



# FEED X DE-RISKING TOOL

## Labour Risks and Social Tradeoffs

A report prepared  
by FAI Farms Ltd.

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## EXECUTIVE SUMMARY

This report provides a practical framework to systematically assess social wellbeing risks and benefits in supply chains. It guides the process of assessing social tradeoffs involved in changing suppliers in existing feed ingredient chains, or novel ones, using a series of questions based on indicators of wellbeing, and social risks and benefits. It also facilitates the process of prioritizing and reducing risks that are identified as well as identifying potential collaborators to address risks.

This FEED X de-risking framework represents a system thinking approach to social wellbeing. The system level approach helps us treat extreme labor abuses such as slavery as part of a continuum of labor risks in the feed industry. Beyond that, we see the de-risking of supply chains as part of a larger and longer-term project of creating greater net social as well as environmental benefits. The system level approach underlying this framework also provides an holistic view of social wellbeing by including a set of people directly and indirectly affected by changes in the feed industry, beyond just individual workers and their livelihoods. These other social levels include workers' families and the communities that depend on the direct income and other economic benefits that suppliers' and buyers' businesses provide. This type of system thinking is not yet well-represented in the basic tools used to assess and certify companies (i.e. social audits focused more narrowly on worker safety in facilities, hygiene and food safety for the consumer, legal compliance regardless of whether laws and protection for workers is adequate in practice). As companies are increasingly being held accountable for social impacts, a system approach to the issues may become more common.

The risk assessment data needed for the FEED X de-risking tool will be collected first at the country level by the company that is evaluating supplier alternatives (referred to in the following pages as the Company). Data is next collected by the Company from key suppliers and vendors (referred to as Suppliers) in the existing chain, and the proposed new supply chain.

This document has been peer reviewed for accuracy and quality of content by at least three independent experts from credible organisations including research universities, WWF and business.

Project X document supported by:



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## 1. AIMS

### 1.1. FEED X AIMS

The focus of FEED X is to source, test, finance and scale alternative feed ingredients into the global feed industry, focusing on salmon and shrimp feed. FEED X aims to enable 10% of the global feed industry to transition to sustainably sourced oil and protein ingredients. As salmon and shrimp feed typically contains fishmeal, fish oil and soybean, this transition is liable to influence the contents of salmon and shrimp feed.

### 1.2. REPORT AIMS AND STRUCTURE

This report provides a practical framework to systematically assess social wellbeing risks and benefits in supply chains, both for existing salmon and shrimp feeds, and novel ones. The report accounts for key social wellbeing risks throughout the supply chain from production to distribution stages. In Section 1, the ethical-risk matrix identifies the key risk categories associated with feed supply chains and how they affect people and businesses (Table 1). Section 2 (Method) describes the purpose and use of the tool, and background on the development of this de-risking framework. It outlines questions for the Company (at national and international scales) and its Suppliers (regional and local scales) and the steps for collecting and analyzing the data on social wellbeing. Section 3 reviews the process of synthesizing the information about the supply chain collected across the relevant scales (individual workers, families of workers, communities where workers live or support others, classes of workers in the supply chain such as harvesters, processors etc., and classes of vulnerable workers at the regional and national scale such as migrants, minorities, women etc.) Section 4 (Conclusions) ends the report with recommendations about how innovative Companies can partner to mitigate harm or even enhance social benefit and wellbeing, even when the decision is made to cease working with a supplier that is deemed risky. The Appendix contains the Excel version of the FEED X de-risking tool, including a demonstration of how to use the tool with two example suppliers.

### 1.3. SOCIAL WELLBEING AND THE FEED X DE-RISKING TOOL

Four focal categories were used to create the FEED X de-risking tool: high-priority rights, earnings, health and education, and viability and flexibility. These in turn are associated with human and business risks (Table 1).

Human risks in unsustainable supply chains can include poor social wellbeing, or even forced labour, and working in such supply chains can contribute to the poverty cycle (Teh et al. 2019). Workers may be unable to take care of medical needs for themselves or their families, and basic educational needs may not be met. Workers may have low social support, low social capital, and few alternative opportunities to improve their lives. The outlook for the next generation of workers and their families may be similarly grim, or in some cases even worse.

Business risks related to these human risks can greatly affect a Company. Companies contributing – knowingly or unwittingly -- to unethical practices in the supply chain and associated human communities can suffer damaged reputation and brand value. From an operational efficiency perspective, workers may perform poorly or less efficiently because they face serious mental and physical challenges associated with the risks described. Various types of discrimination against vulnerable groups also can affect performance.

**Table 1. Social wellbeing risk focal categories, and examples of their associated business risks.**

Wellbeing Categories to be de-risked	Human risks	Business risks
<b>High priority rights</b>	<ul style="list-style-type: none"> <li>➤ Poor social wellbeing at the level of workers and their families</li> <li>➤ Vulnerable migrant workers may be indebted and in forced labour</li> </ul>	<ul style="list-style-type: none"> <li>➤ Unethical and sometimes illegal</li> <li>➤ Company reputation is diminished</li> <li>➤ Reactive public relations and/or external crisis management help is needed</li> </ul>
<b>Earnings</b>	<ul style="list-style-type: none"> <li>➤ Workers locked in poverty cycle of debt</li> </ul>	<ul style="list-style-type: none"> <li>➤ Cheap labour decreases rather than increases operations efficiency</li> </ul>
<b>Health and Education</b>	<ul style="list-style-type: none"> <li>➤ Workers unable to take care of basic and catastrophic medical needs for themselves and families</li> <li>➤ Workers and their families unable to access basic training and education needed to function as workers with rights in a global supply chain</li> <li>➤ Communities where workers live and contribute earnings remain at risk due to lack of basic education and health services</li> </ul>	<ul style="list-style-type: none"> <li>➤ Workers whose physical and mental health is not well are hindered from doing productive and innovative work</li> <li>➤ Unhealthy workers are a liability for product quality, safety and efficiency</li> <li>➤ Illiterate workers are limited from using higher tech production modes</li> <li>➤ Illiterate and non-speakers of the country's lingua franca are disempowered and become vulnerable to labour abuse that puts the brand at risk.</li> </ul>
<b>Viability and Flexibility</b>	<ul style="list-style-type: none"> <li>➤ Lack of social support for workers</li> <li>➤ Social and family networks are fragmented, creating vulnerability</li> <li>➤ Social capital is weakened when women are excluded</li> <li>➤ Workers have no hope or opportunity to improve their lives or their children's.</li> </ul>	<ul style="list-style-type: none"> <li>➤ Gender-biased workforce that does not meet the needs of modern business environment</li> <li>➤ Low job satisfaction, absenteeism, high turnover</li> <li>➤ If the market or buyer situation changes for the worse (or boom-bust cycles occur), the impact on workers, families and</li> </ul>

	<p>➤ Next generation of workers unprepared to work in the sustainable supply chain the industry aspires to.</p>	<p>communities associated with the Supplier and Company can be devastating socio-economically and for overall wellbeing.</p>
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The FEED X de-risking tool employs a conceptual framework built from peer-reviewed academic work as well as practical industry-focused priorities and tools (see Table 2 for main features). We prioritized social wellbeing variables which Companies may potentially influence directly within the supply chain, as well as certain ones at the country or regional level that the Company may have only indirect influence or leverage, or even none. The latter remain important because they provide a basic sense of the scale and context of social wellbeing risks. The tool is flexible and can help the Company assess various types of labour risk and social tradeoffs associated with changing the feed supply chain. The Company can:

- Analyse the social wellbeing situation in one chain or any part of that chain
- Compare risks between two or more Suppliers, supply chains, or host countries in terms category of wellbeing. For example, the Company may see at country-level, and individual Supplier level, which dimensions of wellbeing would have the greatest risks, or benefits.
- Analyse and compare risks at different levels of a supply chain (e.g. risks that affect producers, processors, distributors or associated communities) and compare location/stage in the supply chain where risks or benefits tend to be highest. For example, basic human rights risks (including forced labour) may be common in a certain country, or across the board in a certain sector of the chain such as production/harvest.
- Compare decision options regarding social wellbeing impacts of Feed X vs. Feed Y
- Examine how the structure of the supply chain affects different dimensions of wellbeing. For example, if company is considering whether to exert more control or vertically integrate the suppliers into Company’s sphere of influence, which dimensions of wellbeing might be negatively affected? Which ones might be positively affected?

**Table 2. Summary of main features of the FEED X de-risking tool.**

<b>FEED X De-risking tool for analysing labour risks and social tradeoffs</b>	
Conceptual framework for inclusion of wellbeing dimensions	Focus on basic human rights, security, health & education, economic viability & flexibility.
Justification for variables selected	Prioritizes variables that Companies can influence at the country and Supplier levels.
Methods	Indicators framed as questions to be asked by Company at the country level, and of Suppliers.
Supplier type	Fishers, farmers, and producers of any novel feed ingredients in the future (land, sea or laboratory sourced).
Scale of social impacts addressed by the de-risking tool	<ul style="list-style-type: none"> <li>• Individual workers and their livelihoods</li> <li>• Families of the workers</li> <li>• Communities associated with the workers</li> <li>• Classes or groups of workers by sector of the supply chain (producers, processors, distributors)</li> <li>• Migrants and other vulnerable populations as a class, across geographic locality or sector of supply chain.</li> </ul>
Uses of the de-risking tool	<ul style="list-style-type: none"> <li>• Assessing Company's own knowledge of the supply chain</li> <li>• Assessing a single Supplier</li> <li>• Assessing a whole supply chain</li> <li>• Comparing two alternative Suppliers</li> <li>• Comparing two alternative supply chains (e.g. existing chains vs. proposed new chain)</li> <li>• Identifying actions to decrease risk and increase social wellbeing benefits in existing and new supply chains.</li> <li>• Identifying partners to effect positive change.</li> </ul>

The tool is a five-step process, summarized below (Table 3). The Tabs referenced in this Table refer to the Excel model in the Appendix.

**Table 3. Summary of steps, outcomes and questions for decision-making using the FEED X de-risking tool.**

Step	Corresponding Tab in tool	What to do	Outcomes	Questions to ask for decision-making
1-Company completes high-level /overall chain and partnerships assessment	Company asks questions in Tab A  Company completes Tab B	<ul style="list-style-type: none"> <li>➤ Gather information through desk-top research and internal Company communications</li> <li>➤ See Section 2.3, Tables 4, 5</li> </ul>	<ul style="list-style-type: none"> <li>➤ Awareness of what Company knows/does not know about risks to social wellbeing in the chain generally</li> <li>➤ Compiled relevant contacts for addressing risks</li> </ul>	<ul style="list-style-type: none"> <li>➤ Are there risk categories about which very little is known?</li> <li>➤ Are there many known or unknown risks in the Basic human rights Category specifically?</li> <li>➤ Are there sectors of the supply chain (producers, processors, distributors, associated communities) where risks are more numerous or more severe?</li> </ul>
2- Company assesses Individual Suppliers	Company uses Tab C to list Suppliers  Company uses Tab D to assess Suppliers	<ul style="list-style-type: none"> <li>➤ Company identifies key Suppliers in existing chain, and proposed new chain.</li> <li>➤ Company (or its 3rd party) gathers information via interviews/site visits.</li> <li>➤ See Section 2.4, Tables 6, 7</li> </ul>	<ul style="list-style-type: none"> <li>➤ A document showing key Suppliers in a supply chain; or showing a section of chain (e.g. producers); or showing existing and proposed Suppliers.</li> <li>➤ Awareness of what Company does/does not know re: risks to social wellbeing at Supplier level.</li> <li>➤ Compiled relevant contacts for addressing risks</li> </ul>	<ul style="list-style-type: none"> <li>➤ What are the criteria for choosing “key” suppliers? In addition to volume sourced from Supplier, could include degree to which a community depends on Supplier (and by extension on the Company’s business); whether Supplier is the main or only employer of this type in a community.</li> </ul>
3 - Company synthesizes high-level data	Company uses Tab E	<ul style="list-style-type: none"> <li>➤ Company examines risks and benefits in the country and overall supply chain</li> <li>➤ See Section 3.1, Table 8</li> </ul>	<ul style="list-style-type: none"> <li>➤ Company can see patterns in the types of risks and benefits that are most prominent, and which classes of workers may be most affected by them</li> </ul>	<ul style="list-style-type: none"> <li>➤ In which area of the supply chain (company/buyer, producers/harvesters, processing workers, distribution workers, and communities) does Company find the most knowledge gaps?</li> </ul>
4 – Company synthesizes Supplier level data	Company uses Tab F	<ul style="list-style-type: none"> <li>➤ Company compiles information to assess chain(s) or compares Supplier alternatives re: risks and benefits among individual Suppliers</li> <li>➤ See Section 3.2, Table 9</li> </ul>	<ul style="list-style-type: none"> <li>➤ Company can see patters of risk and benefits across supply chain and among alternative Suppliers</li> </ul>	<ul style="list-style-type: none"> <li>➤ What dimension of wellbeing is most affected at each stage (production, processing, distribution etc.) of the supply chain?</li> </ul>
5 – Company begins de-risking action planning	n/a	<ul style="list-style-type: none"> <li>➤ Company plans with partners identified using the tool.</li> <li>➤ See Section 4, Conclusions</li> </ul>	<ul style="list-style-type: none"> <li>➤ Company and partners tap into respective strengths to solve wellbeing issues.</li> </ul>	<ul style="list-style-type: none"> <li>➤ What can be done to measure/communicate progress in wellbeing for “old” chain stakeholders and new ones, if suppliers are changed?</li> </ul>

## 2. METHOD

### 2.1. BACKGROUND AND SUMMARY

The FEED X de-risking tool is meant to aid in assessing the risks in supply chains and the social tradeoffs involved in changing those chains in order to become more sustainable. It guides Companies to ask questions internally and of their Suppliers, to assess risk in the supply chain and identify ways to reduce social risk and improve social benefits.

This de-risking tool developed for FEED X takes as a starting point concepts used in a social wellbeing performance measure originally developed for wild fisheries (Anderson et al. 2015; Van Holt, Weisman et al, 2016). Wellbeing has a long history of research in anthropology (Pollnac et al. 2015), with much work focused on examining social issues relevant to fishers using a vulnerability framework (Allison et al. 2009; Jepson and Colburn 2013). Social issues are increasingly being integrated with environmental issues in fisheries; for example in life cycle analysis (Kruse et al. 2009), and in overall ecosystem services frameworks (Hicks et al. 2015). This tool also contributes in practical terms to the increasing trend to analyse aquaculture in terms of value chains rather than production systems (Bush et al 2018), and to attend more closely to the governance of seafood value chains more broadly (see Bush, S., & Oosterveer, P. 2019). Here we pay specific attention to the different types of wellbeing conditions and risks that affect small scale and industrial Suppliers, and to wellbeing factors that Companies are more likely to be able to influence.

Van Holt, Weisman et al. (2016) provided a systematic framework for seafood companies to assess performance and measure improvements in social wellbeing within supplier fisheries in terms of security, flexibility and viability. It is helpful background for mapping social risks and tradeoffs for feed supply involving wild fish and its by-products, and for examining the social tradeoffs involved when a Company makes changes to a marine or terrestrial supply chain by consolidating and vertically integrating it, vs. working with supply chains that include smaller-scale independent producers, cooperatives or associations of Suppliers.

The FEED X de-risking tool applies the basic elements of security, flexibility, and viability to characterize wellbeing (the broad social outcomes to be optimized), and incorporates additional elements specifically addressing knowledge and action regarding forced labour and other risks in supply chains.

**Audits and third-party certifications vs. de-risking assessment.** There are many certifications that companies can acquire, which use audits as the basis for certification. While this de-risking tool developed for FEED X, as well as audits, both use lists of questions for gathering information they do not have the same purpose or method. Best Aquaculture Practices (BAP) of the Global Aquaculture Alliance (GAA) for example, includes some items relevant to social wellbeing such as Community Relations (not encroaching on any rights of the local community to land or water, not polluting their resources), and assurances that there is no trafficking or illegal forms of child labour (BAP, 2017). Audit questions are checking to see if Supplier or Company is in accordance with the law, rather than asking about whether human rights are respected adequately by the laws and practices in place. The FEED X de-risking tool examines both knowledge (of legal standards, social problems and risks) and practices (that harm or can help improve social standards) to understand what Companies and Suppliers can do to influence wellbeing, no matter what the current legal context of worksites and countries where work occurs.

### 2.2. HOW DATA ARE GATHERED AND SCORED USING THE DE-RISKING TOOL

**Data gathering.** Data is gathered through a combination of desk-top research, interviews, and site visits. This process does not include using email surveys such as Survey Monkey, which is not effective for collecting this type of data. Wherever possible the questions that are asked using this tool are framed so companies can see a way to directly or indirectly influence change in that indicator.

It should not be difficult to find the information, and it is not required to conduct in-depth research at the assessment stage (however it is encouraged to seek out partnerships that enable such in-depth research by partners). We envision someone at the Company or a designated third party being tasked with:

- Calling and/or meeting with relevant Company staff and leadership
- Calling and/or meeting with relevant government contacts
- Searching media and legal information available online or in public institutions (including searching for reports of abuses in local language of Suppliers, and NGO reports and white papers)
- Calling people within the supply chain such as managers and supply owners/operators
- Reaching out to government, NGO, philanthropic and other partners with expertise in social wellbeing issues and/or the geographic areas or industries relevant to the supply chain.

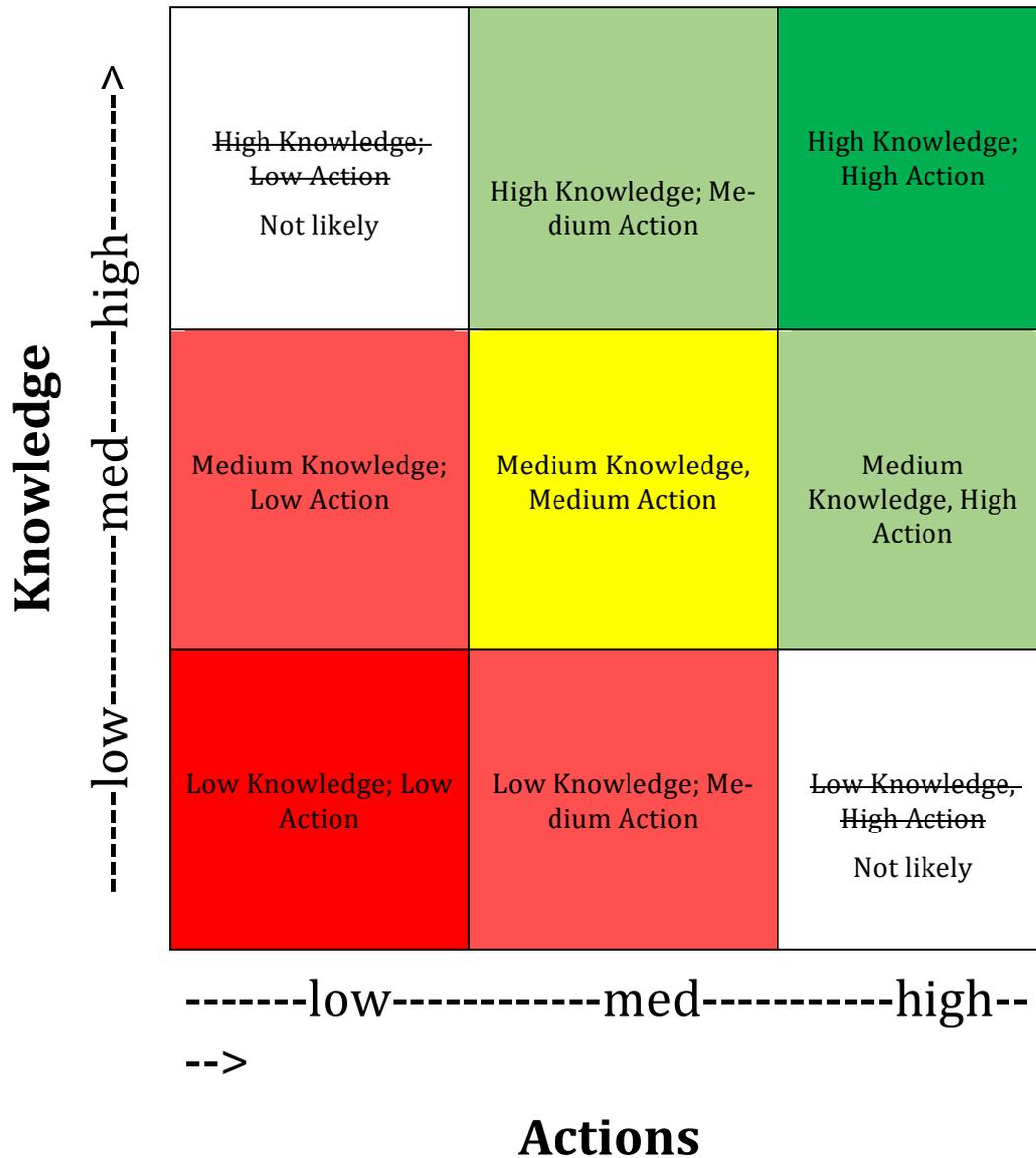
Companies should consider who is best positioned to collect the information, including to interface in culturally sensitive ways with women/minorities in the supply chain. Are translators needed to communicate properly with all workers in the event site visits are made?

**Data scoring.** The series of questions in Sections 2.3 and 2.4 are scored. If the answer to a question is “yes” then score 3, and provide details in the notes section requesting applicable documents and evidence. If the answer is “unknown” at the time of the assessment, then score 2 (and update it whenever the answer is available). If the answer is “no”, then score 1.

In the analysis phase, we assess risk in two dimensions: 1) knowledge and 2) action. Lack of knowledge or awareness of a social risk can be just as problematic as not doing anything about it. Figure 1 provides an example of how the scoring can work, comparing two feed ingredient Suppliers that are known to the authors. This analysis could be run on one section of the supply chain, or run as a comparison of two different Suppliers. The analysis can aggregate all these variables together to get a big picture, or it can break up the scores up among different dimensions to get a more detailed picture of which areas of wellbeing are relatively stronger or weaker (see sections 2.3, and 2.4 for the dimensions).

It is recommended to do a test case with the tool in which the user scores two Suppliers that are already relatively well-known to the user, that represent two extremes of the spectrum: one that is expected to score well and one that is expected to score poorly in social terms. This can help ensure that users are confident with the process and to create criteria and rules that guide how to score when grey areas occur.

It is important to recognize that this tool and the scoring and synthesis methods used are not intended to quantify risk in any definitive way for decision making. The tool will not provide exact thresholds for determining severity of problems or what must be done about them. The assessment is qualitative and relational. It is intended to facilitate discussions by the Company about priorities and feasibility in changing supply chains to support social wellbeing as well as better ecological outcomes.



**Figure 1. Risks are associated with lack of action, as well as lack of knowledge in the Company.**

This shows the basic schema used to characterize the two hypothetical Suppliers scored as examples, for each major category. Assessment of Suppliers thus is boiled down to a statement about how well-known risks are and whether positive actions are being taken to address them. The user looks at each wellbeing category grouping (e.g. worker rights + worker protections + vulnerable populations) and focuses on the proportion of unknown risks (relative proportion of yellow), and proportion of scores for positive and negative conditions of actions (relative proportion of green/benefits and mitigating actions vs. red/risky conditions).

### 2.3. HIGH-LEVEL ASSESMENT USING THE DE-RISKING TOOL

**Desktop information gathering.** Gathering general country-level information will enable the Company to describe basic aspects of risk regarding social issues in the supply chain; these high-level issues provide the legal and practical context, constraints and opportunities in which Suppliers and Company operate. If all or part of the supply chain is based in a country with weak commitment or weak capacity to address human trafficking problems, then Company and Suppliers will need to take more responsibility to address these risks. In a country where commitment and capacity is higher, there may be more opportunities for Company and its Suppliers to become leaders in eliminating forced labour from the supply chain and beginning to focus more broadly on other key human rights and social wellbeing issues in the chain.

**Human trafficking, marginalized populations and worker safety.** Human rights abuses have been identified as a major problem in global fisheries (Teh et al. 2019; Kittinger et al. 2017). If a country demonstrates legal and diplomatic commitments to eliminate human trafficking, then risk in the supply chain in that country may be lowered; however lowered risk cannot be taken for granted due to the wide gap between laws on paper and practices that continue (due to lack of capacity or financial or other support) or are tolerated on the ground because of corruption or other political reasons (see Teh et al. 2019). Fisheries have been associated with human trafficking abuses, and feeds that rely of wild caught fish may be at particular risk. Trafficking also occurs in developed countries with well-developed legal structures in place to combat it. While it may seem counter-intuitive, finding evidence that people (journalists, whistleblowers, citizens etc.) have been able to report on human trafficking, may be a positive sign. Some organizations facilitate exposure of trafficking, such as the NGO Issara Institute (<https://www.issarainstitute.org>) which functions as a hotline for workers to report labour abuses, in their language of origin. Companies and Suppliers who partner with Issara or similar groups can thus help reduce risk to vulnerable workers even in a country where trafficking is known to be a significant problem. The presence of laws focused on protecting marginalized populations — migrants, women, ethnic, racial or religious minorities – and diverse sexual and gender identities are also relevant, to the extent that government has demonstrated support on paper and may be, currently or in the future, engaged to assist Company and Supplier to ensure protection among the population of stakeholders in the aquaculture feed supply chain. Regarding worker safety, any evidence of licenses, registries, or permits needed to fish, harvest, or operate machinery or vehicles, provides one additional layer of public, higher-level transparency, accountability and oversight by government agencies.

**Table 4. Summary of categories and questions for high-level assessment at the country level.** This section focuses on human trafficking, marginalized populations, and worker safety.

Category	Practices and conditions	Question
<b>Basic rights</b>	International laws	Is the country a signatory to international laws against human trafficking?
	National laws	Is there a national law against human trafficking?
	Anonymous reports	Is there a way to anonymously report labour abuse in the country?
	Reported abuses	Has there been any reported rights abuse (including human trafficking) recently in the industry of the [relevant feed ingredient] in the supply chain in the country where the supply chain operates?
	Illegal activities	Are there illegal activities (e.g. unreported fishing [IUU], illegal deforestation) that have been associated with the supply chain or the resource used to create the feed ingredient?
<b>Worker Protection</b>	Worker licenses	Are workers required to have licenses to operate machinery and vehicles?
		Are fishers or independent aquaculture operators required to have licenses or permits?
	Vessel/vehicle registration	Are all fishing vessels [or other relevant commercial vehicles] in the country required to be registered with the government?
<b>Vulnerable Populations</b>	laws for vulnerable populations	Are migrants and undocumented workers specifically protected from human rights and labour abuses?
		Are women legally permitted to do everything that men can do?
		Is homosexuality a crime in the country?

**Earnings, labour, organizing, health & education, economic flexibility and viability (Table 5).** The next set of broad categories consider minimum wage laws and rights to strike and organize in the country (but whether those are acted upon in practice is addressed in a separate set of questions to Supplier). Health and education questions ask for an overview of international standards regarding child mortality and school absences (see Van Holt et al. 2016 for further description). Flexibility refers to the ability and possibility for workers to advance and improve their lives and livelihoods, and Viability refers to the two-way street of dependence and benefit between worker populations and their employers. Workers and the Suppliers that employ them are integrated into a wider community of families, villages or towns, and Suppliers depend on the next generation of capable and willing workers from those communities for the future of their own business. Non-seasonal jobs, for example, may increase economic viability by enabling a younger generation to remain in place (Hishamunda et al. 2017). The high-level assessment questions in this category are focused on national-level organizations, programs,

etc. that train and provide skills for workers and tradespeople. For example in Chile, Sercotec, is a government organization that provides training for any citizen who wishes to work in the fishing industry (<https://www.sercotec.cl/>).

**Table 5. Summary of categories and questions for high-level assessment at the country level.** This section focuses on earnings, worker protections, health and education, and economic flexibility and viability.

Category	Practices and conditions	Question
Earnings	Minimum wage laws	Is there a legal minimum wage in the country?
Worker Protection	Right to strike and organize laws	Is the right to strike protected in the constitution or by law?
		Do workers have the right to organize in unions, cooperatives or similar structures and to bargain collectively?
Health	Under 5 mortality	Is there an improving trend in under 5 child mortality rate, OR does the region meets the global standard for this at the relevant fishery/farm level/community level?
Education	Children out of school	Are fewer than 10% of primary and secondary school age children out of school? Answer based on smallest available scale.
Flexibility and Viability	Women in leadership	Does the company have an increasing trend for women in positions of leadership?
	Country-level training or support for next generation of tradespeople	Does the government offer technical training? (e.g. Norway offers training to become a fisher).

**Partnerships.** The questions on partnerships examine whether the Company has been engaging with any sector to address known risks to human rights and social wellbeing. Demonstration of deeper levels of engagement would include holding multiple meetings on a specific issue or project over time; this has been associated with improved success in changing government policies and practices related to an industry. By contrast, one-off meetings, or casual emails or connections at professional events, is not linked with such outcomes (Crona et al, in review). Does the company engage with non-government associations, or with Suppliers directly, related to improving conditions for people in the supply chain? Working in pre-competitive councils or groups with competitors, as seen in industry Aquaculture Supply Chain Round Tables (<https://www.sustainablefish.org/Programs/Aquaculture/Aquaculture-Supply-Chain-Roundtables>), is an example of private sector partnerships. Other types of creative partnerships could include alliances with technology, telecommunication, health insurance or micro-credit lending companies. Any type of formalized collaborations, or potential collaborations should be noted. Finally, while third-party certifications for feed source ingredients, facilities and processes may be a sign of more awareness and oversight of issues that are relevant to social wellbeing in the supply chain, a critical perspective by Company is warranted regarding what certifications accomplish on the ground (see Roheim et al. 2018, Bush et al 2013 for critiques of certifications as a primary governance tool) particularly whether there are notable gaps between what is on paper vs. actions and practices. Moreover, the one-off audit methods used to gain and maintain certifications may not be adequate to detect and understand the social risks and tradeoffs involved in making changes in supply chains.

## 2.4. SUPPLIER-LEVEL ASSESSMENT USING THE DE-RISKING TOOL

**Knowledge of risk to wellbeing and actions that mitigate risk at the Supplier level.** Well-being is far broader than human rights issues alone (Teh 2019; Coulthard et al. 2011; Helne & Hirvilammi 2015; Purcell et al. 2016). The Supplier level assessment brings in human rights and other wellbeing issues. To identify high risk at the level of individual Suppliers, the tool focuses on 1) Company and Supplier knowledge of vulnerable populations, 2) conditions and practices that have been associated with labour abuses in the past, 3) conditions and tools that can mitigate risks, and 4) empirical evidence that people have freedoms to communicate, associate, and protest (See Table 6).

**Vulnerable populations.** Vulnerable populations are present within every supply chain and almost every worksite will include non-locals. This tool helps the Company assess basic rights and indicators of risk to wellbeing with respect to that high-risk group, specifically migrant and non-local labour groups employed. Certain recruitment practices have been identified as a risk factor, especially the involvement of third-party brokers who recruit workers across borders for fees paid by the workers themselves (ILO, 2016). Workers with low-paying jobs in the host country who are recruited in this manner may owe the broker, in addition to travel expenses, a fee to be paid off over time the worker is employed in the host country, and their identity documents may be withheld by brokers as collateral in these arrangements.

**Maintaining basic human relationships.** Having workers living in company quarters is common practice in some agricultural and fisheries work. Sometimes this can create risk for both labour abuse and poor social wellbeing more broadly. For example, food and shelter may be provided by the employer, but virtually all aspects of a person's daily life are controlled by Supplier and some basic human needs apart from food and shelter cannot be met under these conditions. These can include needs to maintain bonds with family, and to provide access to education for school-age children without having to live apart from them for extended periods.

**How social risks are mitigated.** The tool also includes questions about evidence of risk mitigation. Mitigating conditions include when workers are issued licenses that show that workers are registered in a government system, or when a Supplier can provide verifiable documentation of having training (e.g. certificates, workshop attendance, etc.) in how to identify at-risk groups and to look for evidence of human trafficking. Evidence of collective bargaining or collective action by workers is a positive, mitigating factor (e.g. evidence of a strike or protest would be considered positive, as well as the presence of a non-government association to manage fisheries or labour, etc.).

**Communication.** Finally, communication is important on several levels: evidence of workers' freedom to communicate among themselves and to communicate externally (e.g., on social media), as well as evidence that employers communicate appropriately and proactively about worker rights in relevant locations, formats, languages and literacy levels.

**Table 6: Wellbeing categories, and practices and conditions that can indicate or mitigate risk to wellbeing.**

Category	Practices and conditions	Question
<b>Vulnerable populations</b>	Training	Has the Supplier received any training regarding human trafficking risks for social groups vulnerable to unfair labour practices?
	Migrants	Does the supplier rely heavily on migrant or other non-local labour?
<b>Basic rights</b>	Living quarters	Do workers typically live in company quarters, or must they stay at the work site (on land, at sea, or traveling) for more than 1 week at a time?
	Traceability	Are workers required to have licenses to perform work in this area in the supply chain?
	Recruitment	Are workers recruited by the supplier directly, rather than a third party (by brokers and other means)?
<b>Worker Protection</b>	Worker-social media	Are smartphones OR photography/video allowed at the worksite?
	Worker-communication	Are worker rights and any hotline information communicated in all languages spoken in the workplace, taking into account illiteracy (verbally, graphically, textually)?
	Freedom of collective bargaining	Are there one or more unions, or other groups (syndicates, co-operatives) employees have organized representing their labour and sector interests?
	Collective action	Have there been any strikes, walkouts or protests at this level of the supply chain in the last five years?

**Earnings.** Workers who earn fair wages are more likely to fare better (Van Holt, Weisman, et al. 2016); however, high earnings taken in isolation may give a false perception of security in a sector (Bene 2009). For this reason, we include other dimensions that are stronger indicators of an individual’s ability to access resources, which has been shown by Bene (2003) to be relevant. Workers in fisheries and agriculture settings may face similar challenges in terms of wage earnings. In these systems where low-wage jobs form a large part of the workforce, alternative employment may not be available, and payments may be infrequent or irregular, putting workers at great disadvantage vis-à-vis bargaining power with employers. Efforts to calculate what constitutes fair wages, especially in developing countries and for specific economic sectors are challenging (see Anderson et al., 2015). The earnings measures selected for this tool, rather than pinpointing a specific value (e.g. an amount for wages), are focused on whether workers are “locked in” to poor-paying jobs, and the predictability of income. Regular payments allow for better financial planning and stability; the boom and bust cycle for many seasonal commodities and fisheries are not conducive to regular financial management for families with little or no savings. Stability and security of earnings are also affected by the availability of similar employment from other sources beyond a single Supplier. If Supplier goes out of business, for example, because the Company changes to a new feed ingredient or reduces its volume with the Supplier, then having another work option for a similar type of labour is critical.

**Health.** Worker health focuses on dimensions including the worker, worksite, family and community levels. For fisheries and agricultural workers producing commodities used in feeds, basic health insurance options are usually lacking, and workers or their employers will pay for sickness on a per-need basis at the local clinic. In other cases, there might be basic national

health insurance coverage for these types of workers for day-to-day care needs (Chile is an example of this [data gathered by Van Holt 2012]) and in a few cases, cooperatives may provide better than average resources for health needs of members and their families (McCay et al. 2014). But in general, local state-funded clinics have very limited medical resources and state funded insurance does not cover major medical needs (e.g. cancer treatment, surgeries, many medicines, chronic diseases, basic diagnostic tests, etc.), and often may cover only the worker. It is these major needs which occur in every family which can that can destroy a worker and her family's financial security; resulting debt may affect other key areas of wellbeing (ability to afford children's school fees for example). At the work-site level, food safety (public health for the benefit of consumers) is often the main focus of health monitoring. Global Food Safety Initiative (<https://www.mygfsi.com/>) and BRC Food Safety (<https://www.brcglobalstandards.com/>) are examples of this. Research on fisheries has shown that cleanliness of workplaces (mainly processing) can be an indicator of wellbeing (Anderson, 2015); evidence of regular audits may therefore be helpful even if it is not directly concerned with worker health and wellbeing.

**Education, training.** Education and Training focuses on not only at the level of opportunities for the worker, but also at the level of family and the community. Many workers in fisheries and agricultural settings, especially in developing countries may not be literate, or not able to function in the lingua franca of the country. Even when a worker may have some education, educational opportunities at the family or community level may be very limited, and there are social and economic risks and vulnerabilities associated with lack of communication/language and other basic skills. Examples of training that benefit workers as well as businesses would be those that advance opportunities for communication, mathematics, technology and certifications relevant to the industry (e.g. sales, weight calculations, troubleshooting operations and mechanical failures, computer skills, etc.) Some organizations, including cooperatives, help fund certain education costs of members on a limited basis such as books or uniforms for children which are out of reach for many worker families. Some Suppliers may take this role on informally—e.g. patriarchal management of educational resources by the owner of a farm or vessel in an informal and somewhat unpredictable way. In many cases children of agricultural worker families may have to live away from the working parent because there is no school nearby, which breaks down family bonds and creates other types of social risks with generational implications.

**Viability and flexibility.** This refers to the capacity of people to adapt to changing circumstances, take advantage of opportunities and advance in life, and recover from economic changes that affect them negatively, at individual and larger scales. Addressing vulnerability has been an area of significant research in fisheries literature (Jacobs et al 2013; Mamauag et al. 2013; Cinner et al. 2013); here we focus on practical ways that companies can help to foster resilience in social dimensions. In practice this means having the option to keep on working, having a work-life balance, having an inclusive worksite that is amenable to diversity and innovative ideas and perspectives, and being able to find reasonable work options in the event of large-scale layoffs or changes in an industry or Supplier's business. In some fisheries and agricultural commodities systems, workers may rarely get to go home, and this has far-reaching implications; it was identified as a major issue in the Thailand shrimp industry and associated with the presence of forced labour. Farmworkers may be located far from road networks, and may lack regular contact with their home community and family. The authors have observed once-a-month family visits, for example, on Brazilian ranches. Providing for frequent and regular home visits in the structure of work increases social benefits for workers and helps build strong social networks more broadly which is an aspect of viability. Gender respect and balance of male and female workers is another feature of viability, as well as the active presence of diverse opinions and ideas. Many women work in farms, fisheries, in processing, and even as drivers, managers and executives, yet the workforce is highly male-dominated and there are few female leaders in these supply chains compared to men. In fisheries and agricultural settings, especially as re-

sources are integrated into the global market, flexibility appears to diminish (Van Holt 2013). Increasing levels of capital may be required to “get in the game” in the first place, and high-volume commodities may offer less diversity in jobs. Opportunities for training and to qualify for jobs that may help fill seasonal gaps in income can make workers, and their families and communities, more able to adapt to changing resources, work situations, and markets.

**Table 7. Summary of categories and questions for Supplier level assessment.**

Category	Practices	Question
Earnings	Earnings-wages	For wage-based earnings, are harvesting wages higher than the standard (national minimum wage), OR if landings-based earnings, is the price/weight paid to harvesters stable or increasing over a five-year period of most recently available data? Are processing sector wages higher than the standard?
	Earnings-options	Aside from jobs with the Supplier, are there other jobs considered as options and available to employ the workers of these social class / group in the community?
	Earnings-frequency	Are workers for this Supplier usually paid wages at regular intervals, not less frequently than monthly?
Health	Health-worker	Has there been an audit (or site visit) in the last 3 years to verify that basic safety/hygiene is adequate in the workplace?
	Health-clinics	Can workers at this level of the supply chain access and afford medical care beyond local clinics?
	Health-family	Does the Supplier offer any financial support to deal with family health crises (funding, paid leave, credit)?
Education & training	Education-advance	Does the Supplier offer any assistance to employees to enable them to further their education, language skills?
	Education-family	Does the Supplier offer scholarships, assistance with school supplies or uniforms, or other educational benefits help to children of workers?
	Education-children	Are workers able to live with their school-age children while they are working for the Supplier?
Viability	Dependence	Is employment with the Supplier the main option for jobs in the community for people with similar skills?
	Family	Does the Supplier support the worker’s ability to maintain her/his family bonds, by facilitating communication and regular home visits?
	Gender equity	Do women take leadership roles in management and at the worker level?
Flexibility	Flexibility-year round	Are workers typically employed year-round?
	Flexibility-debt	Do workers usually incur debt to cover operational costs prior to payment? (example, fishing often requires a buyer to finance the season, and this is similar for farms)
	Flexibility-advancement	Does the Supplier offer any assistance to employees to enable them to gain job training, certification, licenses that would increase their ability for advancement?

### 3. SYNTHESIS

#### 3.1. SYNTHESIS OF HIGH-LEVEL DATA USING THE DE-RISKING TOOL

Below we show a comparison synthesizing two high-level assessments for hypothetical Suppliers in two countries (representing a sardine fishery in Chile and a ranch in Brazil). This synthesis helps demonstrate how the tool can facilitate comparison of two existing supply chain alternatives to weigh the social tradeoffs in making changes. These examples were chosen for the likelihood to exhibit contrast in results, as a test case.

Tables 8 and 9 below show the results of scoring based on the authors' knowledge of those two resource production systems. See Figure 1 for description of risk categories and assessment criteria. The darker shades of green, yellow, and red are derived from the scoring on Figure 1, and the raw scores are described in Section 2.2 (where 3= yes, 2=don't know, and 1=no). The questions asked in the scoring are described in Section 2.3 (high-level) and 2.4 (Supplier level), and are included the Excel model attached to this report (Appendix).

In order to classify Case 1, the user takes the first three sections that were scored together. For Low Knowledge, more than half of the scores are 2's; for Medium Knowledge, a third are 2; and for High Knowledge, less than a third are scored 2. For Low Action, more than half of the scores are 1's, Medium Action a third are 1; and High Action, less than a third are scored 1. Then, the colour codes from Figure 1 are used to create a visual representation of these risks using a basic Stoplight framework that is familiar to many users in the industry.

**Table 8. Company synthesizes high-level risks and benefits in the country and overall supply chain.**

	Question	Chile		Brazil	
<b>High Priority Rights</b>	International signatory	3	High Knowledge; High action	3	Medium Knowledge; Medium Action
	Laws – trafficking	3		3	
	Anonymous reporting	2		2	
	Reported abuses	1		1	
	Illegal activities	1		3	
	Worker registration	3		2	
	Producer licenses and permits	3		1	
	Vessel registration	3		3	
	Laws - migrants, undocumented workers	2		2	
	Laws – women	3		3	
	Laws – homosexuality	1		1	
<b>Earnings</b>	Minimum wage	3	High Knowledge; high action	3	High Knowledge; High Action
	Right to strike	3		3	
	Right to organize	2		2	
<b>Health and Education</b>	Under 5 mortality	3	High Knowledge; High Action	2	Low Knowledge; Low Action
	Children out of school	3		2	
<b>Viability and Flexibility</b>	Women in leadership	2	High Knowledge; High Action	2	Low knowledge; Low Action
	Training next generation	3		2	
		3		3	
<b>Partnerships</b>	Labour	2	Low Knowledge; Low Action	2	Low Knowledge; Low Action
	Vulnerable populations	2		2	
	Civil society	2		2	
	Private sector supply chain	2		2	
	Private sector competitors	2		2	
<b>Certifications</b>	Third party certifications	3	High Knowledge; High Action	2	Low Knowledge; low Action

### 3.2. SYNTHESIS OF SUPPLIER-LEVEL DATA USING THE DE-RISKING TOOL

#### **Synthesizing risks and benefits among individual suppliers.**

If we look at Case 1, this supply chain has much more evidence of upholding basic rights, worker protections, and protecting vulnerable populations in comparison to Case 2. This is mainly because little is known about the supply chain for Case 2 on these dimensions. This information should be readily available during Supplier interviews, and the score may therefore improve upon further inquiry (after Supplier Assessment is conducted). Both Case 1 and Case 2 score well on the earnings dimension. There seem to be more benefits for health and education in Case 2 than Case 1, but there are unknowns, so the Company would need to ask more questions. Company may have insight into certain circumstances that seem ambiguous to score; for example, some workers living on a farm may be taken care of if there is a health problem and this may seem to be positive in the health dimension. However, wellbeing also includes viability and flexibility dimensions, and those workers may be unable to afford to leave such a job if they do have health issues, and thus have low flexibility to switch jobs or to train for better positions. Case 1 has many partnerships in place, while Case 2 does not, or they are unknown.

**Table 9. Synthesis of two hypothetical supplier examples (Chilean wild fishery and Brazilian farm).**

3=yes, 2= don't know, and 1= no, in response to Supplier-level questions.		<b>Case 1</b>		<b>Case 2</b>	
<b>Category</b>	<b>sub category</b>	<b>Raw Data</b>	<b>Risk</b>	<b>Raw Data</b>	<b>Risk</b>
Basic rights	Recruitment	3	<b>High Knowledge; High action</b>	2	<b>Low Knowledge; Low Action</b>
	Traceability	3		2	
Worker protection	Worker-social media	3		1	
	Worker-communication	1		3	
	Collective action	3		2	
	Freedom of collective bargaining	3		2	
Vulnerable populations	Training	2		2	
	Migrants	2	2		
Earnings	Earnings-wages	3	<b>High knowledge, high action</b>	1	<b>High knowledge; High Action</b>
	Earnings-options	3		3	
	Earnings-frequency	3		3	
Health	Health-worker	3	<b>Low Knowledge; low action</b>	1	<b>High Knowledge; Low Action</b>
	Health-clinics	2		2	
	Health-family	2		3	
Education & training	Education-advance	2		2	
	Education-family	3		1	
	Education-children	2		3	
Viability	Economic Dependence	2	<b>Medium knowledge; Low Action</b>	2	<b>Medium Knowledge: Medium Action</b>
	Family	1		3	
	Gender equity	3		2	
Flexibility	Flexibility-year round	2		3	
	Flexibility-debt	1		3	
	Flexibility-advancement	1		2	
Partnerships for reducing risk	Government	1	<b>High Knowledge: High Action</b>	2	<b>Medium Knowledge; Low Action</b>
	NGOs	3		3	
	Private sector	3		1	

## CONCLUSIONS AND RECOMMENDATIONS

If salmon and shrimp feed producers are to transition to sustainably sourced ingredients and reduce associated risks from a social perspective, this tool can serve as a practical way for Companies to assess risks and benefits and weigh the pros and cons of specific changes in Suppliers and supply chains. The FEED X tool is based on a holistic concept of risk and de-risking, including a practical understanding of how Companies can reduce risks by becoming more aware of risks in the first place, and by reaching out to other stakeholders in the private, civil society and government sectors. This FEED X de-risking tool builds upon recent work to incorporate human rights and wellbeing into corporate and supply chain sustainability. It contributes to that body of work by bringing a broad systems-thinking perspective to questions of human wellbeing and labour risks, and by using a business-oriented lens on the factors that Companies and their partners may be able to influence.

The final step of the tool, where Company engages with partners and Suppliers in planning and actions to mitigate risks and improve wellbeing in the chain, is left open-ended. In the case where use of the tool leads to or reinforces a Company decision to cease working with a Supplier, it is important to take seriously the potential human wellbeing consequences of ending that business relationship (for the Supplier who employs workers, and their families and communities and regional economy in which those workers are embedded). This holistic view of wider economic impacts underscores how much the Company and the Supplier are interdependent in the social-ecological system and how ethical choices by Company create ethical options in other places in the value chain.

There is a great opportunity for Companies, Suppliers and partners to find ways to communicate stories and reports about social wellbeing values and actions in feed supply chains (e.g. see Little et al. 2018:21; see FAO 2016, Little et al. 2012, Van Holt et al. 2018 on perceptions of aquaculture as environmentally and socially harmful).

Many opportunities to address risks found in supply chains will be context-dependent and will draw upon the strengths of the partners in each sector that Company engages. It is beyond the scope of this report to suggest specific courses of action for Companies and Suppliers, but it is recommended that the participants take the time, before committing resources to any course of action, to fully explore the problem(s) and opportunities, and to widen the circle of potential partners as much as possible. Participants can ask, for example, how do the needs of the feed supply chain overlap with business goals and competitive advantages of technology, clean energy, housing development, or global healthcare companies, whose brands can benefit from investing in improved human wellbeing? Some of the most innovative solutions to wellbeing issues may emerge through partnerships with businesses in other sectors.

## APPENDIX: RISK ASSESSMENT FRAMEWORK (EXCEL MODEL)

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