are shaped by important purchasing drivers⁴. Against these drivers each protein category provides advantages and disadvantages in the eyes of the consumer:

- **Price:** seafood is often relatively more expensive than other proteins.
- **Quality:** seafood can show greater variation than other proteins in freshness and taste.
- **Convenience:** compared to other proteins, seafood offers an abundance of species choice but misconceptions around choosing, preparing and cooking still exist.
- **Health and nutrition:** seafood has several health benefits, some of which are uniquely abundant in some seafood species, for example long-chain omega-3 fatty acids.

- **Welfare and resources:** seafood's sourcing credentials relating to sustainability and welfare can be seen as more complex and uncertain compared to other proteins.

Consumer perception of *value for money* - combining price, quality, convenience, and health – plays an important role in seafood purchasing decisions. Seafood is typically bought by an older and more affluent consumer. Around two thirds of seafood sales (by volume) are made through retail, and a third through food service. With an emphasis on off-the shelf and component products, chilled seafood formats dominate retail sales. Fried fish is the main format in food service. UK seafood sales largely rely on imported (and increasingly farmed) seafood, UK landings are generally exported for overseas consumption⁵.

The seafood and food world are, in turn, influenced by the wider world in which they sit. These wider dynamics can have a strong bearing on seafood and food consumption⁶.

3 see appendix 5

4 see appendix 3 and 7

5 see appendix 1 and 6

6 see appendix 8

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UK consumption of seafood is relatively low, compared to other proteins. Over the last 10 years, UK seafood consumption has shown a gradual decline - particularly since the financial crisis of 2007/8. More specifically:

- In retail, seafood sales have been in price driven growth, with increases in average price, as volumes have declined (by 25% in the decade to 2020). During this period chilled seafood was the only sector in consistent growth, with frozen and ambient either flat or in decline. From 2020, Covid-19 restrictions meant seafood retail sales received a significant boost (over 10%) in response to more in-home meal occasions and closure of many foodservice outlets - with frozen and ambient seafood performing strongly. By the end of 2021 retail seafood volume sales had returned to decline and pre Covid-19 trading patterns: chilled seafood in growth, frozen and ambient seafood in decline.

- In food service, seafood consumption struggled after 2008 as consumers stopped eating out. Consumption slowly began to recover from 2014, particularly premium species, sandwiches, with fish and chip shops outperforming most other channels. However, with Covid-19 restrictions from 2020, out-of-home seafood consumption was severely constrained as the food service sector faced shut down and this is yet to fully recover.

As of 2022, seafood consumption continues to adjust to the easing of Covid-19 restrictions. However, there are new and emerging challenges in returning to the 'new normal' and in the face of significant geopolitical events.

3. Current challenges in seafood consumption

This chapter provides a summary of the current challenges in seafood consumption. It highlights some of the high impact changes affecting the UK seafood industry over 2022 that may go on to play out in important ways in the months and years ahead.

In September 2022, UK consumer confidence decreased to a record low of -49 (a score not seen since 1974) whilst consumer price inflation reached 10.1%. In parallel, there have also been several important changes in the sale of seafood through retail and food service:

- In multiple retail, 12-month trends to June 2022 show:
 - the number of shoppers purchasing seafood falling steeply; fewer shoppers, shopping less often, and spending more on significantly smaller baskets.
 - the seafood category returning to strong decline, as shown in both UK retail sales value (-4.5%) and volume (-4.4%).
 - seafood remains an expensive purchase, with an average price of £10.02/kg; recent price increases affecting other proteins is yet to hit the category.
 - all seafood sectors in full decline, except for ambient.
 - prepared seafood as the only segment in significant volume sector growth; likely driven by consumers opting to dine in as personal finances limit eating out.
 - very few species in volume growth; tuna and crabsticks as consumers turn to sandwiches to save money, and cheaper snacking seafood products.
- In food service, 12-month trends to September 2022 show:
 - A slowdown in overall food service recovery. Consumer visits to foodservice outlets in the Q3 period down 1% on Q3 2021 and remaining below pre-pandemic levels (down 22% on Q3 2019). Food service channels have had mixed fortunes as consumers return to offices and commuting as part of hybrid working: Travel and leisure and Quick service restaurants (QSR) have seen the biggest declines year-on-year, whilst Pubs, Full service restaurants (FSR) and Workplace and education saw growth.
 - Growth in total seafood spend (up 40%) and across all channels in terms of seafood visits (up 16%) and servings (up 17%). However, seafood visits in the Q3 period were down 14% on Q3 2021 and remain below pre-pandemic levels (18% down on Q3 2019).
 - Seafood in foodservice continues to recover in the last 12 months. All channels, except Fish and chip shops, have experienced growth in total spend. All channels have experienced year on year growth in seafood visits and servings.

- However, the recent picture is somewhat less positive - in comparing Q3 of 2022 with that of 2021, we see some reductions in visits and servings:
 - ♦ QSR (excl. Fish and chip shops): visits and servings down 4%.
 - ♦ Fish and chip shops: visits down 8%.
 - ♦ Pubs: visits and servings up 65% and 64% respectively.
 - ♦ FSR: visits and servings up 37% and 44% respectively.
- ♦ Travel and leisure: visits and servings up 22% and 19% respectively.
- ♦ Workplace and education: visits and servings up 72% and 65% respectively.

Many of the current challenges facing seafood are a consequence of recent changes in the food industry and the wider world. Figure 3.1 illustrates some of the higher impact changes seen over the last 12 months, how they combine and create 'spillovers' that affect seafood consumption.

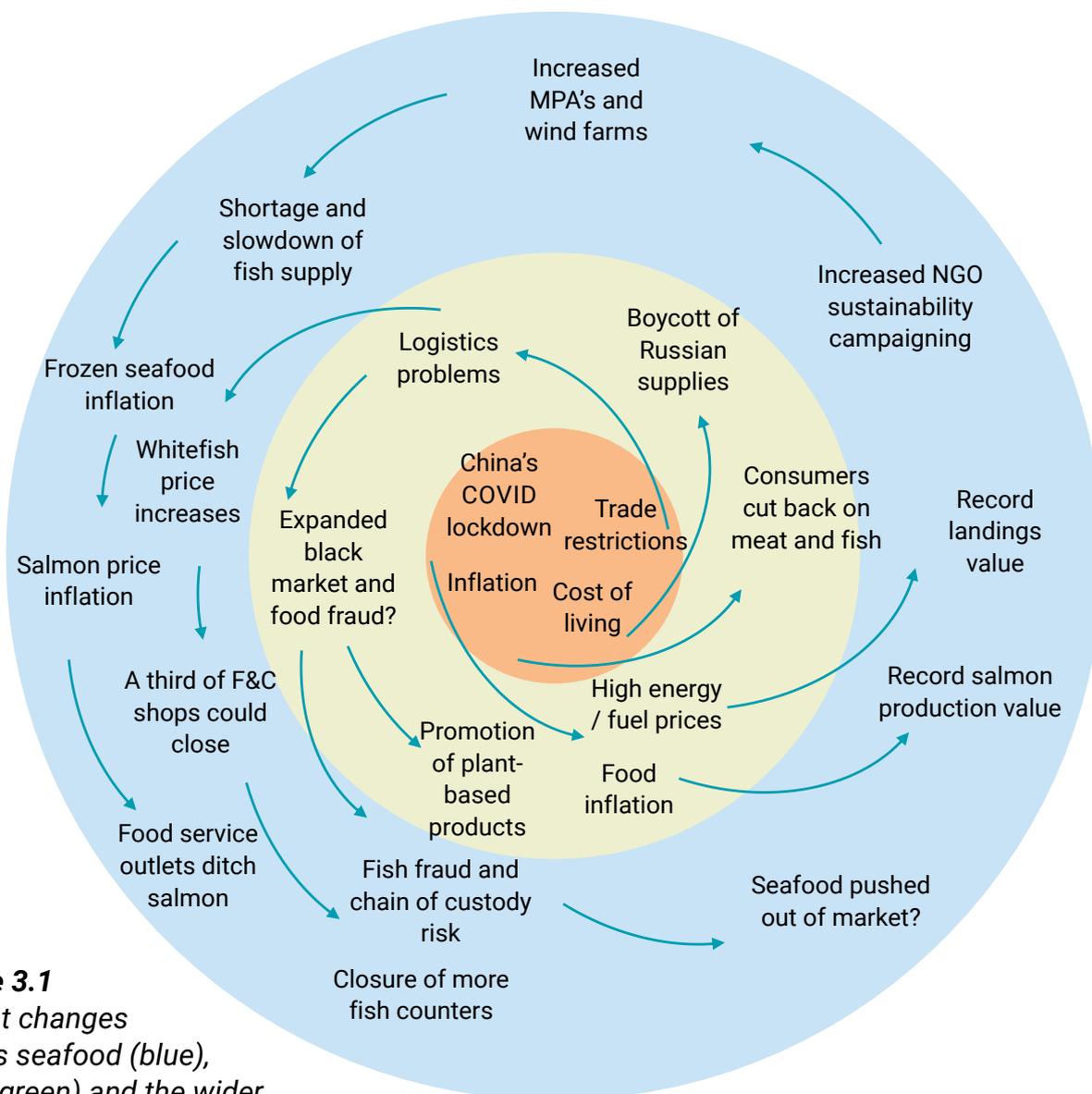


Figure 3.1
Recent changes across seafood (blue), food (green) and the wider world (orange).

The following is a short summary of high impact changes currently affecting the industry, described in terms of the wider world, food world, and the seafood world.

Wider world. The most obvious change, evident at both a personal and a business level, is the increase in 'cost of living'. Other notable changes are the Russia-Ukraine conflict and the trade restrictions and inflation associated with that. Trade restrictions are also linked to the legacy of Covid-19 lockdowns and the strict lockdowns associated with China's recent zero Covid-19 policy. Inflation has been accelerating over the last 12 months or so. These create challenges that spill out into the world of food and seafood.

Food world. Food inflation and high fuel and energy prices are particularly notable. This has had consequences in terms of consumers cutting back on meat and seafood. In parallel with these changes, trade restrictions relating to Russian supplies coupled with lockdown restrictions are aggravating existing challenges. Examples include food fraud, and also the ongoing promotion of plant-based alternatives as competitor protein substitutes. These start to heighten challenges already faced in the seafood world.

Seafood world. Record landings value and record salmon production value are notable. This may be beneficial for that stage in the production chain, as higher sales prices can be used to cover higher input costs such as energy and fuel. It can be less beneficial for those in downstream stages of the chain. Other pressing concerns are being experienced at the production stage where there are challenges in the marine space. There is increased NGO campaigning in the UK - partly a legacy of Brexit and decision-making coming back to London and Westminster. There are quite explicit strategies amongst some NGOs to target the UK, and what is happening in surrounding waters, to influence UK decision-making. Often that campaigning is around increasing Marine Protected Areas and influencing other policies such as wind farm developments and this is adding pressure to the marine spatial area. This, combined with tensions in the food supply chains, is contributing to a shortage and slowdown of fish supply, or at least interrupting it. This is contributing to seafood inflation. This inflation is not just experienced in the supply of whitefish, somewhat expected because Russia is a significant provider of whitefish, but also more broadly. For example, inflation in frozen seafood due to logistics problems, as well as salmon price inflation. This inflation has downstream consequences: the fish and chip shop sector estimate up to a third of the sector could close. There are also examples of food service outlets reducing seafood on menus, and restaurants removing iconic species such as cod and salmon. Salmon prospects have an outsized impact on seafood more widely: if salmon suffers a downturn, then it has consequences for other seafood species. In retail there are closures

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of yet more fish counters. Such closures are not new but is an example of an existing challenge exacerbated by current trends. Within food fraud, there's a heightened risk of seafood fraud and chain of custody risk. As conditions become tighter so this increases the temptation to make ends meet by cutting corners. This raises the question of whether seafood is ultimately pushed out of the market.

From what has been seen in the last 12 months, we may have to respond to a world polarising into blocks, a major geopolitical fracture not seen since the cold war. This is a major disruption. Since the end of the cold war there has been a lot of global cooperation, nations coming around the table to agree global ambitions. Examples include UN sustainable development goals and climate change as a priority challenge. That cooperation is looking decidedly shaky at present and raises important questions.

What are the implications of these fractures for food, and for seafood? In the former, might we see food production and trade increasingly 'weaponised'? Might we see the latter pressured by cost reduction and suffering from its own complexity? Seafood is known for its diversity and its range. However, the downside of this is the cost of that range and managing that diversity in a cost-effective way.

In summary, and in looking ahead, the external landscape presents some key questions. In:

- The wider world, are we becoming more polarised?
- Food, might food production and trade be 'weaponized'?
- Seafood, are seafood products becoming a 'more difficult' option for customers?



4. Notable trends in the last 10 years

Given the challenges set out in the previous section, this chapter identifies notable recent developments and trends in the industry over the last decade. These trends could amplify some of these challenges. A perspective on the wider world is provided in the first instance. Perspectives on food and seafood are then considered as these developments influence price, quality, convenience, health and nutrition, welfare and resources.

4.1 Drivers and developments in the wider world, food, and UK seafood

In the wider world, two key drivers are exerting a substantial influence on consumers, food and seafood production: the economy and climate change:

- In recent years, the economy, which had recovered from the credit crunch and was adjusting to the realities of Brexit, has been - and still is - severely tested by the global pandemic and associated lockdowns.
- Alongside this, climate change has become very high profile in the media and is high on the agenda of government and amongst some in the business and investment community.

These drivers will challenge the consumption and production of food. All protein sectors (including seafood) share a common exposure to changing consumption and expectations of consumers relating to:

- **Price** - a more challenging price environment, with the upward pressure on prices.
- **Quality** - raised expectations of consistent quality.

- **Convenience** - a desire for products that fit with increasingly busy lifestyles.
- **Health and nutrition** - a greater awareness of nutritional merits.
- **Welfare and resources** - an expectation that these aspects are 'taken care of'.

The UK food and seafood industry share these concerns. However, these industries - and individual sectors within that - have exposure in different ways. For example, in the food industry, important drivers are often value for money and nutrition whilst in the seafood industry, important drivers are value for money and perception.

The food industry, in recent years, could be viewed as a period in which sophisticated globalised supply has supported the mass production of food:

- The price of meat proteins and other key foods have been largely contained with 'lower than inflation' price increases.
- However, the quality of our food has been challenged by food scandals (such as 'horsegate'): this has led to a push to restore trust and transparency, helped by industry consolidation.
- A broadening of outlets and expanded choice of protein - including alternative proteins - has improved convenience whilst high profile claims for plant-based foods, and against red meat, has highlighted the nutritional content of food.
- Meanwhile market commitments to welfare and resource use in responsible food sourcing has grown, including human rights and sustainability.

Meanwhile, over recent years, seafood could be viewed as a constrained protein under pressure:

- 'Higher than inflation' price rises have challenged value for money, with the least affluent demographic trading out of the category and seafood becoming a purchase for more affluent consumers.
- In communicating the merits of seafood to consumers, quality and taste have tended to be eclipsed by sustainability credentials.
- In a more crowded protein market, seafood has a more limited presence – one that remains mysterious or scary for some consumers.
- Although health benefits are notable, the expanding demands on welfare and resources requirements (labour and sustainability) have meant some dieticians hesitate to advise that consumers should 'eat more fish'.

This exposure is briefly explored in the next few sections in terms of prices, quality, convenience, health and nutrition, welfare and resources. This exposure highlights anticipated changes relating to consumers, proteins, products, and outlets.

4.2 Prices

Prices relate to changes in price range, including price ceiling and price floor.

Food:

- For the last 30 years, average meat prices have increased but at a lower rate than average food prices and at a lower rate than general inflation. In this regard, the average prices for meat and other key foods have been 'contained'.

- Since the 'credit crunch' of 2007/8, average prices for fish, meat and food have continued to increase. Only meat prices have increased at a rate lower than inflation.
- Higher food prices have a bigger impact on groups with constrained incomes, resulting in switching between meat categories.

Seafood:

- Seafood is relatively expensive and is often the most expensive protein.
- With higher prices, consumers with constrained incomes tend to switch their purchases. In food service, consumers look for alternatives on the menu, whilst some outlets (those with established brands) seek *premiumisation* to retain less constrained consumers. In retail, constrained consumers 'trade down' to cheaper seafood options: from chilled to frozen to ambient seafood, then 'trade out' of the category to less expensive protein options e.g. chicken. Recent data from 2022 suggests consumers have swiftly traded down from higher average priced chilled formats directly to ambient seafood, as a response to the 'cost of living' crisis.
- Food service and retail outlets have sought to contain higher fish prices by adjusting product formats. In food service this includes greater use of frozen formats, in the case of retail this includes pushing costs back down the supply chain.

- For those supplying outlets, the consistent growth of farmed fish has offered a relatively stable price point for fish. However, the growing share of farmed in the repertoire brings its own price effects e.g. price changes in salmon have a direct effect on wider chilled seafood prices.
- By 2021, food service attracted an older and more affluent consumer and has not attracted its fair share of younger consumers. In retail, meanwhile, the seafood shopper is predominantly affluent and older.
- Food industry consolidation has helped shape industry response to consumer distrust. The concern for authenticity and interest in food sourcing transparency, has been particularly strong in retail but less so in the relatively fragmented food service sector.

Seafood:

- With limited shelf-life, seafood quality – taste, freshness, and consistency – has a particularly important bearing in the consumer purchasing decision.
- Taste has played an important role in attracting consumers to seafood; playing a minor role in shifting seafood consumers towards non-meat options, and a greater role in attracting new consumers to seafood.
- Taste of seafood does not tend to get ‘foregrounded’ by retailers as it does for other food categories, for example varieties of fruit and vegetables or cheese (although some exploratory efforts have been made on this topic¹.)
- However, the presentation and experience of seafood products can be inconsistent with bad consumer experiences having a lasting impact with the consumer. This is particularly so in areas where industry has a large number of independent business with wide variability - in some parts of food service for example.
- Seafood freshness has come to the fore in some outlets as a response to higher prices. Improvements in frozen seafood, such as frozen at sea, have made this option viable for other outlets.

4.3 Quality

Quality relates to product taste, freshness, and consistency.

Food:

- Food tastes continue to evolve, shaping recent trends in UK protein consumption. These trends suggest:
 - plant-based meals are increasing (with growing interest in meat substitutes);
 - rising consumption of white meats (particularly poultry); declining consumption of red meats (beef and lamb);
 - seafood consumption remains broadly stable / in slight decline.
- Food consistency and trust has been challenged. There has been a growth in distrust, and increased consumer interest in where food comes from, prompted by the ‘horsegate’ scandal, and amplified by the media.

1 see appendix 9

- Consistency, in both quality and supply, in the seafood category has been supported by the growth in farmed production. Farmed seafood now accounts for 70% of top five species in chilled, with farmed salmon particularly notable.
- Consistent supply has also been supported through seafood industry consolidation. Larger businesses can establish dedicated Corporate social responsibility (CSR) teams for example.

4.4 Convenience

Convenience relates to product availability and format, as well as versatility and time in food preparation.

Food:

- Over the last 10 years, the convenience of food has been enhanced through improved food availability; improved availability has seen new, and expanded choice of, proteins.
- An expanded range of proteins has been detrimental to incumbent proteins; a broader range takes up considerable retail space and makes for a 'busier shop window'.
- Greater availability has been supported by the evolution of retail and food service outlets:
 - Convenience is one of the main drivers for change in retail, in contrast to food service where the desire for new experiences is a bigger driver for change.

- The channels through which consumers purchase food are diversifying - this includes smaller retailers, online delivery and an increasingly common out-of-home food environment.
- More recently, Covid-19 lockdowns seriously impacted food availability; constraining out-of-home outlets and elevating and accelerating online delivery platforms.
- Product formats have also developed to support convenience. Formats have been altered or invented to suit small basket shopping, kit-cooking, and versatility.

Seafood:

- Although food availability and protein choice has expanded, seafood has a limited presence - being a relatively low volume, high value protein category. The role of seafood for the retail consumer is relatively minor; according to one consultee *"seafood still only features in 5% of all in-home meal occasions"*.
- Within the seafood category, choice has changed - particularly in relation to farmed and wild caught species. Although there has been continued retail focus on the top five species (salmon, cod, haddock, tuna and warm water prawn), the trend shows growth in established farmed species (salmon, warm water prawn) and new farmed species (sea bass, sea bream, pangasius). These farmed species are competing with traditional 'caught' species with the latter showing greatest decline.

- Over the last 10 years, discounters have continued to grow seafood share. Online sales have become an established channel, boosted during Covid-19, but have since fallen back, now taking around 13% of retail sales. In format, retail seafood has seen a further shift towards pre-pack on shelves, moving away from traditional fish counters. Currently 97% of seafood retail sales are through pre-pack formats whilst fish counter sales have halved in the last 10 years to around 3% of retail sales.
- Seafood availability has been constrained by these retail changes, for example:
 - fish counters represented a promotional opportunity
 - pre-pack seafood is competing for more crowded retail shelf space, and
 - online shopping presents drawbacks for seafood due to role of 'quality' and managing / communicating this aspect.
- Seafood product formats have remained broadly consistent and focused on the convenient chilled format (particularly chilled natural) - aside from recent Covid-19 related changes (where frozen and ambient seafood performed strongly), chilled seafood is the only sector that has shown consistent growth in retail.
- The convenience of seafood is challenged by limited versatility; retail consumers' cooking skills are low and, coupled with the high variability of fish, this can put people off – with seafood seen as a rather mysterious and scary option.

4.5 Health and nutrition

Health and nutrition relate to the safety, health awareness, and nutritional content of foods.

Food:

- Food and diet play a role in the health and wellbeing of the nation, and this varies by consumer group.
- Public health messages, based on assessments of scientific evidence, provide dietary guidelines for consumers and health professionals including doctors and dieticians. Examples include *The Eatwell Guide* advising how much should come from each food group to achieve a healthy, balanced diet.
- In recent years, the focus of health messages has broadened, with health messages now referencing the environment, ensuring dietary guidance is synonymous with health and sustainable eating. Examples include the British Dieticians Association (BDA) produced One Blue Dot publication on sustainable diets.
- Despite media hype around animal welfare and the environment, health appears to be the main driver of lower consumption across most meats. This would appear to be the main reason for consumers 'buying into' meat alternative and plant-based foods.
- Reflecting the growing interest in healthy eating, manufacturers must account for the nutritional content in food products, to support menu and product labelling information.
- Although health concerns around sugar, salt and fat are higher profile, what people consume in the UK still falls short of dietary guidelines.

Seafood:

- With several health benefits, seafood is a 'relatively healthy' option in the protein landscape².
- UK official advice recommends that people should eat at least two portions of fish (280g of fish per person) a week, one of which should be oily fish.
- Although there is strong evidence for Omega-3 and wider nutritional benefits of seafood³, these aspects are confusing in the minds of many consumers and dietitians. There is also continued 'low level' anxiety associated with seafood and contamination.
- In recent years, the environment has become a factor in advice on seafood consumption. For example, the 2018 BDA Blue Dot advice suggested 'fish should come from sustainable sources'. Arising from this, and perhaps prompted by high profile media coverage of activism (such as the Seaspiracy documentary on Netflix), there have been instances of dietitians suggesting 'eat less fish'.

4.6 Welfare and resources

Welfare and resources relate to how the production and consumption of food impacts on people and animals, as well as on the sustainability of resources.

Food:

- The importance of 'non-price' factors, like welfare and environmental resources, has grown in importance in the food industry over the last 10 years.
- There has been concern for the welfare and wellbeing of food workers and a notable focus on slavery in food supply chains.
- The impact of food production on environmental resources has become a concern across stakeholders, including:
 - food buyers (with sustainability commitments becoming good business practice)
 - dietitians (becoming a factor in food advice) and,
 - researchers (keen to understand the merits of plant, land-based meat and aquatic/'blue food' production).
- Some consumers care about food origin, sustainability, and ethical production standards - for example younger cohorts seem to be approaching food from an environmental, rather than a health, perspective. However, many consumers show a value-action or 'say-do' gap i.e. a difference between what consumers say and what they then, subsequently, do..

2 see appendix 4

3 For example, being the primary natural source of the long-chain fatty acids – eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA) - the functional health-giving components in Omega-3.

- Greater awareness of 'environmental resources' also has a negative dimension - in some cases, environmental arguments rely on simplistic messages about protein categories that lack nuance: for example, all beef production is intensive and therefore damaging.

Seafood:

- Over the course of the last decade, sustainable seafood has become established 'currency' with buyers. For example, some 10 years ago customers would ask '*is this MSC (Marine Stewardship Council) certified?*', now buyers have shifted to '*this must be MSC certified*'.
- Sustainable seafood has gained currency more recently amongst dieticians - dietary advice has now become two portions of fish from sustainable sources.
- Sustainable seafood has also gained currency with the public at large (due to high profile activism on sustainable fisheries - *Seaspiracy* and *End of the Line* for example).
- However, the sustainable use of environmental resources in seafood is nebulous, difficult to define and can be ambiguous. For example:
 - Dieticians are concerned and confused; it's not always possible to go to the MSC, or decide between farmed versus wild seafood etc. This is perhaps a factor in why some dieticians are now suggesting consumers eat less fish.
- In the supply chain, there is a tension reconciling market and environmental objectives, for example promoting the uptake of wider species in the market beyond the top five species when demonstrating environmental credentials is often strongest amongst those top five species.
- The broad environmental credentials of seafood are strong, and seafood has a relatively low carbon footprint, but this positive story is difficult to communicate.
- Corporate social responsibility has broadened, embracing not only waste but social responsibility, worker welfare and animal welfare (most recently focused on shellfish).

5. Anticipated five-year trends

Given the trends set out in the previous section, this chapter identifies anticipated trends in the next five years. A perspective on the wider world is provided in the first instance. Perspectives on food and seafood are then considered as these developments influence price, quality, convenience, health and nutrition, welfare and resources.

5.1 Drivers and developments in the wider world, food, and UK seafood

In the wider world, the two key drivers of 'the economy' and 'climate change' could take markedly different directions over the next few years. This could generate substantial tensions and, given the influence of these drivers, will have implications on consumers, food and seafood production. In the next five years:

- The economy will adjust to post Covid-19, and new geo-political, realities, for example hybrid working and supply chain disruption. With the economy experiencing inflation, this could tip towards recession.
- Climate change will continue to be on the agenda, but this could lead to polarised positions; 'zealous' pursuit of fast paced, and costly, change could generate a 'backlash' from more moderate positions.

In the food industry, the next five years could be a period of marked transition in food production:

- Meat and other proteins are likely to see higher prices.
- The quality of food may be compromised as failures in some supply chains undermine consistency, and the emergence of new scandals weaken public trust in food integrity.

- Convenience may be challenged as availability is constrained by supply chain disruption, on the one hand, but eased by continued expansion of protein choice on the other.
- Following Covid-19, the relevance of health may accelerate.
- With buyer action, welfare and environmental credentials are expected to become a market entry requirement.

In the seafood industry, in the next five years, seafood could be a nutritious, but struggling, protein:

- Seafood prices are expected to increase further and contribute to a suppressed seafood market.
- With consolidation driving consistency and more competition from non-meat proteins, there may be a greater emphasis on seafood taste.
- Availability of farmed species is expected to improve, focus will shift to frozen and ambient formats, with seafood likely to be challenged by disruption and 'confusion' over supply chain credentials.
- Health credentials are expected to feature more highly and be a 'battleground' with other proteins, especially plant-based foods.
- Welfare and resources requirements are likely to broaden to include carbon emissions reductions and animal welfare.

This exposure is briefly explored in the next few sections – in terms of prices, quality, convenience, health and nutrition, and welfare and resources - as it touches on anticipated changes relating to consumers, proteins, products, and outlets over the next five years.

5.2 Prices

Food:

- Food prices are expected to increase.
- Higher food prices will have a greater impact on lower income consumers.
- Younger cohorts, and others, with constrained incomes are likely to be more affected by higher food prices.
- Older, and generally wealthier, age groups are less likely to be affected by higher food prices.
- Consumers will adjust spending but may continue to purchase smaller, luxury items as 'escapism' from bigger issues and challenges.

Seafood:

- Seafood – already a higher priced protein - will continue to see price increases with the potential added pressure of inflation.
- However, seafood may see some 'insulation' to upward price pressure compared to other proteins: being generally older and more affluent, seafood consumers may be able to 'absorb' price increases to some extent.
- Given the share of the category, increases in the prices of farmed seafood can be expected to weigh on wider seafood consumption volume. For example, periods of increased chilled salmon prices can negatively affect salmon and broader chilled seafood consumption.
- We can expect a major shift to lower price seafood, and accelerated decline in seafood consumption. Within this, some components of seafood consumption are expected to fall as others rise e.g. decline may be tempered as consumers trade up

as an 'affordable treat' – such as buying premium seafood products in retail in order to save money by dining-in, rather than eating out.

5.3 Quality

Food:

- Food tastes will continue to evolve. Competitive pressures from non-meat proteins and alternative seafood are expected, with the vegetarian/veganism trend expected to plateau.
- Food consistency may be impacted in the face of continued global supply chain disruption. Some sourcing arrangements are expected to become unviable, with food episodes that leave consumer trust 'shaken'.

Seafood:

- Plant-based foods and the vegetarianism/veganism trend is not expected to significantly impact the taste for seafood.
- In any recessionary period, taste is expected to play a continued role but seafood shoppers are likely to refocus on price over taste/quality and health to meet their value for money expectations.
- Although core seafood consumers tend to maintain a focus on taste, if price increases can no longer be 'absorbed' then even this group is expected to refocus on price in assessing value for money. Constrained 'non-core' seafood consumers will not compromise taste over price where savvy purchasing can support an 'affordable treat'.
- The consistency of seafood is expected to improve in the wake of continued industry consolidation, particularly in food service.

5.4 Convenience

Food:

- Convenience is expected to recover from the challenges to food availability as Covid-19 lockdowns ease.
- However, convenience may be inhibited – particularly in the short term; the range of product formats are expected to be constrained and disrupted by problems in the food supply chain arising from Covid-19 and geopolitical factors affecting international trade.
- Food availability is expected to improve further as protein choice continues to expand. The promotion of plant-based proteins, and development of alternative proteins will continue. However, cell-based seafood is expected to be far slower than other cell-based meats.
- As lockdown restrictions are relaxed, the 'new normal' workplace - with a degree of hybrid working - will influence food availability, shaping the balance of sales volume/value across outlets.
- Online delivery will remain important, as platforms build on advances during Covid-19 to expand their reach, for example *Just Eat* has set ambitious targets to reach more households.
- As society opens up, food service will recover, the out-of-home food environment will be more common and alfresco dining may feature more prominently. However, with tightening economic conditions and disposable incomes under pressure, food service will remain constrained.

Seafood:

- Convenience may be constrained as seafood availability is challenged on choice:
 - Expanded seafood production could enhance choice, mainly through continued growth in farmed seafood (although not expected to be sufficient to contain prices).
 - Meanwhile, disruptions to logistics combined with inflation, higher transport costs and geopolitics, could render some seafood supply chains unviable.
- Further near-term disruption in seafood availability is expected as society adjusts to the 'new normal'. The make-up and share of sales will reflect the balance of wider food sales volume/value across outlets in the 'new normal' e.g. sustaining increased meals at home, decline in sandwiches.
- With consumers re-evaluating what is 'value for money' (as Covid-19 restrictions continue to ease, and economic pressures increase) we can expect major shifts in product format:
 - An initial shift from chilled, to frozen, and then ambient products to save money.
 - A gradual return to pre-pandemic seafood trend i.e. chilled seafood in growth with frozen and ambient sales either static or in decline as the economy improves (a shift back to chilled natural may be a 'recovery signal').

5.5 Health and nutrition

Food:

- In the light of the Covid-19 pandemic, the relevance of health might be expected to accelerate - particularly the importance of mental health and a healthy gut.
- Alongside nutrient content of ingredients and portion sizes, suppliers may have to communicate environmental and social credentials of food products.
- Health minded consumers may further reduce meat intake, consuming more plant-based protein.
- The influence of forthcoming UK regulation, restricting the marketing and promotion of unhealthy food, may mean further reductions in red meat and increased consumption of plant-based proteins and potentially seafood.

Seafood:

- Dietary advice that promotes the merits of a plant-based diet, may end up marginalising seafood. For example, recommendations to vulnerable groups (i.e. those with specific health risks) such as 'cut down on red meat, replace with fish and poultry' may become 'cut down on red meat and replace with grains and pulses' so bypassing fish.
- With health being 'front of mind', the media is expected to highlight nutritional concerns in the UK. As a result, in some instances, seafood may:
 - suffer - for example we can expect continued 'low level' anxiety associated with seafood and contamination

- stand to benefit - for example low iodine levels in the UK population could surface as a serious media story, benefitting whitefish (a good source of iodine).

5.6 Welfare and resources

Food:

- It is expected that consumers will pay more attention to food sustainability, maintaining a closer eye on food companies and their supply chains.
- In addition to the sustainability of the product, consumers may also focus on the sustainability of product packaging, as it allows them to 'do their bit'.

Seafood:

- CSR and welfare is expected to increase in importance.
- 'Responsibility' is expected to become a 'market entry' requirement, with retailers prepared to act in the face of poor business practices e.g. de-listing seafood products.
- Young people care about what they're eating, and have more questions about seafood, so the reliance on certification will become more relevant and recognised.
- Climate change is anticipated to 'make life difficult' for industry ranging from severe weather events, through to fisheries disputes, and bad press.
- The focus on animal welfare is expected to continue with shellfish but broaden to cover fish species.

6. Anticipated trends in five to 15 years

Given the trends anticipated over the next five years, as set out in the previous section, this chapter looks further ahead to anticipated trends in the five to 15 year period. A perspective on the wider world is provided in the first instance. Perspectives on food and seafood are then considered as these developments influence price, quality, convenience, health and nutrition, welfare and resources.

6.1 Drivers and developments in the wider world, food, and seafood

In the wider world, 'the economy' and 'climate change' are two key drivers expected to have a substantial influence on consumers, food and seafood production over the next five to 15 years. In that period the economy could stabilise and return to long term growth, alternatively a prolonged recession could herald a phase of longer-term decline. Meanwhile if climate efforts can remain cooperative this could lead to transformational change, alternatively - if approaches become extreme and confrontational - then this may mean 'just enough' change is made, if not outright failure to address climate change.

In the food and seafood industry other drivers are also important. In food, important drivers are often value for money and nutrition. In seafood, important drivers are value for money and perception.

If we assume a 'fair wind' behind these drivers, i.e. that the economy stabilises and climate effort remains cooperative, then we might anticipate a plausible pathway for food and seafood over the longer-term:

- Food production might approach an era of mass personalisation:

- Higher prices are expected to be the 'new normal'.
 - Food quality may become polarised into trusted (and assured) products on the one hand, and other products that are opaque and 'faceless'.
 - Reflecting this polarisation, food choices may become more personalised for some, and less so for others.
 - Reflecting personalised diets, health credentials might be expected to be important, with the merits of plant-based foods, blue foods, red meat and synthetic foods a matter of lively debate.
 - With supplier action, we might expect improved performance in welfare and environmental credentials of food supply.
- Seafood may become a notable high value protein focused on quality and convenience:
 - Higher prices are expected to be the 'new normal' with the great taste of seafood more widely acknowledged, supported by supply chains optimised for quality.
 - New product formats, and more personalised availability could make seafood easier, and less mysterious or scary for consumers.
 - Seafood could be widely regarded as a key component in health driven flexitarian diets, supported by supply chains with full credentials on welfare and resources.

This exposure is briefly explored in the next few sections as it touches on anticipated changes relating to consumers, proteins, products, and outlets in the next five to 15 years.

6.2 Prices

Food:

- Increasing food prices are expected to continue. Key drivers include trade disruptions, climate change-induced food loss, and resource depletion.

Seafood:

- Seafood may become a higher value, but lower volume, protein. The price of seafood is expected to climb as aquaculture may not expand sufficiently to keep prices in check.
- Prices for some species may increase substantially. Those seafood species that are highly valued, wild caught shellfish for example, may see significant price increases.
- Outlets will tailor pricing strategies to suit their customer base. Some outlets will retain a cost focus and source accordingly, in public sector food service for example. Other outlets may introduce price premiumisation, for instance the retail sector may see premiumisation of retail private label reflecting 'quality tiering' and a polarisation in quality.

6.3 Quality

Food:

- Rebuilding and maintaining food consistency and trust is expected to be more important for consumers. This will have a bearing not just on individual products, but the protein category overall.
- Consistency and trust will be more challenging to deliver. Suppliers will have to account for complex supply chains across jurisdictions, and in the face of future stresses and shocks to food systems.

- Food products may become polarised into products that are trusted (and assured) and those that are opaque and 'faceless'.

Seafood:

- Continued financial squeeze for many seafood consumers could see a polarisation in quality, with quality tiers 'pulled apart'.
- Continued consolidation could drive a supply chain (and delivery) optimised for quality, such that seafood taste is more widely acknowledged.

6.4 Convenience

Food:

- Food availability could see dramatic shifts in protein choice; a decline in conventional meat is expected as consumers switch to novel vegan meat replacements in a transition phase to cultured meat (expected by 2035).
- Food availability may also be enhanced as outlets, and the wider food industry, embrace digitalisation - this process will be accelerated by technology progression and as business leadership shifts from 'digital foreigners' to 'digital natives'.
- Availability will be further enhanced as product formats become personalised. Food supply chains will continue to focus on delivering products consumers want, in the way consumers want to consume them – enhancing convenience and value for money through personalised food, improved packaging, and better labelling (providing more information with improved accuracy on, for example, shelf life).

Seafood:

- Convenience will be enhanced further through greater seafood availability and choice - this is expected to be largely through farmed than 'alternative' seafood.
- In contrast to the transition to cultured meat, where strong growth is expected until 2030, alternative seafood - largely cell cultured seafood – is expected to grow more slowly and be constrained to higher value species and/or high-end markets e.g. high value shellfish.
- Aquaculture is expected to support convenience through appropriate product formats produced close to market as recirculating systems locate in the suburbs of major cities.

6.5 Health and nutrition

Food:

- Greater product surveillance and communication of nutritional content may be required for novel or nutritionally altered food products (reformulated food - food products that are redesigned to make them healthier).

Seafood:

- Regulatory pressure on promoting unhealthy foods combined with greater interest in health-driven flexitarian diets, could provide further opportunities for the seafood category.

6.6 Welfare and resources

Food:

- Climate change is expected to impact on food production systems. Synchronous shocks because of multiple climate-related failures in key sourcing locations could lead to rapid price increases or food shortages.
- The carbon footprint of food products is expected to become a market entry requirement.
- There may also be unintended consequences of industry efforts to be more sustainable, for example alternative packaging may mean more food waste and novel packaging may result in safety risks from contaminants.

Seafood:

- Climate change could affect the availability of wild capture species and may affect the range of farmed species in UK waters.
- UK devolution arrangements, and divergent pathways within the UK, may frustrate robust fisheries management.

7. Pathways, impacts and potential response

This chapter builds on recent and ‘anticipated’ trends to describe an anticipated pathway for seafood consumption across the next 10 years. The potential for alternative, divergent, pathways are also considered.

7.1 Summary of recent and anticipated trends

Table 7.1 shows recent and anticipated trends across the wider world, food and seafood.

Table 7.1 Recent and anticipated developments 2010-2035

	Last 10 years	Next five years	Next 5-15 years
Wider world	Collaborativemoving towards..	... Cooperative / Uncooperative
Economy	• Bounce back/growth	• Hybrid working, inflation, recession	• Growth / stability / decline?
Climate change	• High profile	• Climate ‘zeal’ versus ‘backlash’?	• Climate effort transforms / just enough / fails?
Food world	...Mass produced...	... moving towards Mass personalisation?
Price	• Price of meat and other key foods contained	• Higher prices for meat other foods	• Higher prices for meat and other foods
Quality	• Push for trust and transparency	• Trust shaken / polarised?	• Trust (and assured) versus ‘faceless’ products?
Convenience	• Broad choice (in-home and out) – global/local supply chains	• Reduced choice as outlets and supply chains disrupted?	• Choices personalised but polarised (i.e. reduced / improved for some)?
Health and nutrition	• High profile claims for red meat, ‘plant-based’ foods, ‘blue’ foods	• Scrutiny of ‘plant-based’/‘blue’ foods, demerits of red meat	• Merits of ‘plant-based’/ ‘blue’ foods vs red and synthetic meat (incl. synthetic seafood)
Welfare and resources	• Human rights and sustainability commitments	• Buyer action on human / animal welfare and sustainability commitments	• Supply chain action on human / animal welfare and sustainability commitments
Seafood world	..under pressure..	..struggling...	..noted for quality & convenience..
Price	• Prices relatively high	• Prices increasing	• Prices higher, more so for higher valued species
Quality	• Taste not widely ‘foregrounded’ • High value/low volume protein, with emerging ‘non-meat’ proteins	• Taste celebrated (by some) over price • Consolidation drives consistency • Up against improving credentials of ‘non-meat’ proteins	• Seafood taste is widely acknowledged • Consolidation drives a supply chain (and delivery) optimised for quality • Higher value/lower volume protein
Convenience	• Availability of seafood relies on complex local/global chains • Product can be ‘mysterious’ • Product innovation ‘mixed’	• Availability improves as farmed species take hold, species mix broadens, and evolution of store and product formats / online channels; constrained by ‘confusing’ credentials/supply chain disruption	• Availability personalised through store layout, product format, species mix and online channels; ‘authentic’ now competes with ‘non-meat’ / emerging ‘lab grown’ protein • New product formats mean ‘seafood is easier for the consumer’?
Health and nutrition	• Seafood ‘healthy’ but instances of ‘eat less fish’ advice	• Seafood competes with plant-based foods on health credentials	• Seafood widely recognised as ‘healthy’, supporting health driven flexitarian diets
Welfare and resources	• ‘Sustainability’ expands to ‘responsibility’ and high profile with food buyers and dieticians	• ‘Responsibility’ expands to include carbon and animal welfare ... now influencing buyers and dieticians’ advice	• ‘Responsible’ supply chains show full credentials on people and planet, as the consumer ‘say-do’ gap contracts

7.2 Anticipated pathway for seafood

A three-stage pathway for seafood consumption is described based on a 'central' projection of economic recession and recovery and some climate change progress (see figure 7.1). Over this path, the seafood position in the protein market changes. It is described as a:

1. **Constrained protein under pressure** in the current landscape
2. **Nutritious, but struggling, protein** in the five-year landscape
3. **Notable protein focused on quality and convenience** in the 10 to 15 year landscape

Across this pathway notable changes in seafood are anticipated. These changes are summarised here relating to important factors that affect consumer purchasing:

- **Prices increase**, and are a continuing challenge, across all three stages of this pathway.
- **Quality improves over time.** Quality is a challenge in the current landscape, improving over five years - supported by industry consolidation in some areas and effective cooperation in others, such that over 15 years supply chains are optimised for quality.
- **Convenience broadens beyond core seafood consumers.** Convenience is a continuing challenge across the pathway as the protein market becomes more crowded. Seafood appeals to a core consumer group in the current landscape, improved seafood availability is constrained by supply chain problems in the next five years. In the next 10 to 15 years, supply chains, product formats and availability improvements

combine to make seafood a convenient option for a wider set of consumers.

- **Health credentials gain recognition.** From being a less well-known aspect in the current landscape, seafood health credentials are a competitive feature in the next five years as red meat and plant-based foods are scrutinised. Seafood is then widely recognised in 10 to 15 years as a valuable part of flexitarian diets.
- **Welfare and resources become central.** These non-price factors, initially seen as important commitments in the current landscape, soon expand to become a market entry requirement in the next five years as buyers demand action. By 10 to 15 years seafood supply chains can demonstrate their full credentials.

Beyond this anticipated pathway for seafood consumption, there is always potential for alternative pathways, as long-term developments shape alternative future scenarios for food¹.

An alternative, more pessimistic, pathway may arise from prolonged conflict, a deepening recession, and failure to be pragmatic on climate change. This could create significant challenges for seafood making it a 'more difficult option' for seafood buyers and shoppers.

The actual path for seafood consumption is likely to be a combination of these alternative pathways, for example prolonged Russia-Ukraine conflict could accelerate some of the developments identified in this review. Alternative pathways can be explored, and this anticipated pathway developed further, through subsequent scenario-based exercises.

¹ see appendix 8

Figure 7.1 An anticipated pathway for future seafood consumption

<p>Horizon: The current landscape</p>	<p>Horizon: The five-year landscape</p>	<p>Horizon: The 10-15 year landscape</p>
<p>Economy: Bounce back and rising prices</p>	<p>Economy: Hybrid working, inflation, recession</p>	<p>Economy: Return to stability / growth</p>
<p>Climate: High profile</p>	<p>Climate: Climate ‘zeal’ versus ‘backlash’</p>	<p>Climate: Effort is ‘just enough’</p>
<p>Seafood is a constrained protein under pressure</p>	<p>Seafood is a nutritious, but struggling, protein</p>	<p>Seafood is a notable protein focused on quality and convenience</p>
<p>PRICES</p>	<p>PRICES</p>	<p>PRICES</p>
<ul style="list-style-type: none"> • Prices relatively high 	<ul style="list-style-type: none"> • Prices increasing 	<ul style="list-style-type: none"> • Prices higher, more so for higher valued species
<p>QUALITY</p>	<p>QUALITY</p>	<p>QUALITY</p>
<ul style="list-style-type: none"> • Taste not widely ‘foregrounded’ • High value /low volume protein, with emerging ‘non-meat’ proteins 	<ul style="list-style-type: none"> • Taste celebrated (by some) over price • Competing against improving credentials of ‘non-meat’ proteins 	<ul style="list-style-type: none"> • Seafood taste is widely acknowledged
<p>CONVENIENCE</p>	<ul style="list-style-type: none"> • Consolidation drives consistency 	<ul style="list-style-type: none"> • Consolidation drives a supply chain (and delivery) optimised for quality
<ul style="list-style-type: none"> • Availability of seafood relies on complex local/global chains • Product can be mysterious - product innovation mixed 	<p>CONVENIENCE</p>	<ul style="list-style-type: none"> • Higher value, lower volume protein
<p>HEALTH AND NUTRITION</p>	<ul style="list-style-type: none"> • Availability improves as farmed species take hold, species mix broadens, and evolution of store and product formats / online channels 	<p>CONVENIENCE</p>
<ul style="list-style-type: none"> • Seafood ‘health’ recommendations but instances of ‘eat less fish’ advice 	<ul style="list-style-type: none"> • Availability constrained by ‘confusing’ credentials or supply chain disruption 	<ul style="list-style-type: none"> • Availability personalised through store layout, product format, species mix and online channels
<p>WELFARE AND RESOURCES</p>	<p>HEALTH AND NUTRITION</p>	<ul style="list-style-type: none"> • Authentic seafood now competes with non-meat and emerging lab grown protein
<ul style="list-style-type: none"> • ‘Sustainability’ expands to ‘responsibility’ and high profile with food buyers and dieticians 	<ul style="list-style-type: none"> • Seafood competes with plant-based foods on health credentials 	<ul style="list-style-type: none"> • New product formats mean ‘seafood is easier for the consumer’?
<p>WELFARE AND RESOURCES</p>	<p>WELFARE AND RESOURCES</p>	<p>HEALTH AND NUTRITION</p>
<ul style="list-style-type: none"> • ‘Responsibility’ expands to include carbon and animal welfare ... now influencing buyers and dieticians’ advice 	<ul style="list-style-type: none"> • ‘Responsibility’ expands to include carbon and animal welfare ... now influencing buyers and dieticians’ advice 	<ul style="list-style-type: none"> • Seafood widely recognised as healthy, supporting health driven flexitarian diets
<p>WELFARE AND RESOURCES</p>	<p>WELFARE AND RESOURCES</p>	<p>WELFARE AND RESOURCES</p>
<ul style="list-style-type: none"> • ‘Responsible’ supply chains show full credentials on people and planet, as the consumer ‘say-do’ gap contracts 	<ul style="list-style-type: none"> • ‘Responsible’ supply chains show full credentials on people and planet, as the consumer ‘say-do’ gap contracts 	<ul style="list-style-type: none"> • ‘Responsible’ supply chains show full credentials on people and planet, as the consumer ‘say-do’ gap contracts

7.3 Potential impacts and response over the next five years

Changes in the next five years give rise to a wide range of potential impacts (table 7.2).

Table 7.2 Potential impacts for seafood of anticipated changes in the next five years

(+ [green] = positive impact, - [red] = negative impact, +/- [amber] = positive or negative impact)

Processing	Price	Quality	Convenience	Health	Welfare / resources
Pressure to reduce prices and high supply costs	-				
Pressure to reduce portion size ('shrinkflation')	+/-				
Potential for fraud episodes					
Challenge on reputation		+/-			
Assured supply chain a market entry requirement		+/-			
Some supply chains unviable (price, geopolitics)					
Increased availability of high cost farmed supply			+/-		
Scrutiny on sugar/salt/fat challenges shelf life					
Commitments / action expected in supply chains					+/-

Outlets	Price	Quality	Convenience	Health	Welfare / resources
Polarisation and growth of retail discounters	+/-	-			
Price ceiling on seafood	-				
Emphasis on quality tiers (own label v premium)		+/-			
Consistent supply through consolidated suppliers		+/-			
Constrained 'shop window' reduces choice			+/-		
Large multiples demand more product rotation			+/-		
Interest in healthy foods foreground plant options				+/-	
De-listing of seafood products lacking credentials					-

Products	Price	Quality	Convenience	Health	Welfare / resources
Move across formats as prices drive 'trading down'	+/-				
Competition from plant-based options eases	+				
'Cost of living' alters perception of format quality		+/-			
Formats challenged as preferences evolve			+/-		
Health concerns and highly processed products				+/-	
Product certification expected					+/-

Consumers	Price	Quality	Convenience	Health	Welfare / resources
'Cost of living' pressure and increased 'dining in'	-		+/-		
Consumers prepared to compromise on quality		+/-			
Seafood consumers focus on 'affordable' treat		+			
Appeal of fish and chips as 'feel good' option			+		
Dietary advice marginalises seafood				-	
Seafood nutrition v 'contamination' episodes				+/-	
Rely on outlets and experts to ensure credentials					+/-

Older consumers	Price	Quality	Convenience	Health	Welfare / resources
Older generation able to absorb higher prices	+				
Older consumers grow into fish				+	

Gen Z	Price	Quality	Convenience	Health	Welfare / resources
Acute focus on high prices (less able to absorb)	-				
More likely to cut meat (high prices/concerns)	-				-
Savvy on finding lowest prices/'affordable treats'	+/-	+/-			
Scrutiny of big brands and corporates		+/-			
Value convenience to suit fast paced lives			+/-		
Product fit with 'screen time'/grazing lifestyle			+/-		
Desire for personalisation			+/-		
Health conscious and health aware				+	
Low industry awareness, exposure to 'viral media'					-

Several actions for responding to the anticipated changes confronting UK seafood consumption in the next few years, were suggested by stakeholder consultees (table 7.3).

Table 7.3 Response to anticipated changes affecting UK seafood consumption over the next five years – initial suggested actions

Dimension: Price

Anticipated change	Initial action
Price ceiling	<ul style="list-style-type: none"> Explore telemetry (data measurement and monitoring over networked equipment) to manage food energy costs

Dimension: Quality

Anticipated change	Initial action
Taste	<ul style="list-style-type: none"> 'Above the line' marketing focused on taste to encourage consumers to put seafood on the 'shopping list' Influence tastes of younger cohort in primary to tertiary education sector canteens
Consistency	<ul style="list-style-type: none"> Reputation/myth busting support in advance of 'Seaspiracy' type campaigns Invest in seafood product storylines: secure food to eat, good for people and planet Engage and encourage sector representation to endorse best practice and standards Encourage Government ambition for 'All UK fisheries to be accredited' Make certification schemes (like MSC) mandatory to avoid supply chain criticism

Dimension: Convenience

Anticipated change	Initial action
Availability	<ul style="list-style-type: none"> Provide product seasonality and a crib sheet for sustainability 'credentials' Support local industry to provide product information Assess lab grown seafood and its role in changing diets Explore what automation offers younger cohort e.g. self-service kiosks
Product format	<ul style="list-style-type: none"> Develop new product styles, formats, and storylines through 'disruptor' workshops Invest in 'grab & go' seafood targeted at younger consumers emphasising ease and suitability e.g. 'remove that protein and replace with this protein' Promote frozen and ambient seafood to address short shelf-life exposure Collaborate with colleges to increase the number of trained chefs
Versatility	<ul style="list-style-type: none"> Develop simple visual instructions for cooking Encourage retail category directors to drive seafood focused on 'ability to cook' and 'flexitarian diet'

Dimension: Health and nutrition

Anticipated change	Initial action
Health awareness	<ul style="list-style-type: none"> Develop a common language between experts and health professionals Develop fun tests consumers can use to 'assess your Omega 3 level'
Nutritional content	<ul style="list-style-type: none"> Revisit '2-a-week' promotional message: might 'try one more time' be better? Produce pro-seafood nutrition articles

Dimension: Welfare and resources

Anticipated change	Initial action
Resources	<ul style="list-style-type: none"> Support innovation e.g. compostable nets, alternative powered vessels Explore future/alternatives for outer packaging
Climate	<ul style="list-style-type: none"> Profile emissions of major seafood products, and explore 'where next?' to secure efficiency gains Explore improvements and alternatives to trawling

8. Conclusions and recommendations

This review exercise has highlighted how longer-term developments are likely to drive major changes in food and seafood in the next few years. These changes present several challenges for seafood, but also a major opportunity for seafood to be a protein of choice. Industry, Seafish and other stakeholders could actively respond to the anticipated changes or respond to events as they unfold. The latter will require agility and responsiveness.

In the wider world major changes are afoot, driven by economic and food security prospects and climate change. After a long period in which food prices have generally been contained, it is widely anticipated that food prices will rise and continue to do so. This is underway at a time when the wider economy is facing inflation and a potential recession.

Meanwhile the security of food could be challenged because of geopolitical developments. Climate change is expected to disrupt food systems and supply chains. At the same time, the food we produce will be expected to limit its carbon and wider environmental footprint.

Major changes are underway in food expectations. Consumers, particularly younger cohorts, will have new expectations of the food they eat; people and planet considerations are to the fore with a greater intolerance of malpractice. An emphasis on 'responsibility' will mean consumers expect their food to consider these aspects and, in the face of their own wealth constraints, may feel these should come at no extra cost.

Editing food choices on behalf of consumers, food buyers now expect supply chains to demonstrate full CSR credentials. These credentials may become a market entry condition.

Food production may alter fundamentally.

The 'protein window' is likely to become busier with a major shift in protein choice. New alternative proteins are being developed and introduced to the market, there is also the prospect that red meats fall out of favour.

Food availability will be challenged as global trade experiences major disruptions. Recent difficulties could potentially upend supply chains in the next few years. Additional cost will drive industry consolidation which, in turn, will support consistency. In the face of this consolidation, fragmented parts of the industry will require effective collaboration to address pre-competitive challenges and ensure high standards.

Seafood could struggle under tough conditions in the next five years. The next few years could be a period of turmoil as food production systems adjust to new economic and climate related pressures – and this will challenge seafood in several ways. Already a high-priced protein, seafood could suffer as consumers focus on value for money to counter a fall in disposable income. This may give way to an accelerated trend in declining seafood consumption experienced in the 10 years before Covid-19. Seafood may also struggle to be heard, and ultimately sidelined, in debates about healthy eating and what is good for the environment and the planet.

The inherent complexity of seafood and associated supply chains may mean seafood is unable to satisfy the consistent quality and supply assurance buyers are demanding for 'market entry' – risking seafood becoming 'just too difficult'.

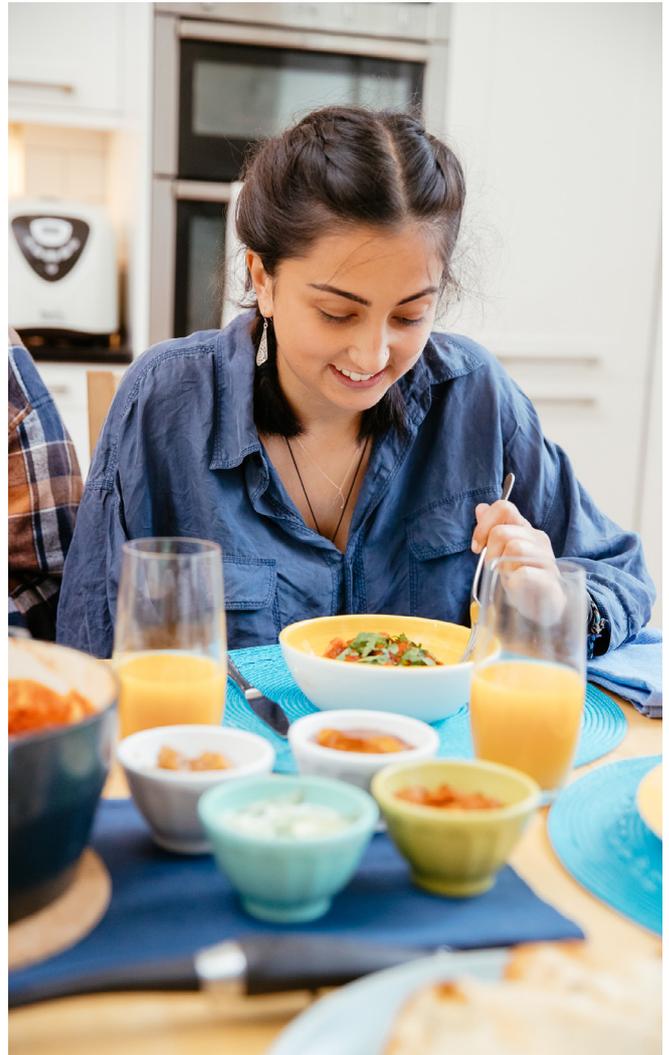
In the face of these changes, seafood has a window of opportunity in the market over the next few years. If the challenges can be met, responsibly produced seafood could be positioned as the protein of choice that benefits people and the planet.

As in the previous review, it is for industry, Seafish and other relevant stakeholders to choose whether to respond to this changing landscape at this stage. Responding could be proactive: involving a range of actions *initiated in advance*. Deciding not to respond at this stage would mean the industry and Seafish are subject to events as they unfold, requiring strong capabilities to react quickly. If there is an appetite to respond at this stage, this review exercise has highlighted the following conclusions and requirements:

- **Seafood's position in the market will be strengthened if it is promoted as a high-quality protein that is value for money.** Seafood is already a relatively high-priced protein facing further price pressures ahead. In order to maintain and enhance market position, seafood must address perceptions and emphasise value for money credentials i.e. not just price but quality and convenience.
- **Efforts should be made to 'foreground' the great taste of seafood to consumers.** In retail, 'above the line' marketing should focus on taste to encourage consumers to put seafood on the 'shopping list'. In food service a push to encourage seafood in canteens of primary, secondary and tertiary education establishments would allow younger cohorts to experience seafood whilst their tastes and diets are in development.
- **Trust in seafood will be enhanced by greater consistency in supply chains** where great tasting seafood products are delivered in a responsibly produced manner. Consistency and trust may be helped by consolidation in some parts of the industry but may be weaker where food production is fragmented. Industry collaboration could mitigate the downsides of fragmentation: sector representation could support responsible practice and standards; effective industry-led platforms could help address pre-competitive challenges – such as managing reputation or myth busting – and ensure seafood 'market entry'.
- **Seafood formats may need to be reinvented to match the needs of key consumers.** Product innovation can be challenging in seafood; in some instances, tried and tested formats may only require incremental change e.g. to meet the needs of older consumers. In other instances, there may be a need to reinvent seafood e.g. 'grab and go' products to fit the norms of a new generation.

- **Health has been a relatively neglected aspect of seafood, yet is a major opportunity** to amplify the merits of seafood and ‘blue foods’ more generally. With more competition in the marketplace, and as nutritional merits of proteins come to the fore, health may become a key battleground of claim against counterclaim. Emphasis should be placed on how seafood is a smart choice that benefits not only people because it is tasty and highly nutritious but, being low carbon, it also benefits the planet.

Finally, these challenges should be addressed in concert with other seafood stakeholders and in an engaged fashion, with efforts directed towards reaching a *common language*. Major advances have been made over the last 10 years by the technical part of the industry, with stakeholders cooperating in a pre-competitive manner on environmental credentials. More recently, advances have been made by the market facing part of the industry cooperating around simpler ‘above the line’ marketing messages – for example through the recent Love Seafood initiative. In this way efforts can be directed towards reaching a shared understanding and ‘common language’ on the challenges faced and responses required. However, new platforms are required for new agendas: health and nutrition is an emerging agenda and provides an opportunity to engage and align with stakeholders in the health community.



9. Bibliography

- Barclays. (2013). *A Summary of Talking About My Generation: Exploring the Benefits Engagement Challenge*. Available at <http://www.emploilr.com/docs/Barclays-study092013.pdf>.
- Birch, D. et al (2018). *Stimulating UK Adolescents' Seafood Consumption*. Journal of International Food & Agribusiness Marketing, 30(1), 61–69.
- Blue Food Assessment (2021) *Building blue food futures for people and the planet*. The Report of the Blue Food Assessment. DOI: 10.25740/rd224xj7484
- Boyd, C.E. et al (2022) *The contribution of fisheries and aquaculture to the global protein supply*. Food Security – published online.
- BritainThinks (2019) *Future Consumer: Food and Generation Z*. Rapid Evidence Assessment for the Food Standards Agency.
- D'Angelo, C. et al (2020) *Food consumption in the UK: trends, attitudes, drivers*. RAND Corporation Europe.
- Defra (2010) *UK Food Security Assessment*. Department for Environment, Food and Rural Affairs, January 2010
- Defra (2022) *Family Food 2019-20*. Department for Environment, Food and Rural Affairs, and Office for National Statistics.
- Defra (2022) *UK Retail price changes by food group*. Food statistics Pocketbook. Department for Environment, Food and Rural Affairs
- Dimock, M. (2019) *Defining generations: Where Millennials end and Generation Z begins*. Pew Research Centre. <https://www.pewresearch.org/fact-tank/2019/01/17/where-millennials-end-and-generation-z-begins/>
- Eyben, R. (2003) *The Rise of Rights: Rights-based Approaches to International Development*. IDS Policy Briefing 17: Brighton. Institute of Development Studies.
- FAO (2020) *The state of world fisheries and aquaculture 2020: sustainability in action*. Food and Agriculture Organisation, United Nations.
- Guruparan, K. and Moynihan, H. (2021) *Climate change and human rights-based strategic litigation: the recent 'rights turn' in climate change litigation is a trend set to continue*. Chatham House briefing paper. The Royal Institute of International Affairs, Chatham House.
- Haidt, J. (2012) ***The Righteous Mind: Why good people are divided by politics and religion***. Penguin Group.
- Foa, R.S., et al (2020) *The Global Satisfaction with Democracy Report 2020*. Cambridge, United Kingdom: Centre for the Future of Democracy.
- Forer, G. et al (2021) *Beyond COVID-19: The Gen Z Perspective*. EY Megatrends 2020 and beyond. EYQ 3rd edition.
- Francis, T. and Hoefel, F. (2018) *'True Gen': Generation Z and its implications for companies*. McKinsey & Company.
- FSA (2020) *The Future Consumer – Food and Generation Z full report*. FSA Research report. Food Standards Agency.
- Garnett, T. et al (2016) *Food systems and greenhouse gas emissions (Foodsource: Chapters)*. University of Oxford, UK.

Garrett, A. (2016) *Fish as Food, a five-year view: an initial review of developments, implications and practical responses from industry and Seafish*. Seafood Strategic Outlook report. Seafish.

Garrett, A., Buckley, P. and Brown, S. (2015) *Understanding and responding to climate change in the UK seafood industry: climate change adaptation for wild capture seafood*. Seafish.

Garrett, A., Burton, C., Cocker, L., Smith, J., Berrill, I., Falconer, L., Telfer, T., McAdam, B., and Pinnegar, J. (2021) *Understanding and responding to climate change in the UK seafood industry: climate change risk adaptation in aquaculture sourced seafood*. Seafish.

Garrett, A. and Caveen, A. (2020) *UK seafood supply base to 2030: An initial review of developments, implications and practical responses from industry and Seafish*. Seafood Strategic Outlook report. Seafish.

Garrett, A., Cooper, L., and Tattershall, L. (2019) *Automation and the UK seafood industry: exploring the trade-offs between new technology, mechanisation and traditional labour resourcing*. Seafood Strategic Outlook report. Seafish.

Garrett, A. and Hatton, G. (2020) *Cod to 2030: A review of the UK's cod supply base and 10 year forward view*. Seafood Strategic Outlook report. Seafish.

Gaydhane, M.K. et al (2018) *Cultured meat: state of the art and future*. Biomanufacturing Reviews 3:1.

Gephart, J. et al (2021) *Scenarios for global aquaculture and its role in human nutrition*. Reviews in Fisheries Science & Aquaculture, 29:1, 122-138

Gerhardt, C. et al (2019) *How will cultured meat and meat alternatives disrupt the agricultural and food industry?* A T Kearney.

Gomez, K. et al (2020) *Welcome to Generation Z*. Network of Executive Women and Deloitte.

Goodhart, D. (2017) ***The Road to Somewhere: The New Tribes Shaping British Politics***. Penguin Random House.

GO-Science (2016) *Future of an Ageing Population*. Foresight report. Government Office for Science.

GO-Science (2021) *Trend Deck*. Foresight report. Government Office for Science.

IGD (2019) *Exploring shopper behaviour when purchasing fresh fish and seafood: Category benchmark report*. IGD ShopperVista.

IFST (2021) *Horizon scanning report*. Institute of Food Science and Technology

Jaggi, G. et al (2020) *Are you reframing your future or is the future reframing you?* EY Megatrends 2020 and beyond. EYQ 3rd edition

Jouffray, J-B. et al (2019) *Leverage points in the financial sector for seafood sustainability*. Scientific Advances 5.

Juan-Torres, M. et al (2020) *Britain's Choice: Common Ground and Division in 2020s Britain*. More in Common.

Kundnani, H. (2020) *The Future of Democracy in Europe: Technology and the Evolution of Representation*. Chatham House research paper. The Royal Institute of International Affairs, Chatham House.

Lieberman, G. et al (2021) *Global Consumer Trends*. Mintel.

- Light, C. and Burton, E. (2021) *An appetite for opportunity: how changing dietary goals can drive growth in retail and consumer goods*. Industry focus report. Strategy&, PWC.
- Loth, S. (2019) *See how food prices compare to 30 years ago and you might be surprised*. Which? Research article (<https://www.which.co.uk/news/2019/11/heres-how-our-food-prices-compare-to-30-years-ago-and-you-might-be-surprised/> - accessed February 2022)
- Marwaha, N. et al (2020) *Alternative seafood: Assessing food, nutrition and livelihood futures of plant-based and cell-based seafood*. Penang, Malaysia: WorldFish. Program Report: 2020-42.
- Naylor, R. et al (2021) *Blue food demand across geographic and temporal scales*. Nature Communications 12:5413
- O'Neill, B.C. et al (2017) *The roads ahead: Narratives for shared socioeconomic pathways describing world futures in the 21st century*. Global Environmental Change 42 169–180.
- ONS (2017) What has happened to the income of retired households in the UK over the past 40 years? Office for National Statistics.
- ONS (2018) Living longer: how our population is changing and why it matters. Office for National Statistics.
- ONS (2018) Young people's earnings progression and geographic mobility, England and Wales. Office for National Statistics.
- ONS (2021) Average household income, UK: financial year 2020. Office for National Statistics.
- ONS (2021) Average household income, UK: The effects of taxes and benefits on household income, disposable income estimate - Financial year ending 2020 edition of this dataset. Office for National Statistics.
- ONS (2021) Estimates of the population for the UK, England and Wales, Scotland and Northern Ireland. Office for National Statistics.
- ONS (2021) Family spending in the UK: April 2019 to March 2020. Office for National Statistics.
- ONS (2021) Labour Force Survey. Office for National Statistics.
- ONS (2022) Consumer Price Index including owner occupiers' housing costs (CPIH). Office for National Statistics.
- Parker et al (2016) *Fuel use and greenhouse gas emissions of world fisheries*. Nat. Clim. Chang. 8 333-337.
- Pedersen, E.H. (2020) *The Global Farmed Salmon Market – Industrial Structure and the Firms' Strategies*. Masters thesis, Nord University.
- Pegg-Darlison, S. (2021) *Seafood in food service Q2 2021*. Seafish.
- Pegg-Darlison, S. (2022) *Seafood in food service Q3 2022*. Seafish.
- RPA and HEC (2020) *The socio-economic value of the impact of increased seafood consumption on Government and NHS budgets, the economy, and population health in England compared to maintaining current seafood consumption levels*. Report for Seafish, March 2020, Loddon, Norfolk, UK.

SACN & COT (2004) *Advice on fish consumption: benefits & risks*. Scientific Advisory Committee on Nutrition and Committee on Toxicity of Chemicals in Food, Consumer Products and the Environment.

Seafish (2019) *Experian Consumer Segmentation*. Love Seafood programme. Seafish.

Smith, E. et al (2019) *Insights into global food system risks and opportunities and their implications for the FSA*. RAND Corporation.

The Food People (2022) *Sixteen Years in Trends*. (<https://thefoodpeople.co.uk/16-years-in-trends>)

Topper, A. et al (2021) *US Foodservice trends*. Mintel.

Tso, R. et al (2021) *A Critical Appraisal of the Evidence Supporting Consumer Motivations for Alternative Proteins*. *Foods* 10, 24.

UK Global Food Security Programme (2021) *The Role of the UK Food System in Meeting Global Agreements: Potential Scenarios*. The Global Food Security programme, UK Research and Innovation.

UK Global Food Security Programme (2021) *The Role of the UK Food System in Meeting Global Agreements: Supporting Evidence*. The Global Food Security programme, UK Research and Innovation.

Van Dijk, M. et al (2021) *An overview of the Scientific Advisory Committee on Nutrition's position statement on nutrition and older adults living in the community*. *British Journal of Nutrition* 126, 1164–1167

Vieira J., et al (2020) *Generation Z and Key-Factors on E-Commerce: A Study on the Portuguese Tourism Sector*. *Administrative Sciences*. 10(4):103.

Watson, R. (2018) *Market Insight Factsheet: Fish and chips in independent fish and chip shops*. Seafish.

Watson, R. (2021) *Seafood in multiple retail*. Market Insight Factsheet. Seafish.

Watson, R. (2021) *GB Demographics 2021: 10 Year Change (volume)*. Seafish.

Watson, R. (2022) *Seafood in multiple retail (2022 update)*. Market Insight Factsheet. Seafish.

Woods, E.T. et al (2020) *COVID-19, nationalism, and the politics of crisis: A scholarly exchange*. *Nations and Nationalism*. 26 : 807–825

WEF (2020) *The Global Risks Report 2020*. 15th Edition. World Economic Forum.

WEF (2021) *The Global Risks Report 2021*. 16th Edition. World Economic Forum.

10. Consultees

We consulted with over 20 stakeholders from organisations such as Aquaesea Ltd, Direct Seafoods, Frozen at Sea Fillets Association, National Federation of Fish Fryers, Norwegian Seafood Council, Nomad, Seafood Scotland, Sysco / M&J Seafoods, Thistle Seafoods, Young's / Sofina, Whitby Seafoods as well as from within Seafish, the Seafish Expert Panel, and the Seafish Consumer and Supply Chain Panel.

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