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Deliverable D3.2

Report on market institutional analysis and implications for competitiveness

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Executive Summary

This report describes the main legal framework for the value chains of the six commodity species (or species groups) that are the focus of PrimeFish; Cod, herring, salmon, trout, sea-bass/sea-bream and pangasius for the European countries Iceland, Faroe Islands, Norway, United Kingdom, Denmark, Germany, France, Spain Italy, Greece, Turkey as well as Canada and Vietnam. At the national specific level, a subset of countries are included; Norway, Scotland, and Newfoundland (Canada) as well as Denmark and Iceland.

The report focuses on the legal aspects influencing the competitiveness at the EU seafood market for EU as well as non-EU based seafood companies. It does not intend to cover the field of regulations which at one hand is a way to establish a common market of fairness and transparency for all market actors, but at the other hand can limit the competitiveness of individual companies. As such the report includes the main regulative framework, and selected national regulations, which might influence the competitiveness of companies on the European market.

The report consists of three sections; first a general section on the regulative framework and competitiveness, second on a supra-national regulation and a third section, examples of national regulation of fisheries, aquaculture and processing and trade.

The supranational regulation sets the framework of international trade agreements in WTO, and other bi- or multilateral agreements, including CETA and TTIP and considerations of the conditions after Brexit (the UK leaving the EU). This section also touches upon the EU regulation of the seafood sector, fisheries and aquaculture, trade tariffs, competition regulation of the increasingly consolidated sector and health and environmental regulation.

The third part of the report addresses central elements of the national regulation; in regard to national implementation of EU (or EEA) regulation, and purely national regulations, which influence the national seafood industry in the competitiveness at the European seafood market. This section looks across four nations and their regulation of fisheries, aquaculture and processing/trade respectively.

The report creates a general overview of the central regulations for the seafood industry competing at the European Market. How these influence the specific value chain and company is highly case sensitive and therefore to be seen in the case studies.

General findings are that the framework for trade and competition is the general international trade agreements WTO, though modified by various supplementing agreements at collective (EU) and bilateral level as EEA (The European Economic Area), CETA (The Canadian-European Trade Agreement) and possibly (TTIP) The Transatlantic Trade and Investment Partnership. Recently, the ongoing institutional shock of Brexit might change the conditions for trade and competition between UK fisheries and the rest of Europe within and outside EU.

Within the EU the companies are regulated by general EU regulations often in national implementation, which allow some national specific differences. Due to international agreements (e.g. the EA agreement) non-EU member states to a high degree are also regulated in the same line as within EU. The primary sector is regulated by the CFP (Common Fisheries Policy), but also influenced by general policies as import regulation, competition regulation (e.g. limits concentration and market control), and environmental regulation and labour market regulations.

In general, the primary sector—fisheries and aquaculture—faces issues regarding entrance and allocation of access rights. The entrance barriers and fishing access through limited entry policies regulate participants in the fisheries, while for aquaculture the issue is spatial and ecological competition with other maritime activities. Especially for the fisheries, the national form of allocation of the rights or access privileges to the resources, influences the development and competitiveness of the industry. The trend has been individual ownership of fishing rights and different forms for transferability between the actors, which generally has led to consolidation and concentration in the capture fisheries. The same trend of concentration is seen in the aquaculture sector in most of the surveyed countries.

Both primary sectors are regulated by fisheries policies (the CFP and national policies), but environmental policies outline further pertinent regulations. In the EU and EEA areas, the Water Framework Directive (WFD) and the Marine Strategy Framework Directive (MSFD) in national implementation are important limitations for the activities. For aquaculture, there are various national regulations and authorities involved in determining site allocations, regional development plans as well as environmental regulations regarding internal environment (e.g. animal health) and external effects in form of emissions, the prevention of disease transmission to wildlife, and genetic intermingling between wild and farmed fish.

Within the EU, entry into the processing or export of seafood is generally not regulated in the same way as the primary activities in fisheries or aquaculture are. The processing sector though faces other legislative barriers, which can influence their competitiveness. Trade regulations regarding raw material access and tariffs on import and export for seafood products are the most important and to some degree general production conditions such as veterinary, technical regulations and labour regulations (including labour costs) are also central for assessing the competitiveness of the national seafood processing industry.

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1. Introduction

In this report a market institutional analysis is carried out on the European seafood market and how it affects the competitiveness of the industry. The report is a deliverable within the PrimeFish project and is a part of WP3, Task 3.2.

The market institutional analysis links to, and should be seen as an integrated part of the Value Chain Analysis, which is the overall theme in WP3, based on global value chain (GVC) analysis (Gereffi et al. 2005, Ponte 2009), as well as the Porter approach (Porter 1990 and 1998) (see more details in the forthcoming deliverable 3.4).

This report is rooted in an institutionalist paradigm, drawing inspiration from authors that recognize how institutions evolve and thus orient firms toward particular practices (North 1990, North 1993, Gereffi et al. 2005). From an institutional point of view governance structures, as the power relations within the value chain (Gereffi et. al. 2005) as well as the formal regulative structures (North 1990), are parts of the market institutions. In addition, values institutionalised into norms or identities can be a part of the institutional framework for the operation of a company, in a specific locality, environment or value chain (Coriat & Dosi, 1998). The value chain analysis will though only address informal institutions if they are seen as an explanatory factor for behaviour of a single company or part of a value chain.

In the PrimeFish context the informal institutions are not central, but might be included as an explanatory factor for the behaviour of a single company or part of a value chain. This report does therefore not evaluate informal institutions, organisation structure, traditions, culture and market path dependency; this will be covered for selected individual case studies where applicable in deliverable 3.4.

It is important to be aware that European seafood companies operate in complex markets with multifaceted interface at local and global level. Therefore, in principle, almost all legal framework and regulation *could* influence the operation and competitiveness of the companies. Nonetheless Deliverable 3.2 addresses the elements of the legal framework at European level, which seem most important for the competitiveness in the value chain of the chosen case species, cod, herring, salmon, freshwater trout, sea-bass and sea-bream. Various regulations influences the operation of an individual company. Seen from a company level some regulation might limit the operation and thereby the possible profitability of the company. In this regard, general regulations are taken into consideration that might have different implementation and impacts between the countries as well as those that seem to create un-level playing fields.

The report thus focuses on the supranational level, WTO and especially the EU regulation, both sector specific and cross-sector regulation, followed by national regulations seen from a Danish, Icelandic, Norwegian, Scottish and Canadian (Newfoundland) perspective. Although the European national regulations for a large part are implementation of EU regulation, there are differences, which influence the competitiveness of the national industry.

The report is made in parallel with development of in depth case studies at company and species group level conducted as a part of WP 3. As such it is based on preliminary experiences, and specific national reports on the legal framework from Denmark, Iceland, Norway, UK (Scotland) and Canada

(Newfoundland). The report is therefore supposed to help focus on the relevant legal aspects in the ongoing process of finalising the case studies.

2. The regulative framework and competitiveness

Criticism is often laid against regulations—sector-specific or environmental—arguing that such laws and statutes limit the competitiveness of firms and the growth. However, as Europe, largely through the EU, has tried to establish a common market, it requires rules by which *all* players or organisations must play. Additionally, as North (1990, 1993) highlights, markets and the coordination of exchange arose in the Western world largely through the ability to defend property rights and establish expectations of fairness and the “institutions that will permit anonymous, impersonal exchange across time and space,” (North 1993). Bromley reminds us of the distinction between property, “a claim to a benefit (or income) stream,” whereas a property right is “a claim to a benefit stream that some higher body—usually the state—will agree to protect through the assignment of duty to others who may covet, or somehow interfere with, the benefit stream,” (Bromley 1992). As markets and Western conception of property pervade our thinking, it can be all too easy to forget that indeed established norms, expectations, and a common understanding of the access to legal recourse in property disputes are important to the performance of firms and their competitiveness.

Consequently, rules and regulations governing seafood Value Chains and their interrelated firms include anti-trust regulations, environmental protection, fishing access privileges and stock sustainability precautions. In addition, the means that Western culture has developed to secure property rights and to enable a degree of predictability of markets—what one can do, which claims one can defend, and the legal mechanisms that allow one to defend those claims.

In addition, the public interest is served through regulations and institutions but also in protecting health and safety, as well as the environment, and against monopolies. Health and safety provisions are relevant throughout the value chain, from occupational safety provisions for fishermen and workers, risk mitigation and accident protocols, as well as consumer protections to ensure safe, edible products. Firms have a shared interest in providing clean and safe products to the market and to the public both ethically, but also because safety recalls and outbreaks affect public confidence in brands and products. Once again, certainty and predictability underpin the reasons for regulation of these value chains.

Nevertheless, regulations may have differentiating impact for less developed versus more developed firms and countries in terms of access to markets and meeting particular requirements. Although equal protection and *equal* distribution or regulatory burden may establish a level playing field, questions of *equity* prevail. Thus, the following text provides an overview of the regulations that firms are subject to in the shared European market and national-level rules.

3. Supra national regulation

The seafood value chains and companies are regulated based on international agreements which are adjusted at lower levels. Here EU trade agreements with European countries via the EEA-agreement, and planned bilateral agreements with Canada (CETA) and US (TTIP) will be briefly discussed as they can change the competitive conditions at the European market. Within EU/Europe sector specific and other, especially environmental regulations are addressed.

3.1 International trade agreements and rules

International trade is in general regulated by international rules set by WTO, The World Trade Organisation. WTO has 164 members, nationals but also EU as a group. WTO (the successor of GATT) has the overall purpose to enable a free flow of trade, as this is seen as important for economic development and well-being. This is done by removing various legal obstacles. In order to get transparent and predictable rules worldwide, so individuals, companies and governments know the trade rules and have confidence in predictability by avoiding sudden changes of policy. At the other hand though also taking into consideration „undesirable side effects“ and therefore some trade barriers could be maintained, e.g. to protect consumers or prevent the spread of disease (WTO (n.d.)a).

This influences the legal framework in this case also. As an example the prevention of spreading of diseases is handled partly by an specific Agreement on the Application of Sanitary and Phytosanitary Measures (SPS Agreement) (WTO (n.d.)b), which concerns the application of food safety and animal and plant health regulations. This can reduce the free trade of items which can spread diseases or endanger the food safety (addressed in 4.3.3). The general principal within the WTO countries is to ensure same trading conditions, that all nations are regarded as Most-favoured nations (MFN). This key principle means that a lower customs duty offered by one member of WTO to another country must be extended to all other members of the WTO. But a country (here EU) can make a free trade agreement with more favourable treatment to the participating states than to the other WTO members (though this is under strict conditions by the WTO). This means that the trade agreements mentioned here: EAA, CETA and TTIP are exceptions from the general agreement under WTO.

3.1.1 EEA agreement

The European Economic Area (EEA), which came into force in 1994, builds upon and furthers the EU's internal market provisions set out in the European Free Trade Area (EFTA). Notable for the cases in PrimeFish, Norway and Iceland are members of the EEA in addition to the EU member states.⁴ When a country joins the EU, it also becomes party to the EEA through Article 128. As an extension of the internal market of the EFTA, “The EEA incorporates the four freedoms of the internal market (free movement of goods, persons, services and capital) and related policies (competition, transport, energy and economic and monetary cooperation),” (EFTA n.d). However, in regard to fisheries, the EU's Common Fisheries Policy (CFP) supersedes and regulates fishing activities within the EU, with certain provisions for the trade of fishery products addressed in the EEA agreement.

⁴ Switzerland, which is part of EFTA, is not part of the EEA. Lichtenstein is part of the EEA.

The implications for processed seafood within the EEA is that some products processed in these EEA countries is not subject to a tariff, whereas products imported into the EEA from outside is subject to tariffs. For example, cod filets processed in Iceland are not subject to an import tariff, whereas cod filets processed in a third country such as the United States would be subject to an 18% import tariff. Consequently, these differentiating taxation schemes affect the competitiveness of firms hoping to sell product on the European market, but also those firms that may choose to outsource portions of the processing to third countries. Nevertheless, trade agreements between the EU and third countries may also differentiate products within the value chain and impact competitiveness.

3.1.2 Bilateral agreements between EU and Canada and USA

The trade conditions are under constant development in on-going negotiations between the EU and third party countries. Notable for fisheries value chains are the Comprehensive Economic and Trade Agreement (CETA) between Canada and the EU and the Transatlantic Trade and Investment Partnership (TTIP) between the United States and the EU. As neither is officially in practice, the effects on value chains are hypothetical and try to capture various possible scenarios. CETA has progressed farther than TTIP, especially in light of the American presidential election and administrative change at the end of 2016 and into early 2017.

Canadian European Trade Agreement (CETA)

The European Parliament voted in favour of the Canadian European Trade Agreement (CETA) on 15 February 2017 and now requires approval from the national parliaments of EU member states before it takes effect. In addition to traditional trade agreement provisions such as the relaxation and removal of tariffs and trade barriers, the agreement also targets the issue of environmental sustainability and good labour practices (European Commission. DG Trade (n.d).a.).

A key component of the agreement is the elimination of customs duties for imports of goods originating in the EU and Canada. Both countries have agreed to fully eliminate tariffs on fisheries products. One factor that has inhibited the Canadian seafood sector's capacity to acquire market share in Europe in the past is the negative effect of tariffs. Canadian fish and seafood exports to the EU currently face tariffs of up to 25%. With the enactment of CETA, those tariff rates will change. When the agreement comes into force, almost 96% of EU fish and seafood tariff lines will be duty-free. Seven years after CETA comes into force, 100% of these tariff lines will be duty-free (European Commission 2016, International Trade Division Canada 2017).

Table 1. EU tariff elimination under CETA, selected products within the PrimeFish case species (cod (whitefish), herring, trout and salmon).

Upon entry into force, 96% of EU fish and seafood tariff lines will be immediately eliminated (2015 rate shown):
Fresh or chilled hake (15%)
Dried and salted cod (13%)
Frozen herring (15%)
Frozen mackerel (20%)
Fresh or chilled halibut (15%)
Fresh mussels (8% or 10% depending on species)
Salmon (2% to 15% depending on species)
Processed salmon (5.5%)
Remaining EU fish and seafood tariffs will be phased out over 7 years (2015 rate shown):
Frozen fillets of cod (7.5%)
Processed fillet of trout, including smoked (9% and 12%)

Source: International Trade Division Canada 2017.

Canada already has market access to the EU for certain fisheries products through autonomous EU tariff rate quota (TRQs). To facilitate the transition to CETA, the EU will offer two transitional duty free TRQs for 23,000 tonnes of Canadian shrimp and 1,000 tonnes of frozen Canadian cod. TRQ's will expire once tariffs have been fully eliminated under CETA (European Commission 2016).

Elimination of tariffs through CETA will make Canadian seafood products more competitive in the EU and is expected to unlock new opportunities by opening new markets for fish and seafood exports, which already in 2015 reached 599 million Can \$ (appr 400 mill. €) (European Commission 2016, International Trade Division Canada 2017). The CETA agreement will give Canada a time-limited first-mover advantage at the EU market over a range of competitors also negotiating special trade agreements: Vietnam, Thailand, India, United States, Argentina and China. Canada currently ranks 10th among fish and seafood suppliers to the EU with a 2.4% share of the import market (International Trade Division Canada 2017).

The CETA agreement includes other requirements and exceptions from the general rules. As an example, the CETA Rules of Origin Matter, where Canada accept its exports of fisheries products should meet the preferential Rules of Origin (RoO) of the EU. Due to difficulties for certain Canadian exporters to meet these rules a limited number of products and within a limited volume of imports are excluded (European Commission 2016). In general the export with preferential tariff treatment in the EU should be wholly obtained, but some processed product of e.g. prepared or preserved salmon and processed herring within some limits can contain materials imported from countries other than EU. Independently of CETA, Canadian seafood export must meet a range of general EU criteria as other fish and seafood exported to the EU (see 3.2.2). The products must come from an approved establishment, a catch certificate documenting legal catch, labelling according to the EU regulation of 2014, health certificate from the Canadian Food Inspection Agency and respect to the EU requirements regarding maximum Residue Levels (for example, cadmium in oysters (International Trade Division Canada 2017).

Transatlantic Trade and Investment Partnership - TTIP

The negotiation between the EU and US regarding the Transatlantic Trade and Investment Partnership (TTIP) continues and the deal's future is uncertain after the 2016 American presidential election. President Barack Obama and his administration had worked with EU leaders to develop the trade agreement, but President Trump has indicated he may not sign TTIP.

TTIP is a wide ranging multinational trade deal linking the American and European markets for trade and harmonization of practices and standards. Fisheries value chains would be affected by TTIP in various ways. Leaked documents received in May 2016 and dated March 2016, reveal that “the objective [*in the field of fisheries*] is to have complete liberalization in this sector, with a symmetrical dismantlement of tariffs for the sensitive products” (Anon 2016, p 5).

The potential, direct impact of full market liberalisation is not known, but based on the overall indications (below) appears to open the EU market in general more than the US market. The value of all export of seafood from EU to US of seafood made up 10-14 % of all export value (and 5 % of total import value) the outcome of this agreement might be of significant importance for the EU seafood industry and its competitiveness. At present most products are without import tariff for EU export to the US, with few exceptions, such as frozen flatfish and sardines, a few fresh products, salted dried or smoked herring and mackerel in certain packages , crab meat and others (European Commission. DG Trade (n.d.)b). Most fish products imported into EU are subject to an import tariff up to 22% (European Commission 2015).⁵

The indirect consequences of the TTIP are even less clear. In the negotiations the TTIP is quite comprehensive and will apparently include regulatory cooperation, which might influence on the general regulative systems in the EU –in the catch and aquaculture sector, as well further in the value chain.

Studies on the impact of TTIP estimate a 9% rise in the European processed foods sector, which captures some aspects of fisheries value chains. Fisheries is subsumed under a shared category with Agriculture and Forestry, may benefit from the very small projected output increase of 0.06% (European Commission 2013b). However, there is some uncertainty in this estimate because of the model's inability to fold in weather events and natural disasters that affect agriculture. Moreover, very little detail is provided specific to fisheries in the European Commission's report, based on the study conducted by the Centre for Economic Policy Research (Francois et al 2013). A study utilizing a different methodology has been less positive toward the gains projected by the CEPR report (Felbemeyr, Heid, and Lehwald 2013).

The 2016 election of American President Donald Trump resulted in questions to the viability of the TTIP in its current form and whether central tenets of the trade agreement could be rectified.

⁵ Regarding fisheries, the leaked documents from the 12. Rounds of negotiations just state:
Fisheries

As part of the 12th negotiating round, the EU and the US held a discussion on market access in the area of fisheries. The purpose of the meeting was to explore each side's export interest with a view on how to balance those with respective sensitive domestic interests. Both Parties explained their offensive and defensive interests. The US will now need to complete and improve its offer to reduce the current gap. The objective is to have complete liberalization in this sector, with a symmetrical dismantlement of tariffs for the sensitive products.

Various scenarios in connection to the Trump Administration and TTIP exist, here from Tereza Novotna 2017, Post-doctoral researcher at the Institute for European Studies at Université libre de Bruxelles in Brussels. On one end of the spectrum, TTIP could be completely dismissed by the US and negotiations would either start again or come to a complete standstill between the EU and the US. At the other extreme, the Trump Administration could push forward on TTIP seeking to get the agreement in place. There are other variations to these scenarios, where the timeline for agreement is greatly elongated, perhaps past Trump's Presidency, as it does not merit a top priority of his administration. There are still questions as to the public acceptance among Europeans, especially if the deal morphs toward the "America first" rhetoric expounded by President Trump and appears to overwhelmingly benefit American multinational corporations (Novotna, 2017).

3.1.3 Potential Implications of Brexit

UK has been an integrated part of EU since 1973 with full integration also in the Fisheries policy. But in 2016 UK chose to leave the EU and negotiations are still to take place regarding the terms under which the UK will leave and continue to interact with the EU. There is a lot of uncertainty around the outcomes of Brexit with consequences for the UK seafood sector as well as the seafood sector in the rest of the EU. It has been indicated that the UK will pursue a 'hard' (or 'clean') Brexit where the UK will leave the EU's Single Market in order to reclaim control over immigration and regulations.

Regarding trade of seafood products, a Brexit might change relations on the markets. Seafood originating from the UK (fisheries or aquaculture), is largely exported for overseas consumption, mainly the EU countries, while UK consumption is largely dependent on imports. In the EU single market there are no tariffs on goods moving between Member States. But as Garrett (2016) notes, without tariffs UK exports/imports would trade at world prices, governed by WTO rules. Although 'most favoured nation' (MFN) tariffs in the EU have been moving downward, and tariffs incurred on seafood products under WTO/MFN rules are moderate, UK seafood exporters and importers would be subject to challenging price competition from lower cost nations. There may be possible transitional 'EU free-trade' agreement in key sectors. Nevertheless, in 2016, Noble et al. (2016) reports that processing industry members express concerns regarding lack of information regarding what new terms of trade would replace existing trade agreements as a significant source of uncertainty, hindering business planning.

The UK seafood processing industry relies heavily on EU and EEA workers. In the Scottish fish processing industry, for example, local highly skilled long-term staff forms a smaller share of the processing labour force, with workers usually in their late career stages and fewer young recruits. A restriction on entering/staying in the UK by migrant workers can create difficulties in this sector (BDA Plus, 2015). Industry representatives have expressed anxiety around what arrangements the UK would implement for existing EU staff. Being able to continue to recruit EU and EEA staff in the future is considered to be very important (Noble et al., 2016).

The Common Fisheries Policy (CFP) is particularly unpopular among British fishermen. It is blamed for having taken away fishermen's livelihoods and 'giving away' UK fish. However, analysis of historical data for the UK shows that the decline of catches occurred prior to the introduction of the CFP in 1983 (Thurstan et al., 2010). Nevertheless the common fisheries policy and the agreement on relative stability has distributed fish quota for fish caught in the British zone to fishers from other countries of historical reasons. Furthermore there is a significant "foreign ownership" of the UK

quota, by vessels sailing under British flag and holding UK FQAs but landing the catch in the country of *de facto* ownership, typically Spain or Holland. With the Brexit, UK can leave also the agreements around the CFP and regain the rights of access to the UK 200 nautical miles marine territory (or the midline to closer nations) according to the UN Law of the Sea. Brexit therefore might have important consequences for reallocation of the rights to fish in the UK waters, as the access to the UK EEZ by foreign vessels and to EU waters by UK vessels would be subject to negotiation.

The UN Law of the Sea Convention requires a Nation State to conserve and manage marine resources, co-operate to conserve and manage specific stocks, and the trade-offs between conservation and fishing. There would therefore be a requirement for some kind of arrangement to support fisheries management, access, data collection and marine conservation (Garrett, 2016).

3.2 EU regulation of the seafood sector

3.2.1 The European Common Fisheries Policy, CFP, including aquaculture

The CFP is a set of rules for managing European fishing fleets and conserving fish stocks. Designed to manage a common resource, it gives all European fishing fleets equal access to EU waters and fishing grounds and allows fishermen to compete fairly.

The CFP is pertinent to the first stage in the seafood value chain, determines fishing access rights for particular Member States and the Total Allowable Catch (TAC) for species in EU waters. The CFP determines the governance and management of marine fisheries in EU waters (European Council and Parliament 2013).

The fisheries management and control limits the resources available in form of Total Allowable Catch (TAC), the amount of fish landed in total, usually set on a yearly basis. The yearly TAC is then divided and allocated among the member states and at national level between the participants in the fisheries. The distribution between the member states is regulated by the relative stability, while the distribution mechanisms to the fishers at national level differ. These limits on both the total amount of fish landed and how it is distributed among Europe's fishers influences the volume of intra-EU supply of material for the seafood sector.

The CFP creates an organisational framework for fishers with the Producers Organisations, POs as the central organisational unit for the catching sector. The market organisation in the CFP further defines the consumer information and thereby set a basic standard for information to be attached to the fishery and aquaculture products sold to consumers and mass caterers. (see 2.3.2 regarding the POs special position in the competition policy)

The CFP also contains a paragraph on promoting sustainable aquaculture. This is elaborated in a document on strategic guidelines for improving sustainable development of EU Aquaculture (European Commission 2013a), which points to simplifying the administrative procedures and coordinated spatial planning as central factors for enhancing the EU aquaculture sector.

3.2.2 Regulation of import of seafood

Import of seafood into the EU is regulated by implementation of the principle of quality management and process-oriented controls throughout the food chain. To implement these harmonized principles, the Food and Veterinary office of the European Commission is undertaking missions in all exporting countries. If positive, the European Commission recognises and certifies the competent authority of the non-EU country. For all fishery products, countries of origin must be on the positive list of eligible countries for the relevance product. The eligibility criteria include specific key elements:

- competent authority, which guaranties that animal health controls and monitoring programmes are enforced,
- hygiene and public health in the value chain from aquaculture or vessels, landing sites, processing, freezing and storage,
- a close monitoring of the production areas to exclude contamination with certain marine biotoxins and finally
- specifically in aquaculture, control plans on heavy metals, contaminants, residues of pesticides and veterinary drugs. (European Commission n.d.)

Further imported products are obliged to be labelled with a range of product information; name of the product, production methods, country of origin, presentation, net weight, EU seller, EU approval number and nutritious content (Blaha, 2008).

Besides the health and quality regulation imported seafood is regulated by trade tariffs and contingents for specific fish products, as mentioned in the general trade description in 3.1. The tariff and contingents also form a central framework condition for the value chains. Every third year the EU establishes autonomous tariff quotas for specific fish and fish products. The autonomous tariff quotas are quantity of products which can be imported into EU at a tariff rate lower than the ordinary. These tariff quotas are established to increase the supply of raw material to the EU processing industry. The quotas of product imports are specified to certain timeframes within the year in order to stabilise raw material supply for the industry. Outside of these specified timeframes and in situations when the tariff quotas are exhausted, the low tariffs of typically 0%, 4% or 6% increase to a 10-15% import tariff.

The duty and tariffs are specified on product categories, and country, following the different types of trade agreements, as mentioned in the introduction to section 2. A general tariff for the Most Favoured Nations (MFN), according to the WTO agreements, but different tariffs for some former colonies, EEA countries and bilateral agreements.

This means that the exact trade conditions, tariffs, quotas and other regulations regarding requirements of approvals and documentation for production conditions, health and safety etc. can be quite complex. To ease the process of trading under such complex regulation, EU has establish a

database where the exact updated regulation can be found at the “Market Access Database” (MADB) <http://madb.europa.eu/madb/indexPubli.htm>. (European Commission. DG Trade (n.d.)⁶)

3.2.3 Competition regulation

The Competition regulation in some cases has influenced the competitiveness of companies in the European Seafood market. In general the competition regulation is established in order to reduce distortions to competition within the internal market through merger control, antitrust enforcement, and state aid control (see the box below). The responsibility for enforcement of the rules is in the hand of the Directive Generale Competition (European Commission DG Growth (n.d.), Consolidated version).

Antitrust

Antitrust is an important tool to protect European firms from practices that adversely affect competition such as price fixing, patent abuses, capacity hoarding, or the prevention of cross-border activities.

Merger Control

Merger control ensures European consumers and businesses are protected against price increases and other anti-competitive effects resulting from mergers, whilst simultaneously helping firms in restructuring and enhancing their global reach through mergers.

State Aid Control

State aid control is essential to avoid distortions in the Single Market, whilst also ensuring that subsidies that promote the competitiveness of sectors and companies are allowed. The EU's State aid regime - a system that is unique in the world - provides a framework that focuses aid on addressing market failures.

Textbox 1: Competition Policy – three strands. From European Commission DG Growth (n.d.)

There are examples of use of the different elements of the Competition policy.

The general anti-trust regulation is derogated in regard the producer organisations in the fisheries, which are regulated in the regulation 1379/2013 (European Parliament and the Council 2013) setting the conditions for the producer organisation for the fishery. In principle the standard competition rules also apply to fishery and aquaculture products, but there are some specific derogations. The derogations regards especially article 101(1) in the TFEU (Consolidated version of the Treaty) which regards prohibition of “directly or indirectly fix purchase or selling prices or any other trading conditions.” This allows the POs to make “agreements, decisions and practices of producer organisations which concern the production or sale of fishery and aquaculture products, or the use of joint facilities for the storage, treatment or processing of fishery and aquaculture products.” (European Parliament and the Council 2013).

⁶ Direct link to specifying the product, country etc. can be found at the link below:

http://madb.europa.eu/madb/datasetPreviewFormATpubli.htm?datacat_id=AT&from=publi

Merger control has been used in the seafood sector in a few instances, mainly in the relative high-consolidated aquaculture sector, where the competition rules have been used to control and limit mergers (e.g. Marine Harvest – merger of Morpol, which the Commission saw as establishing a monopoly at the Scottish salmon market. In order to address the Commission's concerns, Marine Harvest committed to divest the largest part of Morpol's salmon farming operations in Scotland, based in Shetland and the Orkneys. These divestments address the competition concerns created by the merger, because they remove a substantial part of the overlap between the parties' activities in the relevant market. (European Commission 2014b and c). However, according to the case-database of DG Competition there are only few examples of EU objections to state aid or mergers in the fisheries processing sector

Finally the state aid control has previously been used against Norway, and latest in a situation where the European Commission based on complaints from several European member states announced the initiation of an anti-subsidy proceeding with regard to imports into the Union of certain rainbow trout originating in Turkey. The relative complex proceeding concluded that a number of Turkish trout farms had received state aid and countervailing duty rates, expressed on the CIF Union border price, customs duty unpaid, were put on import from a number of named Turkish trout companies (European Commission 2014a)

3.3 Environmental and labour regulation

3.3.1 Environmental regulation

Other areas of EU policies can strongly influence especially the primary sectors, which forms the first link of the seafood value chains, and thereby the competitiveness of the total sector. Especially three so called “framework directives” are of importance; The Water framework directive, the Marine framework strategy directive and the framework directive for maritime spatial planning. The EU framework directives sets a framework of general goals and methods for development at the specific area. But it is within national processes that the specific objectives of the policy, the means to reach the objectives as well as implementation are to be obtained. Therefore, despite of the same framework directives, the specific configuration of means will differ between the countries, and therefore the consequences for fisheries and aquaculture might also differ.

The **Water Framework Directive** (European Commission, 2000) intends to achieve good qualitative and quantitative status of all water bodies in the EU. The directive aims for good environmental status for all ground and surface waters, covering inland waters and marine waters up to one nautical mile from shore. The overall goal, cleaner water will give better living conditions for aquatic ecosystems, and thereby also for the fisheries. But restraints on emissions of nitrate and phosphorus from aquaculture has been the barrier for growth for land- and sea-based farms in some places.

The **Marine Framework Strategy Directive** aims to protect the marine environment in Europe by reaching “Good environmental status” within 11 descriptors. Among these descriptors, four relate especially to the fisheries: Biological diversity, Commercial exploitation of fish and shellfish, Foodweb integrity, and Seafloor integrity. Notably, seafloor integrity broadens the perspective from what was traditionally fisheries policy, and has in some cases led to closures of larger marine areas (also fishing

areas), not due to protection of target species or bycatch, but due to concerns of seafloor and broader ecosystem issues (European Parliament and the Council 2008).

The **Framework Directive for Maritime Spatial Planning** (European Parliament and the Council 2014) aims to ensure that human activities at sea “are as efficient and sustainable as possible. Maritime spatial planning involves stakeholders in a transparent way in the planning of maritime activities” (European Commission. DG Maritime Affairs 2016). The specific Maritime Spatial planning could limit the operational areas for the fishing fleets, but could also ensure sea areas for fishing and especially aquaculture activities by reserving these areas for these purposes.

3.3.2 Labour market regulation

In an addition to the free movement of goods, the EU and the EEA have also prioritised the free movement of European citizens in search of work. The EU member states, in addition to the EEA signatories of Iceland, Norway, and Lichtenstein, allow citizens of their countries to move and reside in other EEA countries for the purpose of employment. The European Commission outlines the rights of EU citizens in this regard, as these persons can:

- Search for work in another EU country
- Work in another EU country without a work permit
- Reside in another country for the purpose of work
- Remain in the country after the employment is done
- Be treated equally with nationals in access to work, working conditions, and other social and tax benefits (European Commission. DG Employment, Social Affairs & Inclusion (n.d.)).

The free movement of workers within the EEA can benefit firms operating within these countries as they have access to a larger labour pool and reduce the concerns for work permit applications for European citizens. In addition, the free movement of labour also allows firms to recruit workers with particular skillsets within all countries within the area EEA, not only those within their member state.

4. National regulation, central elements (in selected countries)

This section focuses on central legal frameworks for seafood value chains at the national level, based on experiences from six of the PrimeFish countries: Denmark, Spain and UK (all within the EU), Norway and Iceland (both under the EEA) and the Atlantic Canada/Newfoundland (outside both the EU and EEA). Relevant to PrimeFish, the section covers capture fisheries in Denmark, Norway, Iceland and Newfoundland and aquaculture in Denmark, Spain, Norway and the UK (Scotland). The focus is on legal elements functioning as barriers to entry or influencing the competitiveness of the seafood companies. This section does not cover all legal issues influencing the companies in the seafood value chains, but those that are salient to the case studies in PrimeFish and would be relevant to those establishing new businesses.⁷

In general, the primary sector—fisheries and aquaculture—faces issues regarding entrance and allocation of access rights. The entrance barriers in the fisheries regard regulation of participants, while for aquaculture it regards spatial and ecological competition with other maritime activities. Especially for the fisheries, the national form of allocation of the rights or access privileges to the resources influences the development and competitiveness of the industry. The ownership form and possibility of transferability, which often results in consolidation and concentration in capture fisheries (McCay, 1995 and Eythórsson, 2000). Furthermore, different types of environmental regulation influence the primary sector. In contrast, fewer sector-specific issues influence processing and trade segments of the value chain, but general production conditions, labour regulations (including labour costs) and tariffs and duties for import and export of seafood items affect competitiveness.

4.1 Fisheries

Fisheries and fishing activities are regulated in order to secure a sustainable use of the resources; in EU according to the CFP and its implementation in national policy. Fishing access, primarily through limited entry policies, often requires that fishers register or hold a license to fish. In many nations, fishing access is further limited by catch shares, which require fishers to obtain shares of quotas of certain species in order to go fishing and namely to land the fish caught. Apart from the conservation focus of the regulations, economic, as well as social and regional, interests are central.

4.1.1 Limited entry

Some countries limit fishing access to those individuals registered as a fisher (Norway, Iceland, Denmark and partly Newfoundland, see boxes below). Proving one's status as a registered

⁷ The following text and text-boxes are based on un-published working papers: 1) Kvalvik, I, Isaksen, J, Svorken, M. Hermansen, Ø. 2017 Norwegian regulative framework and industry competitiveness. PrimeFish WP 3.2 – Norwegian input to deliverable T3.2. Nofima, Næring og bedrift. 10. march 2017. 2) Taskow, D. 2017 Formal regulation within the UK seafood sector - A report contributing to Deliverable 3.2, University of Stirling, March 2017, 3) Manuel, H. and Hayter, R. 2017 Memorial University. Fisheries Management in Canada. Newfoundland and Labrador. March 2017 and 4) Santiago, J.L and Chapela, R. and Jose L. Santiago, Rosa Chapela, Fernández González R. 2017 Spanish Aquaculture Legislation Framework, CETMAR March 2017. 5) Knútsson, Ö and Gunnlaugsson, V. N. (2016), Icelandic cod value chain. PrimeFish WP3 input, UICE and Matis 6) Stefansson, G and Sigurdardottir, S (2016), The herring value chain in Iceland, WP3 input, MATIS

commercial fisher or the owner of a vessel (or the main part of the owners of the capital behind the vessel) can be a precondition for holding registered fishing vessel licenses and receiving or buying fishing rights. In Norway and Denmark the establishment and maintenance of commercial or active fisher status is based on history of being a fisher, being economically dependent on fisheries and in some cases citizenship in the respective countries. In contrast, the nationality is restricted for the vessel, not the fisher, in the Canadian Atlantic Fishery Regulations (Department of Justice 2017). In a similar way in Iceland, according to Fisheries Management Act No 38/1990, no one can catch fish inside the Icelandic economic zone without permission from the Ministry of Fisheries, and licences are allocated for one year at a time (Anon, 1990). As such the barrier to free entry can be seen as a protection of national/regional interests and as such a social concern, *“meant to secure that the remuneration and returns from fishing (and potential resource rent), is channelled back to local coastal communities”*, as expressed in the Norwegian case.

In the UK there is no entry barrier to be registered as a fisher. Foreign skippers have been able to register their vessels in the UK ship register and buy one (or more) of the restricted fishing licences. Consequently, foreign vessel owners have acquired fishing access privileges and UK quotas by buying the vessels and licences needed. This has resulted in many Dutch and Spanish owned and driven vessels to be active in the UK fishery or the fishing of the UK's quotas. Notably, there have been several attempts to force the foreign ownership out, e.g. by requirement of 75 % ownership of vessels by resident UK nationals (in 1988), but this was overruled by the EU commission (Hatcher et al., 2002).

It has been argued that international trade of fishing rights could possibly increase the efficiency of the fisheries (Hatcher et al., 2002). On the other hand, restrictions to foreign ownership represents an important political issue, which was demonstrated in the failed introduction of “transferable fishing concessions” in the proposed CFP reform in 2013, largely because of the fear of transferability among states (Lado, 2016). Foreign ownership of vessels and quotas has also been used by those arguing in favour of the Brexit referendum of leaving the EU—and thereby the CFP.

4.1.2 Quota allocation at national level

The means by which the national quota is allocated to fishers influences the structural development of the fishing industry, and thereby the competitiveness in seafood markets. The major issue in this regard is their *transferability* and often resultant concentration of the fishing and quotas. By allowing concentration of the quotas on fewer vessels, it is possible for the more efficient fishers to buy quotas from the less efficient and in that way establish advantage of scale in the sector as has become evidence in the Icelandic ITQ system. A precondition of being able to transfer and concentrate the quotas is some kind of private (individual or group) right or ownership to use the resource. In four of the countries studied here (Denmark, Norway, Iceland and Newfoundland) the right to fish a certain quota was at first connected to the vessel (and thereby indirectly to the vessel owner), meaning that it could only be transferred as a whole with the vessel. In Norway and Denmark this has later been softened so rights to quota can be transferred without the vessel. In Denmark, where the transferability is linked to the right to quota shares, these also can be traded in fractions.

In Iceland, a comprehensive management system based on individually transferable quotas (ITQs) has been in effect since the beginning of 1991 (Anon, 1990). At first the system only applied to vessels

larger than 6 gross registered tons (GRT), but in the early 2000s smaller boats were also incorporated into the management plan. Both quota shares and harvest rights (see box) may be transferred between vessels but transfers from vessels operating under the hook-and-line quotas to vessels operating under the regular quota system are though banned. Vessels must however utilise at least half of their harvest rights each fishing year or else forfeit their quota shares. The combined quota shares of vessels held by individual parties in each fishery may not exceed a certain maximum which differs between fisheries. Quotas of different species may be added together using cod equivalents which are a special accounting unit defined under the Fisheries Management Act, and based on the market value of each species compared to the value of cod. The combined quota holdings of each firm, measured in cod equivalents, may not exceed 12% for vessels operating under the regular quota system, and 5% for vessels using hook-and-line. The ITQ system in Iceland has led to considerable consolidation, both among larger and smaller vessels. At the start of the fishing year 2014/2015, the 25 largest firms operating vessels in the regular system held almost 75% of the quota. The consolidation was not quite as pronounced among smaller vessels, with the 25 largest firms operating hook-and-line quotas holding a combined share of 57%.

In Norway and Newfoundland, transferability is limited to the merging of two vessels if one of the vessels is scrapped. The reduction of the fleet without public funding seems to be a central purpose here. Denmark has followed the route of Iceland on ITQs, allowing stronger concentration of quota shares. Nonetheless, unlimited concentration is not possible, as there are certain limitations on the concentration of quota ownership in Denmark. The regulation of concentration has been questioned recently as some “ingenious” fishers have found legal ways to *de facto* control larger shares of the quota than intended in the law (Abrahamsen, 2017). The issue discussed in the Danish context is whether the concentration of quotas leads to a capital concentration, which allows these larger fishing operations to outmatch the minor, individual fishers and smaller fishing companies by being able to pay more for vessels/quota shares. This aspect of disfavouring segments of the fleet or regional interests is though a subset of the general purpose of the limits on concentration through regulations, which is to avoid monopolies and secure competition within the fishing industry (as described in 2.3.3).

The issue of protecting small-scale fishing and minor, smaller ports is a consideration in the resource allocation in all the countries studied here. In Norway there are restrictions on transferability of rights between regions and vessel types, as well as obligations to land portions of the catch regionally. Additionally, the coastal fleet is guaranteed a share of the quotas. Up to 6 % of the national quota of cod, haddock and pollock is allocated to a so called “open group” of registered fishers on small vessels (mainly side-line fishers). They can freely fish a weekly defined quota. This system works as a field for recruitment of fishers and for some for a slow or early retirement from fishing. In Denmark a special coastal fishery arrangement has been settled with the introduction of ITQs in the demersal fisheries in 2007. The vessels under the coastal fishery arrangements are granted extra quota of especially cod; quota cannot be sold out of the group of designated coastal fishers, but quota can be bought into this group. The vessels can leave the coastal fishery after at least three years in the arrangement. Then they are allowed to sell their quota to vessels outside the coastal arrangement. Directly for recruitment a minor share of the national quota is reserved for young fishers, which can use a certain quota for a few years, before they have to buy quota. In Newfoundland the main part of the quotas for many of the demersal species are allocated to the

coastal fleet (i.e. inshore and near shore vessels < 65 ft). Especially in a period with low stocks and quotas, this leaves very little demersal resources to the larger vessels in the offshore fleet.

Likewise in 1990 the Ministry of Fisheries in Iceland was permitted by law to compensate fishing companies experiencing a significant income loss, by a temporary increase in their total allowable catch (Anon, 1990). A special ITQ for relevant regions, a regional quota, was first implemented in 1990 when the authorities decided to motivate fisheries to reduce the numbers of fishing vessels. If a particular region lost a significant amount of their total ITQ, because of this public objective, the Ministry of Fisheries could compensate the community concerned by increasing their total allowable catch to reduce the anticipated negative local economic impact of that policy. The objective of the regional quota was widened in 1995, so that it could be activated whenever a certain community had a significant negative change in the ITQ, but not only when a ship was sold as had been the case. Now a fishery in every municipality in Iceland could apply for compensation. The Icelandic Regional Development Institute (Byggðastofnun) was in charge of the regional quota. Iceland introduced in 2009 a new system for small boat called costal fishing (strandveiði) to allow newcomers to enter the system without holding quota as well as supporting fishing villages around Iceland (Anon, 2016). All registered boats, including those holding quotas, may join the fishery which runs during May, June, July and August. The fishing grounds off Iceland are divided into four areas and a pre-determined cod-cap set for each month in each of the areas. The fishery is an open-access fishery and fishing in each month and area is suspended once the cap is reached. Each boat may employ a maximum of four hand-lines, with daily catches limited to 650 kg. Coastal fishing is allowed four days a week where each fishing trip cannot be longer than 14 hours. In 2007 9,200 tons of demersal species was allocated to Costal fishing. A total of 560 boats took part in the coastal fishing in May 2017. By comparison, 277 boats operated under the hook-and-line quota system at the beginning of the fishing year 2016/2017.

The allocation of rights to participate in the fisheries, as well as the resource allocation is often restricted in order to secure employment and resources in different segments of the fleet or regions. This might reduce the opportunities for the national industry to concentrate and consolidate and in a way, harvest the competitiveness of economy of scale.

4.1.3 Other regulations in the fisheries:

The labour regulation of EU means that while ownership of the vessels is restricted to national fishermen, there are opportunities to employ crew from EU following the Schengen agreement (as described in 2.3.2). In Norway the participation act restricts the level of foreign labour leading to a level of 5-10 % foreigners of the total employment on fishing vessels.

Text boxes 2: Case-boxes on Central fishing regulations in regard limited entry and quota allocation in Norway, Iceland, Newfoundland and Denmark

In Norway, the fundamental act for harvesting of marine resources is the Marine Resources Act (Nærings- og fiskeridepartementet 2008). The Marine Resources Act clearly states that the living marine resources belong to the Norwegian society as a whole. Its purpose is to ensure sustainable and economic profitable management of wild living marine resources, pursuing a precautionary and ecosystem approach, ensuring harvesting methods reducing the potential negative impacts. Moreover, it promotes an allocation of resources, which should help ensuring employment and settlement in rural communities. This is partly implemented in provisions (Participant regulation and concession regulation) which defines who can participate in commercial fishing. And other provisions regulates the structuring of the fishing fleet and vessels ability to increase their quota basis for respectively the coastal fleet and the off-shore fleet. In the license provision (for the off-shore fleet) the level of concentration (maximum share of group quota allocated to one owner) is regulated, hence creating a kind of anti-trust regulation.

The Participation Act (Nærings- og fiskeridepartementet 1999) regulates who can fish for a living (and acquire a licensed fishing vessel for commercial reasons). In order to fish a commercial license must be granted, which can only be given to Norwegian citizens (for vessels above 15 meters) and to active fishers. Further the level of foreign labour is restricted. This is a central principle in Norwegian fisheries policy, meant to secure that the remuneration and returns from fishing (and potential resource rent), is channelled back to local coastal communities. The Participation Act regulates the need for limited entry, through vessel allotted licenses and annual permits, even though some fisheries remain open to entrants. It also gives the authorities the right to withdraw fishing rights or issue and allocate new fishing rights when conditions open for it, and the flexibility to alter the quota shares allocated among vessel groups and the regulation of fish stocks.

Fishing rights are in theory not tradeable, since they are unsolvable associated with a vessel. In practice, however, rights are often traded by intricate transactions involving vessels, but dependent on authorities' approval. The approval is more or less formal after a new governmental order in 2015, where fishing vessel owning companies were given the opportunity to agree privately on the transfer of a fishing permit/license without simultaneously transferring the vessel to which the permit originally belonged. The Norwegian system has previously been labelled, a system of "Individually Transferable Access" instead of individually transferable quotas (ITQs) (Williams & Hammer, 2000).

In Newfoundland and Labrador (NL) vessel owners have to be defined as professional fish harvesters to be eligible to apply for licenses and quotas. Professionalization is defined as a means to recognize special skills and experience required and to get 75% of the income from fishery (in the season). Professionalization can either be granted by “grandfathering” (documented long-term attachment to fisheries) or by qualifying for professionalization. New entrants must qualify through training and experience for professionalization through the Professional Fish Harvesters Certification Board (PFHCB, 2015). Requirements for a new entrant as professional fish harvester:

- *Apprentice level: Be sponsored by a registered professional owner/operator or professional skipper on a designated fishing enterprise and complete basic safety training course.*
- *Level I requirements: Minimum of two years of full-time fishing activities and must have earned 55 land-based educational credits.*
- *Level II requirements: Additional three years of full time fishing activities and additional 60 land-based educational credits. This level allows the individual to acquire a fishing enterprise.*

The fisheries in NL are managed by species where the Department of Fisheries and Oceans (DFO) is responsible for management of the stocks in accordance with the roles and responsibilities outlined in Canada's Fisheries Act. Environmental sustainability, economic viability and the inclusion of stakeholders in the decision-making process are key priorities for fisheries management in Canada (DFO 2015). A major objective of Canadian fisheries policy is to ensure that allocation of fishery resources is based on equality; taking into account closeness to the resource, the relative dependence of coastal communities and the various fleet sectors upon a given resource, as well as economic efficiency and fleet mobility. The coastal fleet has therefore a strong position within the NL fisheries sector. DFO allocates quotas for each stock within each fisheries management division (Department of Fisheries and Aquaculture, 2014). Decisions regarding quotas and TACs are made by the minister based on recommendations from DFO science and fisheries management. The quotas within each division are then distributed amongst the fleet sectors. For many of the demersal stocks the mainstay of the quotas are allocated to the coastal fleet (i.e. inshore and near shore vessels < 65').

Currently, all commercial fishing activities in Atlantic Canada are subject to limited entry licensing by DFO for inshore and offshore fisheries. Under Canada's Fisheries Act, a fishing license is defined as an instrument by which the Minister of Fisheries and Oceans grants permission to a person to harvest certain species of fish or marine plants subject to the conditions attached to the license. Individual quotas are implemented as a condition on the fishing license and thus cannot be transferred (re-issued) unless the entire license is (Roy, 1997).

In 2008 DFO introduced the enterprise combining policy as a means of permanently reducing the size of the fishing fleet without the need for DFO financial assistance. Under this policy, an independent core enterprise can purchase one other independent core enterprise, with the stipulation that one vessel registration and one core enterprise must be permanently retired. This approach enables the surviving core operator to potentially double his/her quotas or harvesting levels of key species (DFO 2008, Schrank, W. E. and Roy, N. 2013).

In Denmark ownership of vessel and quota rights requires that at least 2/3 of the capital to be owned by registered and active fishers, a way to keep the rights for the active fishers. Danish fisheries laws distinguish two classes of fishes, A-status and B-status. To be registered as a B-status fisher only requires a short safety course and documented income from fisheries. A-status is a precondition for owning a fishing vessel. To get the A-status the general requirements are Danish citizenship (or two year of work in Denmark) and 1 year as commercial fisher with at least 60 % of the income from the fisheries. For companies with several owners, at least 2/3 of the capital has to be owned by persons with a- or b-status as fishers. (Miljø- og Fødevareministeriet 2017a).

The quota allocation system is handled in the pelagic and demersal fisheries separately with de facto ITQs in the pelagics starting in 2003 and in the demersal sector in 2007. The quota shares (of the national TAC in the area) was allocated to individual vessels (and their owners) based on historical data. The first years the quota shares were closely linked to the vessel, e.g. could only be transferred with the vessel. However, this provision has been relaxed so parts of the quota share in the vessel can be transferred/sold to other vessels. There are restrictions in the allowed concentration of quota shares. In the demersal fisheries there is a limit of concentration of ownership in one vessel/company with a maximum 5-10 % of the total quota for the species in the relevant sea area. The maximum limit in the pelagic segment is 10-15 % per company. For pelagics there is a further limit of 10% of all pelagic quota, and 2% of the total pelagic quota if the vessel also owns demersal quota (Miljø- og Fødevareministeriet 2017b).

As a part of the introduction of transferable quota shares in the demersal fisheries in 2007, a special coastal fisher arrangement was established (Fødevareministeriet 2005). The purpose was to protect the coastal fisheries, minor vessels and minor ports and fishing communities. Vessels of max. 17m length with 80% of the fishing days being trips of less than 72 hours which chose to register as a coastal fisher were given extra quota of cod and sole. Being a part of this segment was binding for at least three years. The vessels in the coastal fishery segment could buy extra quota from vessels outside the coastal segment, but no quota could be sold to vessels outside the segment. The prices for quota tend to be higher outside the coastal segment than within, incentivizing to leave the coastal fisheries arrangement well ahead of exit for selling the quota for selling the quota at the general quota market.

Employment of foreign crew members is allowed according to the EU regulation. An agreement between the trade union and the fishermen's association producer organizations though regulates this with agreement on preconditions of the foreign crew member to be able to document safety training and basic language skills and the same working conditions as Danish labour (Danmarks Fiskeriforening og 3f Transportgruppe 2014). The share of foreign labour is not known, but relative low.

In Iceland (ISL) an ITQ system was introduced in the main demersal fisheries in 1984, but quota systems had earlier been used in the herring fishery from 1975 and the capelin fishery from 1980. The quota system in the demersal fisheries only applied to vessels larger than 10 GRT. The main pressure for introducing the quota system was declining fish stocks and declining profits; first the collapse of the herring stock and later on the foreseeable collapse of the capelin stock unless preventive measures were adopted. The same can be said about the demersal species before 1983 when the stock had been declining due to over-fishing. During 1985-1990, the demersal fleet could choose between operating under an effort system based on the number of fishing days or a quota system, but in 1991 a comprehensive quota system came into effect for all vessels larger than 6 GRT. In subsequent years various effort systems were in place for smaller boats but it was really only a matter of time when they would also become subject to quota management.

Currently, there are two different types of general fishing permits; a general fishing permit with a catch quota for vessels larger than 30 GRT, and a general fishing permit with a hook-and-line quota for smaller boats. The former is often referred to as the regular quotas and the latter as hook-and-line quotas (Agnarsson et al., 2016). Hook-and-line quotas may only be utilised by boats that employ hand-line or longline. The management system distinguishes between two kinds of quotas. Quota shares or permanent quotas quantify the holders' entitlement to a percentage of each year's total allowable catch (TAC) of the species in question. Harvest rights, also called annual catch entitlements, are calculated as the product of each vessel's quota shares and the TAC, and thus state how many kg or tons each vessel may catch during the fishing year (September 1st – August 31st).

Hannesson (1994) has pointed out that the ownership of quotas involves the right to catch the fish but does not entail ownership of the fish stock. Thus, it is claimed that the quota does not mean the ownership of the fish but rather the right to catch the fish. The first article in the Fisheries Management Act no 116/2006 also states unequivocally that the "exploitable marine stocks of the Icelandic fishing banks are the common property of the Icelandic nation" and that the "allocation of harvest rights provided for by this Act neither endows individual parties with the right of ownership nor irrevocable control over harvest rights" (Anon, 2006).

A separate small boat quota system (isl. krókaaflamarkskerfi) is still available for boats less than 30 GT. These are only allowed to fish with hand-lines or longline. These boats get quotas for all the major demersal species and can freely transfer the quota within this system. However to prevent consolidation of fishing rights these quotas cannot be transferred to the common quota system. However, the small boats can buy quotas from vessels operating under the large quota system.

In 2009 a new system was introduced for small boat called costal fishing (isl. strandveiði). In 2010 a total of 6000 thousand tonnes were allocated for coastal fishing in one open access base from May to August. Coastal fishing is limited to small boats that are outside the quota system with two hand-lines and maximum 650 kg catch per day.

By the 1990 Act the fishing year was set from Sept 1 to Aug 31 in the following year but previously it had been based on the calendar year. This was an effort to channel fishing of the groundfish stocks away from the summer months, when quality suffers more quickly and many regular factory workers are on vacation.

4.2 Aquaculture

The aquaculture cases focus on Europe; Denmark, Spain, Norway and UK (Scotland). At the EU level, the CFP contains brief guidance for aquaculture, but environmental policies, especially the Water Framework Directive (WFD) and the Marine Strategy Framework Directive (MSFD) outline further pertinent regulations. At the national level, the most important regulations determine site allocations and the national implementation of the WFD and MSFD and other national-level environmental regulations. The environmental regulations regard the internal environment (e.g. animal health) and external effects in form of emissions, the prevention of disease transmission to wildlife, and genetic intermingling between wild and farmed fish.

The environmental issues are the most challenging for the aquaculture development – according to STECF: “The difficulty to integrate a viable aquaculture economy with environmental policy due to the environmental impact of aquaculture in Europe is a core barrier to the development of the sector,” (Nielsen and Motova, 2014).

4.2.1 Site allocation and licenses

Identification of sites for the plants and licences to produce farmed fish products are a central precondition for establishing aquaculture production.

In the PrimeFish cases, various authorities and regulations are in play for establishing and operating an aquaculture plant. A central reason is the diversity of location of the plants: land-based, coastal adjacent locations or in the open sea. Local authorities are often responsible for permissions and area planning for land-based and coastal operations, and even for land-based facilities serving the sea-based plants (in that way the sea-based plants also depend on the zoning in land). The open sea-areas are publically owned open space or at least not fully allocated, so the responsibility here are often spread on various sector based regulations and authorities. In Spain this differs a little. For establishing marine facilities national legislation and administration in principal handle the authorisation, though in most of the autonomous communities with coastline the regional governments has developed own legislation. Further parts of the coastline is private owned where especially authorisation for intake and discharge of water is central. This is given to all by the Hydrographic Conferences of the relevant autonomous Community (regional level), see the Spanish casebox).

In some cases establishing of an aquaculture plant requires an Environmental Impact Assessment (EIA). Under which circumstances an EIA is required vary between the EU member states; in some states establishing a new aquaculture plant is in practice always required, where as other states only require an EIA for larger plants, in MSP areas etc.) (Dubolino 2016). The difference in EIA requirements are due to national regulations, all implementing EU directives (European Council 1985 and later European Parliament and the Council 2001). To complete the EIA requirements is both time and money consuming, assessed to up to 50.000 \$ in 2010 in the Scottish aquaculture (Skaski, 2010). National differences in the practice of require EIAs might therefore contribute to strength or weaken the competitiveness of the national aquaculture industry.

Permission to establish aquaculture plants are restricted due to concerns of area usage, competition for the physical areas with other actors and types of activities and environmental concerns regarding the use of local resources (water) and emissions to the surroundings. In practice, the factors are often interrelated in the decision process.

Establishing an aquaculture plant requires that the area is already zoned for this type of activity. In land or near the coast it requires zoning in the relevant local or regional plans. If not, the plans have to be changed in a formal procedure allowing the area to be used for aquaculture activities. The sea areas are generally not planned at the same level as land. Often the planning is *ad hoc*, based on case-by-case processes where the relevant actors and the related sector policies and authorities are involved in the planning of location, taking into consideration the existing and possible future use of the area by different stakeholders. In the EU, the area planning is gradually being systematised with national implementation of the EU MSP-directive (European Parliament and the Council 2014). Still the MSP is quite complex having to take many sectoral policies into consideration (see the case box on Denmark)

In the planning and zoning process other commercial interests such as maritime transportation, resource extraction and tourism are often stakeholders, but also environmental interests and NGOs that claim recreational or conservation interests for the possible environmental effects of aquaculture. Political and social concerns about prioritising green, local or small-scale producers in some cases also influences the siting process (as seen in the Norwegian case, see the box). Such provisions parallel the social concerns discussed in relation to fishing licences.

4.2.2 Environmental regulation

Environmental regulation concerns a range of factors from the use of water (especially for land-based operations) to the impact on the wider environment through emissions of namely phosphorus and nitrogen, diseases from the farmed fish and their transmission to the wildlife and the genetic intermixing between the wild and escaped farm fish.

The PrimeFish cases are under very similar, if not identical, environmental regulations. The Water Framework Directive (WFD), which covers inland and coastal water bodies, is implemented in the EU Member States as well as in the EEA state of Norway (Klima- og miljødepartementet 2016). The Marine Strategy Framework directive (MSFD), which addresses European seas, is not enforced in Norway, but the objectives, approach and methods are very similar to Norway's integrated management plans (Norwegian ministry of Climate and Environment, 2016).

These two environmental directives cover all of the EU, but are implemented in different ways among the countries. Despite having the same framework regulation, the differences result from varying political climates within Member States regarding environmental protection, as well as differences in the natural, environmental context of implementation. As an example of the latter: Finding physical space and especially ecological space for aquaculture plants might be hard, if the environmental system is already under pressure due to other activities inland (emissions from agricultural activities, larger cities, etc.). This is the situation in Denmark, where the recent political steps to offer new licenses to sea-based plants are questioned politically because of the general

critical environmental status of several Danish fjords and sea areas (Prip, 2016), (Miljø- og fødevareudvalget 2017). The aquaculture plant will be in competition not only on the physical space, but also on the ecological space.

Other regulations of the animal welfare focus on the farmed fish as well as the wildlife in the surroundings. Limits on the number of fish in each unit contributes to secure good living conditions for the farmed fish, but might also reduce the consequences on the wildlife in case of breakdown of cages, (e.g. a limitation of 200.000 fish in each farm unit in Norway), to reduce impact on the wildlife in case of breakdown of the cage.

Some health regulations focus specifically on avoiding or controlling diseases by regulating movement of fish throughout the production value-chain (from eggs to juveniles to end production sizes) in order to avoid spreading of diseases. Other regulations focus directly on problems in aquaculture of specific species, as the serious problem in the salmon industry—sea or salmon lice. These parasites can have a negative impact on the welfare and health of farmed fish, but also for wild salmon and trout. The regulations for reducing the prevalence of sea lice thus focuses on protecting the production as well as impacts on wild fish (internal as well as external effects). Various regulations can be used, such as monitoring of lice incidents, reduction of density of the farmed fish and vaccination programs. In countries (such as Norway) with industry investments in strong programs for controlling the internal as well as the external effects of lice, the industry might have an advantage compared to less regulated and controlled countries in regard reduction of production effect, but higher costs for investment in measures to control the parasites internally and externally.

Although environmental regulations ensure health and safety for the environment and seafood products, these environmental and animal health regulations can delay or limit the establishment and development of aquaculture plants, and increase the cost of production in the EU/EEA countries. This influences the competitiveness compared to countries outside the EU/EEA areas. But an EU Commission report also concluded that environmental and health standards of the European regulation, WFD, MSFD and regulations on health and protection of the wildlife from alien species in aquaculture potentially increases the competitive advantage, if the consumer's attention is drawn to quality and can improve local acceptance of aquaculture operations (European Commission, 2013). In the same line, a communication from the EU Commission, concludes that the high level of regulation is believed to be at least partly responsible for the positive image of Scottish salmon by international consumers with the price premium of around 10% due to Scottish provenance (European Commission, 2013a).

The various regulations for gaining licences for establishing aquaculture plants – getting the area permissions and various environmental permissions is in all the case countries seen by the industry as an important challenge for development. This is clearly expressed by the Scottish industry:

“The processes governing the establishment of new marine aquaculture operations are often viewed by industry as slow, disjointed and unpredictable in terms of application outcomes. Under the current system of consenting for aquaculture activity, there is perceived duplication, with overlaps between the input of Local Planning Authorities (LPAs), Marine Scotland, the Scottish Environment Protection Agency (SEPA) and other bodies. These can cause delays, expense and avoidable uncertainty of outcome” (Scotland Food and Drink, 2016).

4.2.3 Regulation of the concentration of aquaculture

The physical construction of aquaculture plants and farms is regulated for environmental reasons as well. Economic concentration of licenses has been seen in all countries as a way to establish economies of scale. Limits and restrictions on concentration has gradually been reduced and large companies characterise parts of the aquaculture industry (especially in northern Europe), though a case under the EU Competitiveness Policy regarding merger in the aquaculture industry illustrates limits to the desire for concentration.

In earlier periods, Norway prioritised granting licenses to small-scale, owner-operated farms with one license per person. This policy has later been liberalised leading to concentration in the Norwegian salmon industry. As an example in 2012 one company (Marine Harvest) had 20-30% of the total harvest of Atlantic salmon in Norway and two other firms held 10-20% each. This was seen as a problematic concentration by the EU Commission, but in relation to an EU anti-trust case a merger of two Norwegian companies with production, processing and marketing of salmon, Marine Harvest and Morpol, were seen as limiting the competition at the Scottish salmon market, as the merged companies would control of 40-50% of the salmon production. This share of the sector was seen as too high of a concentration and market control to get EU approval (European Commission 2014b).

Text boxes 3: Case-boxes central aquaculture regulations in Norway, Scotland, Spain and Denmark

***In Norway** various forms of less intensive aquaculture has a relatively long history in Norway. However, it is the relatively young industry around farming of salmonids such as Atlantic salmon and rainbow trout that has seen the sector grow to one of noteworthy economic importance on a national level, and of particular importance in a number of rural areas.*

The regulatory basis is founded in a number of acts with underlying provisions. Authority is distributed across several institutions and at several levels. Five ministries with underlying institutions and in total three levels of administration, state, county and municipality are involved. In total, businesses have about a dozen management institutions to adhere to. A resulting fragmentation of responsibilities and with some degree of overlap of authorities has been identified as problematic for good management (Robertsen et al 2016)

Establishing aquaculture requires a license from the authorities. The Aquaculture Act specifies some requirements, but also gives the authorities leeway to decide whether a license should be granted. The law also specifies that a license is dependent on approval from the following acts; food, pollution control and harbour. Aquaculture on land also requires approval from the Water Resources Act. The institutions responsible for these acts therefore have a major influence on the sector.

The distribution of licenses has been and still is a major political topic. Initially, small-scale, owner-operated farms were favoured, and the regulations only allowed one license per person. Primarily through periods of economic problems, these restrictions have been lifted. Although there is a limit to the share of licenses an individual can control, these have small competitiveness implications. The geographic distribution was also important—the sector was to be a backbone of maintaining rural settlements. Hence licenses were initially tied to municipalities. The licenses are still tied to specific regions, and are only in special cases allowed to move to neighbouring regions. Licenses, initially non-transferable, today can be transferred and mortgaged.

Establishing a farm requires a physical site. The license cannot be granted if the area is not specifically defined for this purpose in the municipal plan, however the municipality can give dispensation from this requirement. The area plan is a political decision, but municipalities have formal responsibility to seek solutions to possible conflicts between interests and to make other considerations. Sea-based farms are placed in the commons thereby in areas without any defined owner. Other considerations, such as waterways for maritime transport, are managed by the coastal administration based on the Harbour Act.

Authorities place emphasis on ensuring that the effects on fish are within ethically acceptable limits. These are generally defined in the Animal Welfare Act with underlying provisions. The Act is in practice managed by a government owned institution, the Food Safety Authority, with a central administration, decentralised offices and control and inspection routines.

Operators are required to document and regularly update knowledge of fish welfare. Fish density in salmonid cages is limited to 25 kg/cubic meter. Farmers are required to monitor fish welfare and health and have regular inspections of fish health from qualified persons.

In Scotland the aquaculture sector is regulated by national and regional laws. In the UK the countries have devolved administrations with wide ranging legislative and executive powers including fisheries, aquaculture and environmental protection. Thus the following examples regard only Scotland and not necessarily the other three countries in the UK.

A number of institutions are responsible for the aquaculture policy in Scotland. Fragmented legislation and lack of integration have been pointed out as limitations to aquaculture development (Marine Scotland, 2014). Hedley and Huntington (2009) report that the industry is "scrutinised by 10 different statutory bodies and subject to more than 60 pieces of legislation, 43 European directives, 3 European regulations and 12 European Commission decisions".

There is a perceived lack of available sites for the expansion of aquaculture in Scotland (Marine Scotland, 2009). However, as Hofherr et al. (2015) note, limitations to growth may be better explained by the competition for space which takes place at the local level with more established coastal economic activities or strong pressure from stakeholders with negative perception about aquaculture (Ertör and Ortega-Cerdà, 2015).

To establish an aquaculture operation in Scotland involves several statutory bodies. The following are examples of some of these (Marine Scotland, 2014):

- *The Crown Estate is responsible for granting a seabed and the foreshore under the Crown Estate Act 1961.*
- *Modifications to existing farms or planning permissions for new ones must be obtained from the relevant local planning authority under the Town and Country Planning (Scotland) Act 1997 (amended by the Planning etc. (Scotland) Act 2006).*
- *Aquaculture activities expected to cause pollution or have potentially significant adverse impact on the environment also require authorisation from SEPA under the Water Environment (Controlled Activities) (Scotland) Regulation 2011. Aquaculture farms must also be registered under the Aquatic Animal Health (Scotland) Regulations 2009 (amended 2011).*
- *The supply and possession of veterinary medicines is regulated through the veterinary medicines Regulations 2011 (amended 2012) and incorporated a multitude of EU regulations.*

The Aquaculture and Fisheries Act 2007 covered a number of legislative areas relating to aquaculture operations including controlling parasites on fish and shellfish farms, treatment of disease, prevention and escapees. The act was amended in 2013 to include a legal requirement for cooperation between farms within a management area in fish health management, movement of fish, harvesting and fallowing (Scottish minister 2015).

No regulation against economic concentration is found in national legislation, but the EU anti-trust regulation has been used to reduce the marked dominance of the Norwegian owned Marine Harvest after planned merge with the Norwegian company Morpol. In a merger they would control 40-50% of the salmon production in Scotland and 70-80% of the Scottish share of the high value "label Rouge" market. The merge was only accepted by the EU Commission after some of the salmon production plants in Scotland was sold to third parties (European Commission 2014, b and c).

In Spain, the aquaculture industry is regulated by national laws (often implementation of EU directives), but also sometimes different laws at regional level due to the autonomous communities. The aquaculture industry is organised in various different professional organisations, some of which are defined geographically.

According to the legislation, commercial farming of aquatic species is allowed only to those Spanish citizens and organizations that have been registered as business enterprises (Jefatura del Estado 1984: Law Nº23/1984 of Marine Cultivation). The concession or authorization confers the right to set up an aquaculture activity in a specific area and may concern either a single species or a group of species. There are slightly different administrative procedures depending of where the plants is supposed to be and area ownership: a) inland aquaculture facilities, b) marine aquaculture facilities within publicly owned coastal zones and c) marine aquaculture facilities within privately owned coastal zones utilizing publicly owned zones for collecting/discharging water.

The inland facilities need a "Concession for the use or occupation of the public water area" and an "Authorization for the intake and discharge of water", both from the regional Hydrographic conference. Further a "Construction and start of operations permit" from the municipal authorities, an "Authorization for operation of the aquaculture facility" and to complete an "Environmental Impact Assessment". The marine aquaculture facilities further needs a "Concession for the occupation of the public shoreline" from the Ministry of Aquaculture. The "Authorization for the intake and discharge of water" is included for facilities in public waters, but has to be obtained for facilities at private owned coastal zones.

Especialy the inland facilities has to complete an Environmental Impact Assessment (Jefatura del Estado 1984: Law Nº21/2013 on environmental evaluation), including:

- *General description of the project and forecasts over time on the use of land and other natural resources. Estimation of the types and amounts of waste dumped and emissions.*
- *Exposure of the main alternatives studied, and a justification of the main reasons for the solution adopted, taking into account the environmental effects.*
- *Evaluation and quantification of the project's direct or indirect, cumulative and synergistic effects on population, human health, flora, fauna, biodiversity, geodiversity, soil, subsoil, air, water, climate change, landscape, material assets, and interaction between all of the above factors during the implementation, exploitation and during the demolition or abandonment of the project.*
- *Measures to prevent, correct and, compensate for adverse effects on the environment.*
- *Environmental Monitoring Scheme.*

In Denmark, the aquaculture industry has traditionally been land-based production of rainbow trout. Still two-thirds of the production originate from land-based farms. Over the years, many small local farms have been reduced in numbers. At the same time, the size of the remaining farms increased which has led to a stable production volume over the years

Licenses and approvals for aquaculture operation establishment or expansion differ between the land-based (and sea-based up to 1 nm from the coast), and sea-based outside 1 nm from the coastline. The land-based plants need an environmental approval from the municipality and other approvals. The environmental approval is an 8-10 year approval to produce within a described environmental framework. The minor plants are regulated by a limit on volume of feed to be used while the larger plants in general are regulated by emissions limits. All expansions or changes of existing plants must go through a full Impact Assessment on the Environment (IAE), which is also included in the Natura 2000 regulation. Furthermore, the land-based plant has to have a permission for the use of surface- or ground water (Dansk Akvakultur no.d.). The (rare) location of new plants has to be in accordance with the zoning of the city plans.

Sea-based plants are meant to apply for permission according to the fisheries law and the provisions include conditions for production and operation, owner control, acceptance from the food agency (animal health and food safety). New or altered aquaculture operations are also supposed to seek environmental approval according to chapter five in the law on environmental protection, referring to polluting activities (Miljø- og Fødevareministeriet 2016). This will involve the regulation regarding EIA and the habitat-regulation (Dansk Akvakultur n.d.). Licenses and permissions are given by the state (e.g. the Danish AgriFish Agency), as the sea is common property. New licences have so far been given on an ad hoc basis, taking a range of sector legislation, relevant for the site, into consideration. A new Danish law (Erhvervs- og Vækstministeriet 2016), implementing the Marine Spatial Planning directive (European Parliament and the Council 2014) lists 14 fully or partially overlapping laws and acts already regulating the sea area to be taken into consideration.

4.3 Processing and export:

Within the EU, entry into the processing or export of seafood is generally not regulated as the primary activities in fisheries or aquaculture. But the processing sector faces other legislative barriers, which can influence their competitiveness. Trade regulations regarding raw material access and tariffs are the most important and to some degree general production conditions such as veterinary and technical regulations are also relevant.

4.3.1 Raw material regulations

In general, there is an open market for fish in Europe, though with a few examples of protective measures during the last years. In a situation where access to raw materials is a competitive parameter (European Commission 2014c), regulative restrictions on landing of wild fish can be important for the competitiveness of the processing and exporting industries. Some countries wish to ensure resources (and thereby jobs) for the national processing industry by establishing incentives to land the national quota at home or restricting landings abroad, often via the landing regulation in the fisheries and quota allocation. This of course influences the competitive balance between industries in the various countries. As an example, Faroese vessels pay a fee for landing their pelagic catches of the national quota abroad, while the Scottish minister intends to give a quota bonus to Scottish landings of mackerel in Scotland (Harkel, 2017 and Fishing news 2017). This influences the level of landings in e.g Norway that traditionally has been a landing place for some Faroese and Scottish vessels.

In some countries sourcing of wild fish for the industry can be ensured by industries owing their own vessels and quotas (e.g. in Iceland). In other countries, the restriction of vessel ownership (as described above in 3.1) disables this opportunity (e.g. in Norway and Denmark) as vessels (and quotas) in general can only be owned by active fishers. However, fishers are allowed to own processing industries, which can be a way to establish vertical integration between the two links in the value chain. In the aquaculture sector there are no limitations for processors to integrate backwards in the value chain and buy aquaculture farms in order to secure access to raw material. The opportunity to integrate in the value chain has in some countries (as Scotland, Norway and Faroe Islands) lead to large fully integrated companies which cover the value chain from hatching and farming over processing to sale and export of consumer ready products.

4.3.2 Tariffs

The trade tariffs and contingents are established to protect the national industry and to stabilise the raw material supply for the industry within the country or groups of countries covered. At national and company level the cost for raw materials can vary depending of the position in the market, e.g. depending whether the source of raw materials for the production are national resources or imported resources with tariffs.

At the European market the competitiveness of the company depends on their position as selling from within or outside the EU and the bi- and multilateral trade agreements negotiated between the country and the EU. As described in section 2, the CETA agreement will significantly reduce these tariffs and over some years eliminate all EU tariffs for Canadian fish. This will increase the competitiveness of the Canadian exporting processors, while other companies (EU or other non-EU) will lose relative competitiveness in this process. EU has established various trade agreements

leading to different tariffs. As members of EEA, Norway and Iceland are in some regards favoured by better trading agreements than the so-called Most Favoured Nations (MFN), which are the nations under WTO, which EU has no (free) trade agreements). The advantages for Norway compared to the MFN can be seen in the table below, while after CETA Canada will have 0-tariffs on most products, then being more favoured than Norway. The table also illustrates the challenges for companies from third countries (non-EU member s) to gain market access due to the tariffs, which tend to favour the local, tariff-free fish for the imported. Further it illustrates that the import tariffs of processed fish is higher than for fresh or low-processed fish (except for filets of cod from Most Favoured Nations in the table below). This difference favour processing jobs within EU and challenges attempts to move up the value chain by companies in third countries, then facing higher tariffs at the EU market for the processed products.

Table 2 Tariffs on Norwegian salmon, cod and herring to the EU (for selected product categories)

		Whole - fresh and frozen	Filet - fresh and frozen	Smoked	Vacuum packed whole or pieces	Salted	Dried (tørrfisk)	Salted and dried (klippfisk)	Preserved w/ vinegar, spices etc
Salmon	Nor	2 %	2 %	13 %	5,5%				
	MFN	2 %	2 %	13 %	5,5%				
Cod	Nor	0%	0,9%			0%	0%	3,9%	
	MFN	12%	18% and 7,5%			16%	13%	13%	
Herring	Nor	15%*	15% and free**			0%			20%
	MFN	15%*	15% and free***			12- 16%			20%

* Zero tariffs in the period 15 February to 15 June

**Including butterflies

***Butterflies: From 1 January to 14 February and from 16 June to 31 December: 15%. WTO tariff quota. From 15 February to 15 June: free.

4.3.3 Other regulation

The EU's veterinary regime is based on the WTO guidelines on "The Agreement on the Application of Sanitary and Phytosanitary Measures" (SPS-agreement) and "The Agreement on Technical Barriers to Trade" (TBT-agreement). EU has increased the requirements for third countries exporting products to the EU. These include EU approval of the national systems (laws, organisation of authorities etc.), as well as EU approval of lists of specific companies which are approved to export into the EU.

Norway as the non-EU country in this case participates in the EU veterinary regime and therefore does not face any SPS barriers. Nonetheless, there may be barriers for Norway regarding standards not fully harmonised with the EU-standards. Other third party countries might face barriers of both SPS and TBT issues. Likewise, European countries face the same type of problems when exporting to other countries, especially regarding differences in technical barriers.

5. References

- Abrahamsen, S., 2017. Kvotekonger og store fisk har ikke altid fortjent deres succes (Quota kings and big fish has not always deserved their success). Editorial Information april 6 2016, <https://www.information.dk/debat/leder/2017/04/kvotekonger-store-fisk-altid-fortjent-succes>
- Agnarsson, S., Matthiasson, T. and Giry, F. 2016. Consolidation and distribution of quotaholdings in the Icelandic fisheries. *Marine Policy*, 72, 263-70.
- Anon 2016 b. Note – Tactical State of Play of the TTIP Negotiations – March 2016. Found may 2016 at: <https://www.ttip-leaks.org/pandaros/doc16.pdf>
- Anon (1990). The Fisheries Management Act no 38/1990. <http://www.fisheries.is/management/fisheries-management/the-fisheries-management-act/>
- Anon (2006). The Fisheries Management Act no 116/2006. <https://eng.atvinnuvegaraduneyti.is/media/acts/Act-no-116-2006-on-Fisheirs-Management.pdf>
- Anon (2016). Reglugerð um strandveiðar 2015/2016, no 337. (Regulation on coastal fishing for fishing year 2015/2016).
- Blaħa, F. (2008), Exporting Seafood to the UE. Bulletin No. 84/2008.Rev.1, International Trade Centre (ITC). Found april 2017 at: http://legacy.intracen.org/tdc/Export%20Quality%20Bulletins/EQM84eng_Rev.1.pdf
- Consolidated version of the Treaty on the Functioning of the European Union - PART THREE: UNION POLICIES AND INTERNAL ACTIONS - TITLE VII: COMMON RULES ON COMPETITION, TAXATION AND APPROXIMATION OF LAWS - Chapter 1: Rules on competition - Section 1: Rules applying to undertakings - Article 101 (ex Article 81 TEC). Official Journal of the European Union 115, 9.5.2008, p. 88–89
- Danmarks fiskeriforening and 3f transportgruppen 2014. Overenskomst 2014-2017 for fiskere (Collective agreement 2014-2017 for fishers 2014). Found April 2017 at: <http://fiskeriforening.dk/wp-content/uploads/2014/10/Overenskomst-for-fiskere-2014-2017.pdf>
- Dansk Akvakultur n.od. Homepage on regulation for land- and sea-based plants. Found April 2017 at: <http://www.danskakvakultur.dk>
- Department of Fisheries and Aquaculture (2014). *Seafood Industry Year in Review 2014*. Government of Newfoundland and Labrador.
- Department of Justice (2017, February 28). Atlantic fishery regulations, 1985. Retrieved from Department of Justice Canada: <http://laws-lois.justice.gc.ca/eng/regulations/SOR-86-21/index.html>, april 2017.
- DFO (2008). Enterprise Combining Implementation Guide – Newfoundland and Labrador Region. Retrieved from Fisheries and Oceans Canada: <http://www.nfl.dfo-mpo.gc.ca/e0016996>

- DFO (2015a, January 12). *Integrated fisheries management plans*. Retrieved from Fisheries and Oceans Canada: <http://www.dfo-mpo.gc.ca/fm-gp/peches-fisheries/ifmp-gmp/index-eng.htm>
- Dien, V.V and Thong, T.N (2017). Pangasius catfish markets and non-tariff barriers. Working paper. Nha Trang University.
- Dubolino, D. 2016. Criteria for Environmental Impact Assessment in aquaculture – current situation across MS. DG for Maritime Affairs and Fisheries. Presentation, Brussels, 25/5/2016
- EFTA (n.d.). EEA Agreement. The European Free Trade Association (EFTA) homepage, found May 2017 at: <http://www.efta.int>
- Erhvervs- og Vækstministeriet 2016. Lov om maritim fysisk planlægning. LOV nr 615 af 08/06/2016, Retsinformation, <https://www.retsinformation.dk/Forms/R0710.aspx?id=180281>
- Ertör, I., Ortega-Cerdà, M., 2015. Political lessons from early warnings: Marine finfish aquaculture conflicts in Europe. *Mar. Policy* 51, 202–210. doi:10.1016/j.marpol.2014.07.018
- European Commission, 2000. Directive 2000/60/EC of the European Parliament and of the council of 23 October 2000 establishing a framework for Community action in the field of water policy, Official Journal of the European Union. L327, 22.12.2000, p. 1 consolidated version 20.11.2014
- European Commission 2013a. Strategic Guidelines for the sustainable development of EU aquaculture. Communication from the Commission to the European Parliament, the European Economic and Social Committee and the Committee of the Regions. COM(2013) 229 final, Brussels 29.4.2013.
- European Commission 2013b. Transatlantic Trade and Investment Partnership. The Economic Analysis Explained. European Commission, September 2013. Found April 2017 at: http://trade.ec.europa.eu/doclib/docs/2013/september/tradoc_151787.pdf.
- EU Commission 2014a. Commission implementing regulation (EU) No 1195/2014 of 29 October 2014 imposing a provisional countervailing duty on imports of certain rainbow trout originating in Turkey. Official Journal of the European Union L319/1-35, 6.11.2014
- European Commission 2014b. Press release. Mergers: Commission informs Marine Harvest of objections against early implementation of its acquisition of Morpol. Brussels, 31 March 2014, found April 2017: http://europa.eu/rapid/press-release_IP-14-350_en.htm
- European Commission 2014c: Summary of Commission Decision of 23 July 2014 imposing a fine for putting into effect a concentration in breach of Articles 4(1) and 7(1) of Council Regulation (EC) No 139/2004 (Case M.7184 — Marine Harvest/Morpol (Article 14(2) proc.)). Official journal of the European Union. 18.12.2014, C455/55
- European Commission 2015. Commission implementing regulation (EU) 2015/1754, of 6 October 2015. Amending Annex I to Council Regulation (EEC) No 2658/87 on the tariff and statistical nomenclature and on the Common Customs Tariff. Official Journal of the European Union 2015 L 285.
- European Commission 2016. CETA – Summary of the final negotiating results. Retrieved from: http://trade.ec.europa.eu/doclib/docs/2014/december/tradoc_152982.pdf

European Commission. DG Employment, Social Affairs & Inclusion (n.d.). Free Movement - EU nationals, homepage. Found April 2017 at: <http://ec.europa.eu/social/main.jsp?catId=457>

European Commission DG Growth (n.d.). Competition Policy. Found April 2017 at:
https://ec.europa.eu/growth/industry/policy/competition_en

European Commission. DG Health & consumers (n.d.). EU Import Conditions for Seafood and other Fishery Products. Found April 2017 at:
http://ec.europa.eu/food/sites/food/files/safety/docs/ia_trade_import-cond-fish_en.pdf

European Commission. DG Maritime Affairs 2016. Maritime spatial planning. Homepage. Found May 2016.
http://ec.europa.eu/maritimeaffairs/policy/maritime_spatial_planning/index_en.htm

European Commission. DG Trade (n.d.)1. In focus: Comprehensive Economic and Trade Agreement (CETA), DG Trade homepage, found May 2017 at: <http://ec.europa.eu/trade/policy/in-focus/ceta>

European Commission DG Trade (n.d.)2. Marked Access Database. USA, productcode 0308. Found May 2017 at:
http://madb.europa.eu/madb/atDutyOverviewPubli.htm?option=1&display=20&language=all&year1=&year2=§or=all&country=all&langId=en&datacat_id=AT&showregimes=&countryid=&submit=Search×tamp=1463658478669&countries=US&hscode=0308

European Council. 1985. Council Directive 85/337/EEC of 27 June 1985 on the assessment of the effects of certain public and private projects on the environment. OJ L 175, 5.7.1985, p. 40–48

European Parliament and the Council 2001. Directive 2001/42/EC of the European Parliament and of the Council of 27 June 2001 on the assessment of the effects of certain plans and programmes on the environment. OJ L 197, 21.7.2001, p. 30–37

European Parliament and the Council 2008. Directive 2008/56/EC of the European Parliament and of the Council of 17 June 2008 establishing a framework for community action in the field of marine environmental policy (Marine Strategy Framework Directive). OJ L 164, 25.6.2008, p. 19–40. ELI:
<http://data.europa.eu/eli/dir/2008/56/oj>

European Parliament and the Council 2013. Regulation (EU) No 1379/2013 of the European Parliament and of the Council of 11 December 2013 on the common organisation of the markets in fishery and aquaculture products, amending Council Regulations (EC) No 1184/2006 and (EC) No 1224/2009 and repealing Council Regulation (EC) No 104/2000. Official Journal of the European Union L354/1-21, 28.12.2013

European Parliament and the Council 2013. Regulation (EU) No 1380/2013 of the European Parliament and of the Council of 11 December 2013 on the Common Fisheries Policy, amending Council Regulations (EC) No 1954/2003 and (EC) No 1224/2009 and repealing Council Regulations (EC) No 2371/2002 and (EC) No 639/2004 and Council Decision 2004/585/EC. In: Official Journal of the European Communities 2013; L 354 (28.12.2013): 22-61.

European Parliament and the Council 2014. Directive 2014/89/EU of the European Parliament and of the Council of 23 July 2014 establishing a framework for maritime spatial planning. Official Journal of the European Union 28.4.2014, L 257/135

Eythórsson, Einar. 2000. "A Decade of ITQ-Management in Icelandic Fisheries: Consolidation without Consensus." *Marine Policy* 24: 483–92.

Felbemeyr, Heid, and Lehwald 2013. Transatlantic Trade and Investment Partnership (TTIP). Who benefits from a free trade deal? Part I Macroeconomic Effects. GED. Global Economic Dynamics, Bertelsmann Stiftung.

Fishing news 2017. Scots minister withhold mackerel quota to deter foreign landings, 13th February 2017. Found april 2017: <http://fishingnews.co.uk/news/scots-minister-withholds-mackerel-quota-to-deter-foreign-landings/>

Francois, J., Manchin, M., Norberg, H., Pindyuk, O., Tomberger, P. 2013. Reducing Trans-Atlantic Barriers to Trade. Centre for Economic Policy Research, London.

Fødevareministeriet 2005. Aftale om Ny Regulering af dansk fiskeri. Found April 2017 at: <http://www.dr.dk/NR/ronlyres/5604A5CF-8588-4648-936B-8DBA9EB71607/1824068/Endeligregulering.pdf>

Garrett, A., 2016. Brexit and the UK seafood industry. Seafish, found at: http://www.seafish.org/media/1653731/overview_-_brexit_and_the_uk_seafood_industry_1.3.pdf

Gereffi G., Humphrey J. & Sturgeon T., 2005. The governance of global value chains, *Review of International Political Economy*, 12:1, 78-104, DOI: 10.1080/09692290500049805

Hannesson, R. (1994). Trends in Fishery Management. (E. Loyayza, Ed.) *Managing Fishery Resource*, World Bank Discussion Papers, 217.

Harkel, L. 2017. Scotland withholds mackerel quotas pending review of foreign landings. *Undercurrent news*. Feb 14, 2017, found April 2017 at: <https://www.undercurrentnews.com/2017/02/14/scotland-withholds-mackerel-quotas-pending-review-of-foreign-landings/>

Hatcher, A., Frere, J., Pascoe, S., Robinson, K., 2002. "Quota-hopping" and the foreign ownership of UK fishing vessels. *Mar. Policy* 26, 1–11. doi:10.1016/S0308-597X(01)00035-5

Hedley, C., Huntington, T., 2009. Regulatory and legal constraints for European aquaculture 102 pp.

Hofherr, J., Natale, F., Trujillo, P., 2015. Is lack of space a limiting factor for the development of aquaculture in EU coastal areas? *Ocean Coast. Manag.* doi:10.1016/j.ocecoaman.2015.06.010

International Trade Division Canada (2017). Opportunities and benefits of CEAT for Canada's fish and seafood exporters. Retrieved from: http://www.international.gc.ca/gac-amc/campaign-campagne/ceta-aecg/seafood-fruits_mer.aspx?lang=eng

- Jefatura del Estado 1984. LLEI 23/1984, de 25 de juny, de cultius marins. BOE núm. 153, de 27 de junio de 1984, páginas 18742 a 18745 (4 págs.), BOE-A-1984-14431. Found april 2017 at:
<https://www.boe.es/buscar/doc.php?id=BOE-A-1984-14431>
- Jefatura del Estado 2013. Ley 21/2013, de 9 de diciembre, de evaluación ambiental. BOE» núm. 296, de 11 de diciembre de 2013, páginas 98151 a 98227 (77 págs.) BOE-A-2013-12913 Found april 2017 at:
<http://www.boe.es/buscar/doc.php?id=BOE-A-2013-12913>
- Klima- og miljødepartementet 2016. Kjempeløft for bedre vannmiljø (Important improvement of better water environment) Regjeringen.no, presserelease. 01.07.2016, found May 2017 at:
<https://www.regjeringen.no/no/aktuelt/kjempeloft-for-bedre-vannmiljo/id2506703/>
- Kvalvik, I, Isaksen, J, Svorken, M. Hermansen, Ø: Norwegian regulative framework and industry competitiveness. PrimeFish WP 3.2 – Norwegian input to deliverable T3.2. Nofima, Næring og bedrift. 10. march 2017. Unpublished.
- Lado, E. P. (2016). The Common Fisheries Policy. The quest for sustainability. West Sussex, UK: John Wiley & Sons.
- Manuel, H. and Hayter, R. 2017. Fisheries Management in Canada. Newfoundland and Labrador. Memorial University. March 2017. Unpublished report
- Marine Scotland, 2009. A Fresh Start. The renewed Strategic Framework for Scottish Aquaculture. Scottish Gov. doi:<http://dx.doi.org/10.1016/j.cpa.2008.05.002>
- Marine Scotland, 2014. An Assessment of the Benefits to Scotland of Aquaculture 1–164.
- McCay, Bonnie J. 1995. "Social and Ecological Implications of ITQs: An Overview." Ocean & Coastal Management 28 (1–3): 3–22.
- Miljø- og Fødevarerministeriet 2016. Bekendtgørelse af lov om miljøbeskyttelse LBK nr 1189 af 27/09/2016. Found April 2017 at: <https://www.retsinformation.dk/Forms/r0710.aspx?id=184047#id5cbf1ba2-9a7e-42be-86bc-f16b4552f211>
- Miljø- og Fødevarerministeriet 2017a. Bekendtgørelse af lov om fiskeri og fiskeopdræt (fiskeriloven), Miljø- og Fødevarerministeriet, Landbrugs- og Fiskeristyrelsen, LBK nr 17 af 04/01/2017 (Gældende) 21. april 2017, <https://www.retsinformation.dk/pdfPrint.aspx?id=186159> (april 2017)
- Miljø- og Fødevarerministeriet 2017b, Bekendtgørelse om regulering af fiskeriet i 2014-2020, Miljø- og Fødevarerministeriet, Landbrugs- og Fiskeristyrelsen, BEK nr 212 af 01/03/2017 (Gældende) 20. april 2017, j.nr. 17-7131-000001, <https://www.retsinformation.dk/pdfPrint.aspx?id=186983&exp=1>
- Miljø- og Fødevarerudvalget 2017. Høring i Miljø- og Fødevarerudvalget om kompenserende marine virkemidler ved etablering eller udvidelse af havbrug (L111) (Hearing in the Environmental and Food committee on compensatory marine instruments for the establishment or expansion of aquaculture L 111). TV-transmission: found april 2017 at:
<http://www.ft.dk/webtv/video/20161/mof/tv.3835.aspx#pv>

- Nielsen, R., Motova, A., 2014. The Economic Performance of the EU Aquaculture Sector (STECF 14-18) Scientific, Technical and Economic Committee for Fisheries (STECF). doi:10.2788/15501
- Noble, S., Quintana, M.M., Curtis, H., 2016. Seafood processing industry report 2016.
- North, Douglass C. 1990: Institutions, institutional change and economic performance, USA: Cambridge University Press, USA
- Norwegian ministry of Climate and Environment 2016. Update of the integrated management plan for the Barents Sea – Lofoten area including an update of the delimitation of the marginal ice zone. Meld.St. 20 (2014-2015) Report to the Storting (white paper) (Vol. 20). Retrieved from www.government.no
- Novotna, T. (n.d.). Will Donald Trump shoot down TTIP or rebrand it as the 'Trump Trade and Investment Partnership'? Blog at LSE USCentre, forund April 2017 at:
<http://blogs.lse.ac.uk/usappblog/2017/01/19/will-donald-trump-shoot-down-ttip-or-rebrand-it-as-the-trump-trade-and-investment-partnership/#Author>
- Nærings- og fiskeridepartementet 1966. Lov om forbud mot at utlendinger driver fiske m.v. i Norges territorialfarvann [fiskeriforbudsloven]. LOV-1966-06-17-19
- Nærings- og fiskeridepartementet 1999. Lov om retten til å delta i fiske og fangst (deltakerloven). LOV-1999-03-26-15. <https://lovdata.no/dokument/NL/lov/1999-03-26-15?q=deltakerloven>
- Nærings- og fiskeridepartementet 2008. Lov om forvaltning av viltlevande marine ressursar (havressurslova). LOV-2008-06-06-37. <https://lovdata.no/dokument/NL/lov/2008-06-06-37>.
- PFHCB. (2015, August 24). FAQs. Retrieved from Professional Fish Harvesters Certification Board Newfoundland and Labrador: <http://www.pfhcb.com/faq-s/> april 2017.
- Ponte, S. 2009. Governing through Quality: Conventions and Supply Relations in the Value Chain for South African Wine. In *Sociologia Ruralis*, vol 49, no 3, p. 236-257, Blackwell Publishing Ltd, doi 10.1111/j.1467-9523.2009.00484.x
- Porter, M. 1980. Competitive Strategy. The Free press, New York.
- Porter, M. E. 1998 Competitive Advantage of Nations: Creating and Sustaining Superior Performance. Simon and Schuster. 896 pages ISBN 9780684841472. <https://www.google.co.uk/webhp?sourceid=chrome-instant&ion=1&espv=2&ie=UTF-8#q=the%20competitive%20advantage%20of%20nations%20pdf>
- Prip, C. (2016). Regulation of mariculture in Denmark : what of the legal and environmental space ?I. Nordic Journal of International Law, 2(October), 89–103.
- Robertsen et al 2016. Regelrett eller rett regel? Håndtering og praktisering av regelverket for havbruksnæringen (In norwegian). Rapport 37/2016. Nofima, Tromsø.
- Roy, N. (1997). The Newfoundland Fishery – A descriptive analysis. St. John's, NL: Memorial University of Newfoundland.

- Santiago, J.L, Chapela, R. and Fernández González R. 2017 Spanish Aquaculture Legislation Framework, CETMAR March 2017. Unpublished working paper.
- Schrank, W. E. and Roy, N. (2013). Commentary: The Newfoundland fishery and economy twenty years after the Northern cod moratorium. *Marine Resource Economics*, 28, 397-413.
- Scotland Food and Drink, 2016. Aquaculture Growth to 2030.
- Scottish minister 2015. The Aquaculture and Fisheries (Scotland) Act 2007 (Fixed Penalty Notices) Order 2015, 2015 No. 113. Found at:
http://www.legislation.gov.uk/ssi/2015/113/pdfs/ssi_20150113_en.pdf
- Skaski, R., 2010. Environmental Impact Assessment (EIA) Thresholds For Marine Fish Farms. Report commissioned by the Scottish Aquaculture Research Forum.
- Taskow, D. Formal regulation within the UK seafood sector. A report contributing to Deliverable 3.2. Stirling University, unpublished report.
- Thurstan, R.H., Brockington, S., Roberts, C.M., 2010. The effects of 118 years of industrial fishing on UK bottom trawl fisheries. *Nat. Commun.* 1, 15. doi:10.1038/ncomms1013.
- Williams, J.H. & S. Hammer (2000) "The Norwegian fisheries: An unregulated common property resource in transition by the introduction of quotas, closed access and the industry's user-rights perception", in Shotton, R. (ed.) *Use of Property Rights in Fisheries Management*. Proceedings of the FishRights99 Conference, Freemantle, Western Australia, 11-19 November 1991, Part I., FAO, Rome, pp. 192–197.
- WTO (n.d.)a .About WTO, World trade Organisation, homepage. Found May 2017 at:
<https://www.wto.org/index.htm>
- WTO (n.d.)b. The WTO Agreement on the Application of Sanitary and Phytosanitary Measures (SPS Agreement), found April 2017 at: https://www.wto.org/english/tratop_e/sps_e/spsagr_e.htm