

Climate-KIC: FEED-X Project

Stakeholder Analysis: EU/US Aquaculture sector
29th March 2019



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Executive Summary

In Europe, most of the stakeholders were: small to medium sized third sector organisations with a small budget and focused specifically on aquaculture issues. Their activities centred on policy advocacy, communications and research. Overall, there was less dependency on other organisations in the EU, which suggests that stakeholders had more agency to lobby, collaborate and work on projects and were not restricted to funders requirements. There were very few informal organisations such as associations and partnerships and it is suggested that these types of organisations are not included in the FEED-X activities going forward as there are grassroots initiatives and do not have the resources or leverage.

In the USA, most of the stakeholders were: small to medium sized third sector organisations with larger budgets (than EU stakeholders) and some large third sector organisations that were based in the USA but operated internationally. Overall, there was a higher dependency on other organisations specifically for funding and higher number of strategic partnerships, which suggests limitations of activities to align with funders objectives and collaboration with partners on specific projects, which could limit the agency of some organisations to lobby on political issues (or be seen to be). Stakeholder in the USA has more specialised knowledge than in the EU as such, this could fragment the sector, whereas the EU had more organisations in 'clusters' working on there same issues within aquaculture.

Stakeholders were examined and split into four clusters (stakeholder 'types'), depending on data collected. The frequency of each type of stakeholder was noted for each region. The engagement effort for FEED-X for each type is briefly outlined:

This research suggests FEED-X should focus on Type 1 and 2 (third and public sector) for political engagement and to leverage more stakeholders in the EU. For the USA it is suggested that Type 4 (large political bodies) have significant influence within the aquaculture sector and though challenging to access, can provide large membership bases and political leverage.

Introduction

The Edinburgh Centre for Carbon Innovation (ECCI) provided stakeholder analysis expertise on the **FEED-X project**, a strand of the WWF-founded and EIT Climate-KIC-funded Project X initiative. The project focuses on catalysing change in the food system and will source, test, finance and scale sustainable animal feed ingredients. The project is targeting 10% of the global feed industry to adopt alternative feed ingredients into value chains (purchase order for test or outright procurement). FEED-X aims to reduce feed ingredient production related to environmental impacts, specifically ingredients that are: contributing to land deforestation; exhausting the global carbon emissions budgets; and, sourced from non-responsible fishing practices.

Mincing up fish to provide protein in animal feed is hugely damaging, and finding more sustainable alternatives is a priority, especially in the current climate change scenario. There is a need to identify regulators, influencers in the aquaculture and feed/food system that have influence over EU/US regulations on feed, feed ingredients and technologies within aquaculture. ECCI's contribution focusses on mapping and characterising the EU and US aquaculture stakeholder environment with the aim of supporting Feed-X in identifying key players and understanding their weight in making aquaculture more sustainable. This will feed into activities later in the year, when the project will select the nine of the most promising innovators through the FEED-X Challenge. It will give them the opportunity to build their global profile, scale their operations and accelerate adoption across the entire industry. This will include introducing them to financing opportunities, direct market testing and the opportunity to work with leading aquaculture feed company Skretting.

Research Objectives

This report aims to identify stakeholders (with special focus on market and policy influencers) within the aquaculture and feed system sector that can impact EU/US regulations on feed, feed ingredients and technologies within aquaculture. Stakeholders are then analysed in order to examine their influence/interest within the sector, highlighting any trends and insight. The report then details how FEED-X could best engage with such stakeholders.

About the Edinburgh Centre for Carbon Innovation (ECCI)

ECCI are the leading low carbon hub for Scotland and beyond. We are hosted by the University of Edinburgh and deliver ground-breaking projects and kick-start new ideas. ECCI collaborate with leading organisations to deliver low carbon innovation. One of our core functions at ECCI is forging influential partnerships with key players, nationally and internationally.

Methodology

Stakeholder identification required a consistent methodology applied to both the EU and US. The methodological process was as follows:

1. **Search phase.** Identification of key stakeholders for FEED-X. We specifically focused on organisations that have the ability to influence EU/US decision making on feedstock and aquaculture through advocacy, campaigning, communications, policy, and description of each organisation and their operating context. The stakeholders were searched and found by simply typing keywords in an internet browser. Keywords used were “aquaculture” + “EU” or “USA”. Many stakeholders were also found through other stakeholders’ website, partnerships and networks.

Characterisation phase. Assessed each stakeholder’s profile, resources and policy negotiation capacity, utilising Mendelow, A.L. (1981) approach which focuses on organisational scoping and assessment, including an analysis of each stakeholders’ relative power (in this case, the organisation potential to influence stakeholders and regulations in the aquaculture and feed system sector within EU and USA). Of the identified stakeholders, the following details were recorded in a spreadsheet (hereafter *the database*):

Table 1. Details, grouped by category (profile, resources, negotiation and additional information), collected for each of the identified stakeholder.

Detail	Data captured from stakeholders
Profile:	<ul style="list-style-type: none"> Location (e.g., where the stakeholder is based or has the main office, or where the majority of its activities occur) <input type="checkbox"/> occur) <input type="checkbox"/> Field (e.g. seafood production; ocean protection, etc.) <input type="checkbox"/> Revenue <input type="checkbox"/> Sector (e.g., private, public, non-profit) <input type="checkbox"/> Size (i.e. number of employees) <input type="checkbox"/> Number of members (where applicable) <input type="checkbox"/> Objective/mission
Resources:	<ul style="list-style-type: none"> <input type="checkbox"/> Resources (e.g., what the stakeholder offers, e.g. training, platform for discussion, R&D) <input type="checkbox"/> Specialist knowledge (e.g., specific area of expertise, USP)
Negotiation:	<ul style="list-style-type: none"> <input type="checkbox"/> If organisation is dependent on funding (e.g., from partners, sponsors, members, donors, etc.) <input type="checkbox"/> Number of strategic partners (e.g., any formal agreements with organisations or other networks) <input type="checkbox"/> Potential interest of Feed-X in the stakeholder (e.g., does it align with the organisational objectives)
Additional information:	<ul style="list-style-type: none"> <input type="checkbox"/> Additional notes to consider in analysis <input type="checkbox"/> Website

3. **Mapping phase.** Map out and explain the stakeholder/sector specific representatives' importance and influence in the aquaculture and feed system sector, with justification.
4. **Suggestions for stakeholder engagement.** Describe the engagement effort and identify some of the lessons gained. Explain the journey of engagement i.e. how key stakeholders/sector representatives could be engaged by the FEED-X team. Include stakeholders/ sectors that may not be in the high influence/high interest category, but could be involved in the FEED-X Project (e.g., contributing formally or informally to objectives and activities).

Methodology Justification

Mendelow's (1981) approach was utilised as it enabled the researcher to capture data to assess the relative importance and influence of an organisation and covered both formal (e.g., legally registered) and informal (e.g., partnerships and association) stakeholders.

The approach captured variables affecting the relative importance and influence of formal stakeholders such as: legal hierarchy, authority of leadership (e.g., formal or informal structure/body), control of strategic resources, possession of specialist knowledge or skills and negotiation position (e.g., strength in relation to other stakeholders). Data regarding informal organisations was also captured by exploring: social, economic and political standing of organisations (e.g., degree of formal organisation), control over strategic resources, informal influence through links with other stakeholders and degree of dependence on other stakeholders'. In addition to these variables, the research also captured information on: who's interests are most met by FEED-X and whose objectives align with FEED-X.

The research focused on the variables noted above as concepts of power are very value-laden and subjective, therefore the research team had to base the study on information that was as factual as possible within the timeframe (e.g., hence they focused on the resources provided to each organisation, and partnerships between organisations, as we can say for certain the USP of each organisation/stakeholder).

The team aligned the concept of power with 'resource dependency' as there is a breadth of literature on this, which informed the research methodology (see Goverde et al. 2000). The research team then focused on the concept of 'influence' specifically on the *ability* of stakeholders to negotiate / lobby on political reform by understanding their limitations, formal partnerships, etc (see Bourne et al. 2005). This information combined with the organisations 'profile' (e.g., org type, funding, expertise, resources, members, staff) enabled the team to factually understand the *potential* influence of each organisation.

Limitations of Methodology

Stakeholders selected were profiled on their: location, organisational objective, interest in the aquaculture field and their key partnerships, influence and networks (criteria for this in the database, Table 1). This process informed the stakeholders influence on other stakeholders in the aquaculture field and on regulation and policy and the researcher has a clear understanding of the stakeholders remit.

Identifying the influence of specific stakeholders is relatively subjective. Relevant stakeholders and their respective power and/or influence within aquaculture sector (specifically regulation) was designed specifically for the FEED-X project requirements, but utilised credible academic approaches (Mendelow, A.L. (1981)) to develop a set of guidance questions and explanations (see the database). This enabled the researchers to make adjustments where necessary for the subjective judgement used thereby providing a “sense check” against key information that had to be collated to conduct the analysis.

Another limitation within the stakeholder analysis research is the relatively short timescales to complete the work to, therefore the report is as comprehensive as it can be within the time frame provided. ECCI conducted a desk based scoping exercise to identify relevant stakeholders within the aquaculture sector online through web searches, sectoral conference attendees and by tapping into their national and international networks.

Stakeholders Assessment

This section details the stakeholder assessment summary research findings from EU and USA stakeholders, based on the methodology above and on a synthesis of the database attached to this report.

Stakeholder profile: EU

Location

The diagram below maps out stakeholders location within the EU (GREEN), the USA (BLUE) and INTERNATIONAL stakeholders (RED) that could impact aquaculture / fish feed policy and regulation both regions. More detail can be found in the database in the Appendix.

Of the 35 stakeholders identified in the EU:

- 71% of stakeholders based in the EU have likely influence only at **country level**.
- 29% of stakeholders based in the EU have likely **international influence (European level)**.

The analysis identified most stakeholders operated at a country-level to lobby national government on aquaculture issues, however, almost a third clearly stated on their website that they aimed to influence policy at a European level (these stakeholders tended to be networks with membership organisations from across Europe and were seen as a key partner 'node' in lobbying for specific regulations or lack of and for communicating opportunities across Europe).



Sector

Stakeholders operated in sector specific areas, with the majority (60%) focusing on aquaculture (policy and legislation, funding, research and projects), around one third (28%) specialising in marine protection and the rest on diverse thematic areas such as aquaculture investment and fish feed.

Revenue

No database available to identify revenue within European stakeholders, therefore the researchers' examined the potential budgets in organisational documentation. The research was able to identify if the stakeholder had a budget or not, though this information was not always readily available online and would require contacting the stakeholders directly.

Type of organisation

The majority of stakeholders are third sector and public sector organisations (formal entities). There are few informal organisations that rely on members to volunteer time and few private, commercially driven stakeholders.

35 org stakeholders in EU:	35	%
public	13	37.1%
private	3	8.6%
third	16	45.7%
association/partnerships	3	8.6%

Size (number of employees)

The majority of stakeholders (77%) have between 5-20 employees (small to medium sized organisations) and have a dedicated and resource secretariat to carry out activities. Only five stakeholders are large organisations with other 100 employees.

Org	size
IUCN	1000+
Crown Estate	450
MA-HAL	100
Croatian Chamber of Commerce	100
APA (Portugal)	100

Number of members

The table below highlights the stakeholders within the largest number of members. The researchers examined the stakeholders and identified: 34% (12) of stakeholders had between 0-50 members; 8% (3) of stakeholders had between 51-100 members; 20% (7) has between 101-500 members; 8% (3) had between 501-1000 members, and with 10 stakeholders it was not possible to identify a specific number.

Org	members
IUCN	1,400
General Union Aquaculture Producers	1,000
Norway Seafood Federation	600
Renewables UK	291
VDBA (and others)	100+

International stakeholders had the most members, country-specific stakeholders tended to have a smaller number of members.

Objective/mission

Please see Appendix for a comprehensive/detailed list of stakeholder objectives. The objectives were examined to identify those that aligned with the FEED-X aims and if they would be interested in the project. Over 74% (26) stakeholders could be interested, with 25% (9) potentially not interested (please note this conclusion is somewhat subjective and was based solely on an analysis of the organisations webpage).

Stakeholder profile: USA

Location

Of the 36 stakeholders identified in North America:

- 85% likely have influence only at **country level** as they are solely based in US.
- 15% have likely **international influence (global level)** as they have offices/bases in other countries out of the US.

Stakeholders in the USA tended to have less international orientated organisations than in the EU (with twice the amount of EU stakeholders focusing on international activities). However, the organisations that were based in the USA and did focus on international activities tended to be significantly larger organisations (by membership, employee size and number of strategic partners).

Sector

Most of the identified stakeholders (45%, 16 stakeholders) operated within the aquaculture sector; 17% (6 stakeholders) focused on seafood sector and 17% (6 stakeholders) focused on fisheries. In addition, 11% (4 stakeholders) worked within the marine protection sector and 8% (3 stakeholders) worked in agriculture that was specifically linked with aquaculture.

Type of organisation

The majority (38.5%) of US-based stakeholders are from the third sector, followed by the private (30.8%), associations/partnerships (19.2%) and public sector organisations (15.4%; Figure 1).

Size (number of employees)

Of the US-based stakeholders, 65% has a size (number of employees) smaller than 20, 20% has a size comprised between 20 and 100, while only 15% has a size larger than 100, reaching 105,778 employees at the USDA. Even if public sector bodies involved in aquaculture are smaller (by employees), they are the most powerful in terms of size, revenue and partners.

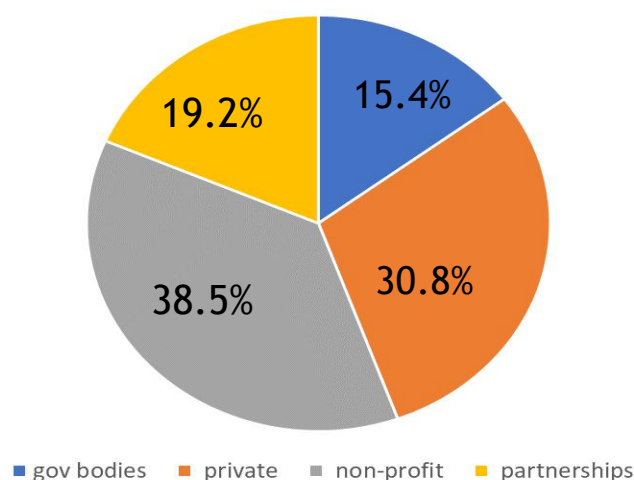


Figure 1. Pie chart showing the percentages of the different types of organisations (governmental bodies = 15.4%; private = 30.8%; non-profit = 38.5%; association/partnerships = 19.2%).

In US, the top five organisations according to the number of employees were:

Org*	size
USDA	105,778
NOAA	12,000
Blue Ridge Aquaculture	88
The Fish Site	25
Centre for Food Safety	18

* Please see below for a short description of the organisation and about its relevance in the context of aquaculture

- *USDA (United States Department of Agriculture)*. Applied aquaculture research and technology transfer at USDA has improved the international competitiveness and sustainability of U.S. aquaculture and reduced the dependency on imported seafood and threatened ocean fisheries.
- *NOAA (National Oceanic and Atmospheric Administration) – Fisheries Department*. NOAA Fisheries is responsible for the stewardship of the nation's ocean resources and their habitat. They provide vital services for the nation: productive and sustainable fisheries, safe sources of seafood, the recovery and conservation of protected resources, and healthy ecosystems—all backed by sound science and an ecosystem-based approach to management.

CASE STUDY STAKEHOLDER:

The Centre for Food Safety (CFS) is a national non-profit public interest and environmental advocacy organization that for twenty years has been at the forefront of organizing a powerful food movement that is fighting the industrial model and promoting organic, ecological, and sustainable alternatives.

Internationally, the top five organisations according to the number of employees were:

Org	size
FAO	11,561
The Nature Conservancy	3,500
Friends of the Earth International	1,200
Conservation International	1,000
INVE Aquaculture	400

* Please see below for a short description of the organisation and about its relevance in the context of aquaculture

- *FAO*. The Food and Agriculture Organization (FAO) is a specialized agency of the United Nations that leads international efforts to defeat hunger. Their goal is to achieve food security for all and make sure that people have regular access to enough high-quality food to lead active, healthy lives. The Fisheries and Aquaculture Department supports all efforts to promote Blue Growth - environmental performance - to all fisheries and aquaculture policies. The with its emphasis on reconciling social and economic development with Department leads efforts to promote and support implementation of the Code of Conduct for Responsible Fisheries and its related instruments, in addition to providing scientific advice, strategic planning, and training materials. Moreover, it serves as a neutral forum in bringing together relevant actors to discuss issues related to international cooperation and multi-stakeholder approaches to fisheries and aquaculture management.

- *The Nature Conservancy*. Their mission is to conserve the land and waters on which all life depends. Their vision is a world where the diversity of life thrives, and people act to conserve nature for its own sake and its ability to fulfil our needs and enrich our lives. The Nature Conservancy has grown to become one of the most effective and wide-reaching environmental organizations in the world. Thanks to more than a million members and the dedicated efforts of our diverse staff and more than 400 scientists, we impact conservation in 72 countries across six continents.
- *Friends of the Earth International* are considered a significant political influencer, with more than two million members globally, and **opponent** to corporate fish farming. From the *Fish Site*: 'Friends of the Earth has delivered more than 38,500 comments opposing a National Oceanic and Atmospheric Administration (NOAA) plan to increase aquaculture production in the USA...While NOAA's plan offers a utopian vision for factory fish farming, the reality is that these facilities would destroy our wild-capture fishing industries, devastate the ocean ecosystem and give mega-corporations greater control of our food production system.'
- *Conservation International (CI)*. CI and WorldFish Centre released a comprehensive analysis of the environmental impact of the world's major aquaculture production systems and species. This is the first global analysis of the ecological impact of seafood farming, an industry that has grown rapidly over the past 50 years and now provides half the seafood consumed worldwide. The ecological impact of aquaculture is compared by species, method, and country. It is also compared to other sources of protein and nutrition. **The findings of this report serve as the guide for policy in the future.** Report [available here](#).
- *INVE Aquaculture* is a pioneer in the aquaculture industry, always been about enabling healthy growth of fish and shrimp, the growth of their clients' local businesses and the growth of global aquaculture as a whole. They support hatcheries and farms worldwide with concepts, best practices and technologies that improve their bottom line.

Revenue

In US, the top five organisations according to the revenue were:

Org	revenue
Aquacare	\$24.9M
Blue Ridge Aquaculture	\$19.7M
NOAA	\$12.8M
USDA	\$9.4M
Fish Choice	\$7.3M

* Please see below for a short description of the organisation and about its relevance in the context of aquaculture

- *Aquacare* and *Blue Ridge Aquaculture* are two private organisations within the aquaculture sector. Specifically, the former supplies controlled environment aquaculture technology to the aquaculture industry while the latter is the world's largest producer of tilapia using indoor recirculating aquaculture systems.
- *Fish Choice*. This is a third sector organisation that creates solutions that accelerate sustainability in the global seafood industry and their vision is a thriving and sustainable global seafood industry. FishChoice is dedicated to helping businesses advance their seafood sustainability efforts on their own by offering solutions that accelerate sustainability in the global seafood industry.

At international level, the top five organisations according to the revenue were:

Org*	revenue
The Nature Conservancy	\$1.29b
WWF	\$336m
Conservation International	\$158m
OCEANA	\$53m
Global Aquaculture Alliance	\$12m

* Please see below for a short description of the organisation and about its relevance in the context of aquaculture

- The Nature Conservancy. Please see Appendix.
- WWF. As a conservation organization, WWF is concerned about the negative effects the industry has had - and could continue to have - on the environment and society. They know that when done responsibly, aquaculture's impact on wild fish populations, marine habitats, water quality and society can be significantly and measurably reduced.
- *Conservation International*. Please see Appendix. *OCEANA* is a non-profit organisation that works to win policy victories that will restore and maintain ocean abundance and biodiversity; the *Global Aquaculture Alliance* (GAA) promotes responsible aquaculture practices through education, advocacy and demonstration; while *INVE Aquaculture* is an international company with offices across Belgium, Thailand and USA that develops solutions for fish farms and hatcheries worldwide.
- *Global Aquaculture Alliance*. Their mission is to promote responsible aquaculture practices through education, advocacy and demonstration. For over 20 years, they have demonstrated commitment to feeding the world through responsible and sustainable aquaculture. They do this by providing resources to individuals and businesses worldwide who are associated with aquaculture and seafood. They improve production practices through their partnerships with countries, communities and companies, as well as online learning and ground-breaking journalism that boasts active readership in every country of the world.

Number of members

For the majority of USA stakeholders (68%, 26 stakeholders), no data was available to identify how many members each organisation had. Overall, only 2 stakeholders had less than 20 members, 2 stakeholders has between 21-50, 2 stakeholders had between 101-500 stakeholders and 5 had over 500 members (these were large international focused organisations).

Objective

Please see Appendix for a comprehensive list of stakeholder objectives.

Stakeholder resources: EU

Resources

The majority of resources provided by EU stakeholders were communication activities (74%) then political lobbying and campaigning (68%). Research and projects were also mentioned frequently by (48%) stakeholders as many relied on project funded activities. Activities such as networking (25%) and training and skills (14%) were also mentioned by stakeholders.

resource	frequency
Communications	26
Political links & campaigning	24
Research	17
Networks	9
Skills and training/events	5

Knowledge of stakeholders

The research data identified that European stakeholders' area of expertise was predominantly aquaculture related (48%), then marine protection (37%), fisheries (34%) and aquaculture policy specifically (31%).

knowledge topic	frequency
Aquaculture	17
Marine protection	13
Fisheries	12
Policy	11
Seafood	5
Feed industry	5

Stakeholder resources: USA

Resources

Based on an internal system for categorisation of resources (see spreadsheet), the top five resources offered by the identified USA-based stakeholders were: 42% (15) activity focused on political lobbying and advocacy, with 28% (10 stakeholders) working on research and development (e.g., projects based), with the remaining stakeholders working on communications (22%), discussion (20%) (e.g., facilitation / knowledge brokerage roles), and, skills and training (17% of stakeholders).

resource	frequency
advocacy	15
R&D	10
comms	8
discussion	7
training	6

Specialist knowledge

The majority of the stakeholders focused purely on aquaculture (31%, 11 stakeholders); while other stakeholders (34%) presented slight different sub-themes of aquaculture, such as seafood, and fishery, and focusing specifically on communications, sustainability, conservation, research, technology development, etc.

knowledge topic	frequency
aquaculture	11
sustainability	3
fishery	2
research	2
knowledge transfer/comms	2

Stakeholder negotiation and influence: EU

This section has examined the stakeholder database to assess organisations dependency on other stakeholders regarding: funding, memberships or affiliations, and, formal strategic partnerships as this will directly influence the stakeholders agency to advocate on specific political issues.

Stakeholder negotiation and influence: EU

Are stakeholders dependent on funding from another organisation?

Yes: 11 (32%)

No: 24 (68%)

Are stakeholders formally members of another network?

Yes: 5 (15%)

No: 30 (85%)

Do stakeholders have any strategic partners or collaborations with other organisations?

Yes: 9 (26%)

No: 26 (74%)

Stakeholder negotiation and influence: USA

Stakeholder negotiation and influence: USA

Are stakeholders dependent on funding from another organisation?

Yes: 23 (65%)

No: 12 (35%)

Are stakeholders formally members of another network?

Yes: 8 (23%)

No: 27 (77%)

Do stakeholders have any strategic partners or collaborations with other organisations?

Yes: 19 (54%)

No: 16 (46%)

Number of strategic partners

In US/Canada, the top five organisations according to the number of partners were:

Org	partners
Seafood Watch - Monterey Bay Aquarium	1826
Ocean Wise	784
USDA	30
Stronger America Through Seafood	23
Seafood Nutrition Partnership	22

Most stakeholders who developed formal strategic partners with other organisations were network type organisations who would lobby on behalf of a specific topic.

CASE STUDY STAKEHOLDER:

Stronger America Through Seafood is a coalition of partners that works to secure a stronger America through increased U.S. production of healthful, sustainable, and affordable seafood.

Stakeholders trends and insights

Trends: EU

In Europe, most of the stakeholders were: small to medium sized third sector organisations with a small budget and focused specifically on aquaculture issues. Their activities centred on policy advocacy, communications and research. Overall, there was less dependency on other organisations in the EU, which suggests that stakeholders had more agency to lobby, collaborate and work on projects and were not restricted to funders requirements. There were very few informal organisations such as associations and partnerships and it is suggested that these types of organisations are not included in the FEED-X activities going forward as there are grassroots initiatives and do not have the resources or leverage.

The top three influencers (in terms of networks, resourcing, objectives) in the EU are:

1. General Union of Aquaculture producers
2. Eurofish
3. Aquaculture Advisory Council

Trends: USA

In the USA, most of the stakeholders were: small to medium sized third sector organisations with larger budgets (than EU stakeholders) and some large third sector organisations that were based in the USA but operated internationally. Overall, there was a higher dependency on other organisations specifically for funding and higher number of strategic partnerships, which suggests limitations of activities to align with funders objectives and collaboration with partners on specific projects, which could limit the agency of some organisations to lobby on political issues (or be seen to be). Stakeholder in the USA has more specialised knowledge than in the EU as such, this could fragment the sector, whereas the EU had more organisations in 'clusters' working on there same issues within aquaculture.

The top three influencers (in terms of budgets, networks and expertise) in the USA are:

1. USDA
2. NOAA
3. Blue Ridge Aquaculture

Globally, the top three influencers are (in terms of budgets, networks and resourcing) are:

1. Conservational International
2. FAO
3. INVE Aquaculture

For both EU and USA regions, small to medium sized organisations were networks themselves, and lobbied on specific sectoral issues that were directly relevant to their membership base. The USA had more informal organisations than the EU (approx. 19% of stakeholders), which suggests that the aquaculture sector is more established in the EU as more formal organisations existed to lobby for a change in regulation. In addition, informal organisations are vulnerable to membership changes and thus have less influence. The number of private sector organisations in the USA could hinder FEED-X's ability to engage in the policy process as they will be lobbying for their own organisations objectives and ethical issues may need to be considered.

Engagement effort

Stakeholders have been examined and split into four clusters (stakeholder ‘types’), depending on data collected. The frequency of each type of stakeholder is noted in each region. The engagement effort for FEED-X for each type is briefly outlined.

<p>TYPE 1: third sector organisations, membership based budget, mid-sized (15-20 staff) EU: Frequent (less budget) USA: Not frequent (more budget)</p> <p>Make up majority of stakeholders in Europe and have potential to collectively have a strong political influence at both country level and at a European level. Similar objectives to FEED-X and staff are resourced to work on relevant issues (e.g., political advocacy, communication)</p> <p>Suggestion: Focus on EU type 1 for political engagement and to leverage more stakeholders. In USA it is less frequent, but partners have more budget, therefore more tailored and strategic approach required for USA.</p>	<p>TYPE 2: public sector agencies, operating at both country and EU/ international level EU: Frequent (30% stakeholders) USA: Not frequent (private sector focus)</p> <p>Well resourced, public sector agencies are frequent in EU but not in the USA. Working closely with such stakeholders could provide political intelligence and a FEED-X could directly lobby national and international (EU) level decision making. Private sector focus in USA could be useful for technology development for the sector.</p> <p>Suggestion: Focus on type 2 for EU direct political engagement to bypass stakeholder engagement on key issues. May need type 1 organisation to make introductions initially.</p>
<p>TYPE 3: associations and informal organisations, country-specific, grassroots EU: Not frequent USA: Quite frequent (19% of stakeholders)</p> <p>Tend to have less formal structure, less resources (staff and finance), less networks or members.</p> <p>Suggestion: Limited engagement with FEED-X and limited scope for disseminating information, less influence within political issues and regulation as focus is on more localised specific issues that affect fewer organisations / people.</p>	<p>TYPE 4: Large third sector network organisations, international EU: Less frequent USA: Frequent</p> <p>USA has a few large scale organisations with international / global outreach who are well resourced and known ‘influencers’ in their field. This could be a gateway to identifying stakeholders in other regions (e.g., South America). Accessing such organisations may be challenging but potential impact on policy is significant.</p> <p>Suggestion: Focus on type 4 within the USA, tailoring your approach.</p>

Appendix

Appendix 1. Stakeholders' mission and objectives

Europe

APA

The Portuguese Environment Agency (APA) is a new public institute, within the scope of the Portuguese Ministry of the Environment and Energy Transition. Our mission is to propose, develop and monitor, on an integrated and participated manner, the public policies for the environment and sustainable development, in close cooperation with other sectoral policies and public and private entities.

APROMAR

APROMAR is the Business Association of Aquaculture of Spain. We are a professional organization, voluntary, non-profit and national. We are also recognized by Ministerial Order of December 30, 1986 as Producer Organization (OP-30) for national and European Union purposes.

AQUACULTURE ADVISORY COUNCIL

The Aquaculture Advisory Council (AAC) is a balanced stakeholder representative organisation created for consultation on elements of Union policies which could affect aquaculture under Articles 34 and 44 of Regulation (EU) No 1380/2013.

AQUASPARK

Aqua-Spark is a global investment fund based in Utrecht, the Netherlands that makes investments in sustainable aquaculture businesses that generate investment returns, while creating positive social and environmental impact. The fund invests in small to medium enterprises that are working towards the production of safe, accessible aquatic life, such as fish, shellfish and plants, in a way that does not harm the health of the planet

ASSOCIAZIONE PISCIOLTORI ITALIANI

The A.P.I. is a non-profit corporation. It aims to protect, develop and consolidate all activities related to fish-breeding both in fresh and in salt and brackish waters. Consequently, it promotes any financial, scientific, technical, insurance, professional, union and legal interventions which may prove necessary to reach this target

BRITISH TROUT ASSOCIATION

The British Trout Association was set up in 1983 and represents in the region of 80% of trout production in the UK. It has over 100 members made up of trout farmers, feed suppliers and a number of aquacultural academics.

COLLEGE DES PRODUCTEURS

The College of Producers is the link between the Producers, the public authorities and the actors of the sectors. Within the College, Producers can interact with public agencies, consumers, the agri-food sector and distribution.

CROATIAN CHAMBER OF ECONOMY

The Croatian Chamber of Economy is an independent professional and business organisation of all legal entities engaging in business. The Chamber consists of the Headquarters in Zagreb and 20 County Chambers.

CROWN ESTATE

The Crown Estate is a collection of lands and holdings in the United Kingdom belonging to the British monarch as a corporation sole, making it the "Sovereign's public estate", which is neither government property nor part of the monarch's private estate.

DANSK AKVAKULTUR

Danish Aquaculture members breed fish, shellfish, seaweed and feed in international top class. This is due to a proud Danish breeding tradition dating back to the end of the 19th century, when the first Danish fish farms were established.

EU AQUACULTURE TECH AND INNOV PLATFORM

ATIP is an international non-profit association dedicated to developing, supporting and promoting aquaculture and, especially and specifically, technology and innovation in aquaculture in Europe.

EUROFISH

Contribute to the sustainable development of the fisheries and aquaculture sector; Promote trade of high quality, value-added fishery products; Facilitate the transfer of information and knowledge.

EUROPEAN AQUACULTURE SOCIETY

To promote contacts between all involved or interested in marine and freshwater aquaculture

FEDERATION OF EU AQUACULTURE PRODUCERS

FEAP is the united voice of the European aquaculture production industry, being the Federation of National aquaculture associations in Europe that represent professional fish farming.

FEDERATION OF GREEK MARICULTURE

FGM is focusing in the establishment and the promotion of the successful development of the Greek Mariculture Industry. The companies - members of FGM - represent the 80% of the total production capacity of sea bass and sea bream.

FEDERATION OF VETERINARIANS OF EUROPE

We are the umbrella body for veterinary associations from 39 European Countries. We represent, through our Sections, veterinarians working in different fields of the profession, such as veterinary practitioners (UEVP), state officers (EASVO), food safety and veterinary public health (UEVH) and veterinarians working in education, research and industry (EVERI).

FEFAC

FEFAC is the only independent spokesman of the European Compound Feed Industry at the level of the European Institutions.

FFA

Poisson-aquaculture.fr, CIPA's portal, Interprofessional Committee for Aquaculture Products, offers information on aquaculture in our regions, freshwater fish farming and marine and new aquaculture, and invites you to discover many gourmet fish recipes.

GENERAL UNION OF AQUACULTURE PRODUCERS

Producer organization established with the approval of the Ministry of Agriculture and Rural Affairs in 2009 according to the provisions of the Agricultural Producer Unions Law No. 5200. Our associations have approximately 1000 members.

HELCOM (Baltic Sea Area)

HELCOM (Baltic Marine Environment Protection Commission - Helsinki Commission) is the governing body of the Convention on the Protection of the Marine Environment of the Baltic Sea Area, known as the Helsinki Convention.

IRISH FARMERS ASSOCIATION

The IFA is Ireland's largest farming representative organisation. We have protected and defended the interests of Irish farmers in all sectors for more than 60 years.

ISSF

The ISSF team engages all constituencies in dialogue and projects that advance ISSF objectives. We serve as a global bridge among industry, environmental stakeholders, scientists, and RFMOs and their members.

LANDSSAMBAND FISKELDISSTODVA

The Federation carries out the general interest of aquaculture in the country. The aim of the association is to promote and strengthen aquaculture in Iceland.

MA-HAL

MA-HAL has 100 members, who are stakeholders along the supply chain of the Hungarian aquaculture sector including producers, processors, traders, R&D and training institutions. Production of MA-HAL members covers more than 90% of the Hungarian aquaculture production. MA-HAL is member of the Federation of European Aquaculture Producers (FEAP) and the Hungarian Mirror Platform (HUNATiP) of the European Aquaculture Technology and Innovation Platform (EATiP). The Hungarian Inter-branch Organisation facilitates the dialogue between actors in the supply chain, promotes best practices and market transparency, improve knowledge of production and the market, forecast productions potential, help to coordinate better marketing activities and to explore potential export markets.

MARITIME INSTITUTE OF EASTERN MEDITERRANEAN

The "Maritime Institute of Eastern Mediterranean" is a novel non-profit organization, based in Cyprus, which aims to promote Research, Technology, Innovation, Sustainability and Environmental Protection as well as Education and Training within and for the Maritime Industry, in support of Sustainable Blue Growth.

NATIONAL FEDERATION OF FISHERMEN'S ORGANISATIONS

The National Federation of Fishermen's Organisations (NFFO) exists to provide a voice for fishermen, irrespective of where on the coast they are based or the size of the vessel they operate.

NEVEVI

NeVeVi unites fish farmers in the Netherlands. The association consists of Dutch fish farmers of various fish species, including: Trout, Catfish, Claresse, Eel, Zander and Turbot.

OSPAR COMMISSION

The OSPAR Commission provides a platform for Member States to cooperate and fulfil their obligations under the convention. The Commission is made up of the governments of 15 Contracting Parties and the EC. The Commission's objective is to reduce and eliminate marine pollution, but it also works towards marine species & habitat protection.

POLISH TROUT BREEDERS ASSOCIATION

PTBA unites more than one hundred members. Nearly 100% share in total Polish trout production belongs to PTBA. The Polish Trout Breeders Association consists of a legal team and persons conducting professional fish production, primarily of salmonid fish, as well as other species with a potential future in the marketplace.

RENEWABLES UK

RenewableUK is the UK's leading renewable energy trade association, specialising in onshore wind, offshore wind, and wave & tidal energy.

SCOTTISH SALMON

Scottish Salmon Producers Organisation (SSPO) is at the centre of Scottish salmon farming's industry-wide initiatives and public communication, acting as a trusted source of information and a strong industry voice. The organisation plays a central role in representing its members on political, regulatory, media and technical issues in Scotland, the UK, EU and internationally.

SEA FISHERIES PROTECTION AUTHORITY

The Sea-Fisheries Protection Authority (SFPA) carries out a number of functions, including protecting and conserving fisheries resources for long-term use; promoting compliance with sea-fisheries legislation; and ensuring seafood safety.

SJOMARTNORGE (Norway Seafood Federation)

The Norwegian Seafood Federation (formerly known as FHL) represents the interests of approximately 600 member companies. Our member companies cover the entire value chain from fjord to dinner table in the fisheries and aquaculture sectors in Norway.

SUOMEN KALANKASVATTAJALITTO

The Finnish Fish Breeders' Association is a nationwide organization of fish farmers' interests. The association was founded in 1964. In its work, the federation monitors and promotes the interests and the operating conditions of the fish farming industry as a part of the whole fishing industry and creates the conditions for sustainable aquaculture. The task is to monitor and influence the legislation, governance and market development of fish farming, and to address the gaps in the industry's environment. In addition, the federation has an influence on research and education that develops the sector, as well as to share information about the industry

VDBA

The task and purpose of the VDBA is the national, joint and international representation of all aspects of German fish farming, fish farming and lake and river fishing. The VDBA is committed to the protection of nature, water and animals. He promotes the union of professional fishermen and anglers and is a member of the German Fisheries Association

VSF

The aim of the association of Swiss fish farmers is to bring together a majority of private aquaculture farms in Switzerland, regardless of the species of fish raised.

International

Conservation International

Building upon a strong foundation of science, partnership and field demonstration, CI empowers societies to responsibly and sustainably care for nature, our global biodiversity, for the well-being of humanity.

Food & Agriculture Organization (FAO) - Fisheries and Aquaculture Department

The Food and Agriculture Organization (FAO) is a specialized agency of the United Nations that leads international efforts to defeat hunger. Our goal is to achieve food security for all and make sure that people have regular access to enough high-quality food to lead active, healthy lives.

Friends of the Earth International

We believe in evidence based solutions to environmental problems that make life better for people while protecting the planet for future generations. We believe in promoting people's action, individual and collective, local, national and international, to tackle the environmental challenges we face.

Global Seafood Ratings Alliance (GSRA)

The GSRA is a collaboration of seafood rating organizations focused on ensuring healthy oceans and freshwater bodies by supporting sustainable production of wild and farmed seafood through evaluating the environmental performance of seafood producers, advancing sustainable seafood issue salience and promoting sustainable products.

Global Sustainable Seafood Initiative

The mission of GSSI is to ensure confidence in the supply and promotion of certified seafood as well as to promote improvement in the seafood certification schemes.

INVE Aquaculture

Larvae quality is one of the main drivers for successful fish and shrimp farming. This is why we develop solutions that help larvae, fry and PL exploit their full potential throughout the production chain. Every day our products and protocols prove their added value in hundreds of farms and hatcheries worldwide.

IUCN

The International Union for Conservation of Nature is the global authority on the status of the natural world and the measures needed to safeguard it.

The Nature Conservancy

Their mission is to conserve the land and waters on which all life depends. Their vision is a world where the diversity of life thrives, and people act to conserve nature for its own sake and its ability to fulfill our needs and enrich our lives. The Nature Conservancy has grown to become one of the most effective and wide-reaching environmental organizations in the world. Thanks to more than a million members and the dedicated efforts of our diverse staff and more than 400 scientists, we impact conservation in 72 countries across six continents.

World Aquaculture Society

The World Aquaculture Society (WAS) is strategically positioned to play an important role in assuring the progressive development of aquaculture worldwide by meeting the increased global demand for science-based information and technology.

WorldFish

The WorldFish mission is to strengthen livelihoods and enhance food and nutrition security by improving fisheries and aquaculture.

WWF

Seafood is one of the most popular sources of protein worldwide. Almost half of the seafood we eat comes from farms. And seafood farming—also known as aquaculture—is the fastest growing food production system in the world. The rapid expansion of the aquaculture industry has not come without impacts. As a conservation organization, WWF is concerned about the negative effects the industry has had—and could continue to have—on the environment and society. We know that when done responsibly, aquaculture's impact on wild fish populations, marine habitats, water quality and society can be significantly and measurably reduced.

USA

Alaska Seafood Marketing Institute

The Alaska Seafood Marketing Institute is a marketing organization with the mission of increasing the economic value of the Alaska seafood resource

Algoid technologies

Algoid Technologies, a certified State of Florida Aquaculture Facility, is a division of Faremax, Inc., that has been involved in aquaculture as a diverse and up-to-the-minute technology, creating research and development on the use of microalgae across several different commercial uses and industries.

Aquacare

Aquacare Environment Inc. supplies controlled environment aquaculture technology to the aquaculture industry.

Aquaculture North America

Aquaculture North America follows the trends, the issues, the people and events that have set the pace for this, the fastest growing agribusiness sector on the continent. Our coverage is relevant to all finfish and shellfish species grown in North America plus special reports from other regions around the world.

Best Aquaculture Practices Certification

BAP is the world's most trusted, comprehensive and proven third-party aquaculture certification program. We've been improving the environmental, social and economic performance of the aquaculture supply chain and growing the global supply of responsibly farmed seafood since 2002.

Blue Ridge Aquaculture

Blue Ridge Aquaculture, Inc. is the world's largest producer of tilapia using indoor recirculating aquaculture systems (RAS)

BrioBiotech, LLC

BrioBiotech is a Maryland-based company focused on the development and commercialization of innovative products and technologies to deliver improved healthcare outcomes in animals. Initial research and development is focused on aquaculture and fish farming and enhancing/broadening the practicality of oral delivery of nutraceuticals, vaccines, water soluble chemicals and therapeutics, with the goal of significantly increasing the efficacy of the deliverable, thereby reducing the required dosage

Center for Food Safety (CFS)

For twenty years, CFS has been at the forefront of organizing a powerful food movement that is fighting the industrial model and promoting organic, ecological, and sustainable alternatives.

Fish Farming News

FISH FARMING NEWS is the business newspaper for the US aquaculture industry. Readers include more than 7,500 aquaculture professionals who are directly or indirectly involved in the business of growing fish and seafood products. Circulation is national, encompassing all major farm raised species (finfish, shellfish and aquatic plants) both marine and fresh water aquaculture.

Fish for America USA, Inc.

Fish for America USA, Inc.'s purpose is to educate the American consumer on their rights to consume domestic, wild caught seafood and ways they can contribute to domestic, wild caught seafood sustainability and maintain their fishing accountability.

FishChoice

Mission: Creating solutions that accelerate sustainability in the global seafood industry; Vision: A thriving and sustainable global seafood industry. FishChoice is dedicated to helping businesses advance their seafood sustainability efforts on their own by offering solutions that accelerate sustainability in the global seafood industry.

Global Aquaculture Alliance (GAA)

Their mission is to promote responsible aquaculture practices through education, advocacy and demonstration. For over 20 years, they have demonstrated

commitment to feeding the world through responsible and sustainable aquaculture. We do this by providing resources to individuals and businesses worldwide who are associated with aquaculture and seafood. We improve production practices through our partnerships with countries, communities and companies, as well as online learning and groundbreaking journalism that boasts active readership in every country of the world.

Gulf of Mexico Fishery Management Council

The Gulf of Mexico Fishery Management Council is one of eight US Regional Fishery Management Councils established by the Fishery Conservation and Management Act of 1976. Manages fishery resources in the federal waters of the Gulf of Mexico; Prepares fishery management plans (FMPs) and makes recommendations by balancing competing interests; Uses scientific advice from NOAA Fisheries and public opinion to inform FMP recommendations; Aims to achieve the greatest overall benefit to the nation by sustaining and maintaining responsible fisheries management; Stays consistent with the ten national standards laid out by the Magnuson Stevens Act; Specifically manages reef fish, shrimp, spiny lobster, coastal migratory pelagics, corals, essential fish habitat, red drum, and aquaculture.

National Aquaculture Association (NAA)

To provide a unified national voice for aquaculture that ensures its sustainability, protects its profitability, and encourages its development in an environmentally responsible manner

NOAA (National Oceanic and Atmospheric Administration) Fisheries

NOAA Fisheries is responsible for the stewardship of the nation's ocean resources and their habitat. We provide vital services for the nation: productive and sustainable fisheries, safe sources of seafood, the recovery and conservation of protected resources, and healthy ecosystems—all backed by sound science and an ecosystem-based approach to management.

Ocean Wise

Our mission is to inspire the global community to become Ocean Wise by increasing its understanding, wonder and appreciation for our oceans.

OCEANA

Oceana works in the United States to win policy victories that will restore and maintain ocean abundance and biodiversity.

Recirculating Farms Coalition

The Recirculating Farms Coalition is a collaborative group of farmers, educators, non-profit organizations and many others committed to building local sources of healthy, accessible food. Through research, education and advocacy, we work together to support the development of eco-efficient farms that use clean recycled water as the basis to grow food. We believe these recirculating farms can create stable green jobs and supply sustainably-grown food – fruits, vegetables, herbs and humanely-raised seafood – in diverse communities nationwide, and someday, worldwide.

Sahlman Seafoods Inc.

A family owned Florida company located in Tampa. We are a fully-integrated production company that farms, processes and markets raw shrimp that includes farm-raised shrimp under the brand “Bee Gee” from Nicaragua.

Seafood Nutrition Partnership

SNP is addressing the country’s public health crisis through education programs that inspire Americans to incorporate more seafood and omega-3s into their diets for improved health as per leading health organizations.

Seafood Watch - Monterey Bay Aquarium

The Monterey Bay Aquarium Seafood Watch® program helps consumers and businesses choose seafood that's fished or farmed in ways that support a healthy ocean, now and for future generations. Our recommendations indicate which seafood items are Best Choices or Good Alternatives, and which ones you should Avoid.

Stronger America Through Seafood (SATS)

Securing a stronger America through increased U.S. production of healthful, sustainable, and affordable seafood

The Conservation Alliance for Seafood Solutions

The ultimate goal of the Conservation Alliance is to preserve the health of ocean and freshwater ecosystems and ensure a long-term seafood supply.

The Fish Site

The Fish Site is published by 5m Enterprises, who also host Aquaculture UK and the Scottish Marine Aquaculture Awards, deliver Sustainable Aquaculture courses in partnership with St Andrew’s University. Our international team of contributors are guided by our vision for aquaculture, reporting on the economics, environment and ethics of contemporary food chain challenges. We challenge the status quo to create understanding, opportunity and innovation.

the Subcommittee on Aquaculture (SCA)

The SCA is a federal interagency coordinating group that increases the overall effectiveness and productivity of federal aquaculture research, transfer, and assistance programs.

U.S. Aquaculture Society - USAS

To provide a national forum for the exchange of timely information among aquaculture researchers, students, and industry members in the U.S.

USDA (United States Department of Agriculture)

Applied aquaculture research and technology transfer at USDA has improved the international competitiveness and sustainability of U.S. aquaculture and reduced the dependency on imported seafood and threatened ocean fisheries.

World Aquaculture Society

The World Aquaculture Society (WAS) is strategically positioned to play an important role in assuring the progressive development of aquaculture worldwide by meeting the increased global demand for science-based information and technology.