



Aquaculture
Stewardship
Council

ASC Draft Harmonised Standard

August 2016

Collectively, the requirements seek to minimize or eliminate the key negative environmental and social impacts of salmon farming, while permitting the industry to remain economically viable. In order to improve the industry's overall performance, the requirements focus on today's best performers and are intended to be at a level where enough producers strive to achieve them, bringing about actual change on the ground.

The requirements are intended to be a starting point for continuous improvement and to be periodically updated to reflect the best available scientific knowledge, management practices and technologies, and the data collected during the certification of farms to the requirements. The requirements call for a high level of transparency around farm-level data and monitoring to assist in these future revisions.

The requirements are intended to be one tool to improve the sustainability of the industry. The ASC recognizes that farm-level standards must be complemented by effective governmental regulations and coastal zone planning. Governments play a particularly important role in managing potential cumulative impacts from multiple farms. These requirements seek to harness the power of the marketplace to promote meaningful, positive change in aquaculture practices.

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About The ASC

What is the Aquaculture Stewardship Council (ASC)?

Founded in 2010 by WWF and IDH (Dutch Sustainable Trade Initiative) the Aquaculture Stewardship Council (ASC) is an independent not for profit organisation with global influence.

ASC aims to be the world's leading certification and labelling programme for responsibly farmed seafood. The ASC's primary role is to manage the global standards for responsible aquaculture, which were developed by the WWF Aquaculture Dialogues.

ASC works with aquaculture producers, seafood processors, retail and foodservice companies, scientists, conservation groups and consumers to:

- *Recognise and reward responsible aquaculture through the ASC aquaculture certification programme and seafood label.*
- *Promote best environmental and social choice when buying seafood.*
- *Contribute to transforming seafood markets towards sustainability.*

Transforming global seafood markets

With its partners, the ASC runs an ambitious programme to transform the world's seafood markets and promote the best environmental and social aquaculture performance. This means increasing the availability of certified responsibly produced seafood to buyers and promoting the use of the ASC logo. The logo sends a strong message to consumers about the environmental and social integrity of the product they are purchasing.

Making a real difference

The ASC programme promotes industry best practice to minimise the environmental and social footprint of commercial aquaculture. Through its consumer label the ASC promotes certified responsibly farmed products in the marketplace.

To achieve this the ASC programme is:

Credible

ASC standards are developed and implemented according to ISEAL guidelines - multi-stakeholder, transparent, incorporating science-based performance metrics.

Meaningful

Including science-based performance metrics, the requirements in the standards are realistic, measurable and auditable.

Effective

A globally recognised, market-oriented programme that aims to promote meaningful improvements in aquaculture production in a credible and cost efficient way that adds real value to producers and buyers of certified products.

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INTRODUCTION

Seafood is one of the most important sources of protein worldwide. Half of the seafood we eat comes from aquaculture; it is the fastest-growing food production system in the world. However, as the industry expands, so does its footprint on the environment and on society. It is imperative that we face the challenge of minimising these potentially negative impacts. The goal of Aquaculture Stewardship Council (ASC) is to transform aquaculture towards an environmental and social responsible food source.

One of the cornerstones of this transformation is creating robust and credible requirements for responsible aquaculture production. Requirements help reassure seafood buyers that aquaculture products do not harm the environmental or have socially adverse impacts. One way buyers can support sustainability is by purchasing certified products that have been produced in compliance with the ASC Standard.

PURPOSE AND SCOPE OF THE STANDARD

Purpose of the Standard

The goal of the ASC Harmonised Standard is to credibly offer measurable, performance-based requirements that minimize or eliminate the key negative environmental and social impacts of aquaculture, while permitting the industry to remain economically viable. The aims of harmonization are:

- Scalability of ASC certification, with new species being introduced far more easily, expanding the reach of the standards.
- More effective response to updates and changes within the market, due to a more efficient approach to integrating such modifications into the standard.
- Consistency when applying the standards as there will be less scope for variety in the interpretation of indicators when the wording is harmonised
- Contribute to the ASC's ultimate aim of minimising the environmental and social impacts of aquaculture.

Scope of the Standard

Aspects of aquaculture to which the Standard applies

The intention of the ASC harmonised standard is that it is generally applicable to all production systems globally with exceptions where appropriate. The standard document consists of Principle, Impact, Criteria and Indicators with additional guidance to the standard related to requirement levels, specific issues and methodology provided in a separate certification requirements document.

The harmonised standard is currently applicable for the following species groups with others added once applicability has been validated: Salmon, Shrimp, Pangasius, Bivalves, Abalone, Tilapia, Trout and *Seriola/Cobia*.

Unit of certification to which the Standard applies

The unit of certification is the specific aquaculture operation to be assessed and monitored for compliance with the Standard. The size of the production operation can vary considerably and needs careful consideration when determining the entity that will seek certification. As the focus of this Standard is on production and the immediate inputs to production, the unit of certification will typically consist of a single farm or some other, yet to be defined, entity.

The unit of certification may also encompass a group of operations that, logically, should be considered collectively, especially in the case of small-scale farms producing the same species and using similar management regimes. For example, they may be in close proximity to each other, share resources or infrastructure (e.g., water sources or effluent discharge systems), share a landscape unit (e.g., a watershed), and/or be under the same management. This group or cluster must be a legal entity that shares a common management structure so that the ASC Harmonised Standard is binding for each individual producer. Certification will not be transferable to another farm, production site or production system that does not undergo auditing.

Regardless of the specific situation, farms and other users often can have cumulative negative effects on the environment and society. As a result, some of the requirements included in the ASC Harmonised Standard are independent of what a producer can achieve

at the farm level and rely on the efforts of the producer to act as an advocate and steward of their environment.

Transgenic and genetic modification

Farms that grow transgenic fish are not permitted because of concerns about their unknown impact on wild populations. The culture of genetically enhanced species is acceptable under this standard as this allows for further progress in feed conversion, which should increase the efficient use of local resources. Also allowed under this standard is the cultivation of triploid or all female fish, as long as those fish are not transgenic.

Process for creating the Standard

In November 2014, the 'ASC Standard Setting Procedure' was released. This procedure sets out steps for assuring quality and credibility of standard setting activities that are implemented by the ASC and its relevant bodies and provided the guidance for the drafting of the ASC Harmonised Standard.

The ASC Standard Setting Procedure document alongside further information can be found by following this link: http://www.asc-aqua.org/upload/ASC%20Standard%20Setting%20Procedure_v1.0_including%20forms.pdf

Continuous improvement of the ASC Standard

As stated in the ISEAL "Code of Good Practices for Setting Social and Environmental Standards,"

“. . . Standards shall be reviewed on a periodic basis for continued relevance and effectiveness in meeting their stated objectives and, if necessary, revised in a timely manner.”

It is implicit in the development of the ASC Harmonised Standard that the numerical values, or performance levels, will be raised or lowered over time to reflect new data, improved practices and new technology. These changes will correspond to a lessening of impacts rather than an increase in impacts. Changes to other components of the requirements are also recognized as a way to reward better performance and, as science and technology allow for more precise and effective measures, the ASC shall remain open to adopt these new findings within the scope of the ASC Standard.

1. PRINCIPLE: Comply with all applicable laws and regulations

Issue: Legal compliance

Impact: To ensure that all farms aiming to be certified against the ASC Standard meet their legal obligations as a baseline requirement. Adhering to the law should ensure that producers meet their legally obligated environmental and social requirements. The starting point of ASC certification is for the farm to comply with legal requirements and where these do not meet ASC standards then ASC's standards shall prevail.

1.1 Criterion: Legal Compliance

INDICATOR

1.1.1 The farm is compliant with all applicable legal requirements and regulations where the operation is located

Rationale— Aquaculture operations must, as a minimum baseline, adhere to the national and local laws of the regions where production is taking place. Farm operations that, intentionally or unintentionally, break the law violate a fundamental benchmark of performance for certified farms. It is important that aquaculture operations demonstrate a pattern of legal and responsible behaviour, including the implementation of corrective actions for any prior legal violations. The standards may go beyond those required by law in many jurisdictions, yet are not intended to contradict them when they seek to promote outcome consistent with environmental and social responsibility.

The standard requires confirmation in at least the areas of use rights, tax laws, labour laws and water quality, land and water use and water discharge regulations, planning permission at the point of construction. Due consideration shall also be given to customary laws and international obligations such as the World Organisation for Animal Health (OIE).

2. PRINCIPLE: Conserve species, habitats and ecosystems

Issue: Environmental and Ecological Impact

Impact: The intention is to address potential impacts from farms on natural habitat, local biodiversity, ecosystem function and conversion of eco-sensitive habitats. Specifically for marine farms, the key impact areas of benthic impacts, siting, effects of chemical inputs and effects of nutrient loading are addressed within this principle. For freshwater farms the potential impacts on water quantity and quality related to the establishment and operation of farms must be addressed. Such impacts can be associated with the requirement for a fresh water supply, either surface or ground water or a combination of both, and the quality of water discharged from the farm into the natural environment. Whether the culture method utilizes fertilizers, manufactured feed or both, the ability to utilize inputs efficiently aids in the conservation of receiving waters where farms discharge effluent.

This principle aims to ensure farms do not disrupt the structure of native fish population, enhance eutrophication in the receiving waters, cause the loss of sensitive habitat, result in production failures, ecological degradation. It is important to control the most important water parameters, such as nitrogen and phosphorous and to develop specific water quality requirements for them. To address these potential impacts monitoring of effluent water quality is critical to ensuring the aquaculture operations are not generating unacceptable levels of pollution.

Impacts of marine and freshwater cages are different, for instance with different volumes of production from freshwater compared to marine cages and therefore the standard takes this into account when setting limits.

2.1 Criterion: Ecosystem impact assessment and mitigation

INDICATOR	
2.1.1	An assessment of the farm's impact on biodiversity and the environment is conducted and applied
2.1.2	The farm is not sited in a Protected Area or High Conservation Value Area
2.1.3	The ecological carrying capacity of the waterbody is not exceeded
2.1.4	Navigation, aquatic animals or water movement is not impeded by the farm

Rationale—Farms siting can influence surrounding ecosystems hence siting decisions should take into consideration Protected Areas (Pas), High Conservation Value Areas (HCVAs), habitat for threatened species and natural wetlands. These requirements relate to the identification and description of significant impacts of activities on biodiversity, protected habitats and threatened species, and the communication of strategies to manage these impacts and ensure that a farm is aware of any nearby critical, sensitive or protected areas, understands the impacts it might have on those areas, and has a functioning plan in place to address those potential impacts. They also ensure that extra care is taken in areas that are recognized for ecological importance either through designation as a protected area or

through designation as being an area of high conservation value, by not allowing production in these areas to be eligible for certification, with some exceptions made if extra conditions are met to ensure that the farms are compatible with the conservation goals of the areas. No new farms or expansions built within PAs after the publication of the ASC Standards will be considered for certification. Tools to be used for ensuring compliance include National Protected Area maps, Environmental Impact Assessments (EIAs) and protected area management consent.

2.2 Criterion: Protect water quality and resources

INDICATOR	
2.2.1	Dissolved oxygen, phosphorus and nitrogen levels are monitored by the farm
2.2.2	Dissolved oxygen levels meet requirements
2.2.3	Maximum allowable amount of phosphorous and nitrogen released from the culture system is not exceeded
2.2.4	Maximum allowable amount of phosphorous and nitrogen added to the culture system is not exceeded
2.2.5	Maximum allowable amount of turbidity in the water column is not exceeded
2.2.6	Maximum allowable chlorophyll concentration is not exceeded
2.2.7	Quality of receiving water body meets requirements
2.2.8	Water quality data is sent to the ASC
2.2.9	The maximum allowable percentage of fines in the feed at point of entry to the farm is not exceeded

Rationale—Water quality is essential for the health of farmed species as well as wild species surrounding a farm. This criterion focuses on setting limits for water quality on key indicators on and around the farm as well as in the water body. One component of water quality, Dissolved Oxygen (DO), provides a useful overall proxy for a water body’s ability to support healthy biodiversity and supplements the benthic indicators that will also pick up excessive nutrient loading. Low DO levels can also be a sign of excessive nutrient loading. In an attempt to limit the oxygen burden on natural water bodies from the release of nutrients, these requirements include a minimum saturation level of dissolved oxygen at discharge.

Fluctuation of the level of oxygen in a given water body is influenced by the rate of photosynthesis and respiration in the environment. The rate of fluctuation in a given water body can be best observed by comparing early morning DO levels to those in the late afternoon, as during the early morning DO is usually low because of animal and plant respiration. Conversely, DO peaks in the late afternoon, having built up through photosynthetic activity that releases oxygen in the water during daylight hours. The percentage change in DO is a good indicator of the biological activity in the water. A lower value of percentage change of DO indicates a healthy water body. Minimizing excessive

diurnal fluctuations between daytime and night-time dissolved oxygen levels is of critical importance to aquaculture operations to maintain fish health and productivity, and in determining the impact of farm effluent on the quality of the receiving water body. Measuring DO as a percent saturation takes into account salinity and temperature at the farm site.

Efficient use of nutrients in aquaculture has an important role in better production for any type of culture system. Efficient nutrient utilization may also result in less negative impacts on the receiving water bodies. Thus, the ASC Standard water resources requirements focus on the efficiency of two key nutrients to control to reduce the risk of eutrophication: phosphorus and nitrogen. Monitoring the quality of receiving waters is a means for demonstrating due diligence and good stewardship. It shows that producers understand the dynamics of the receiving waters where farms discharge and potentially where they source their water for the culture activity. In all cases, consideration shall be given for remedial measures that exist or steps that have been taken to reduce loading on the environment.

Phosphorus is a stable nutrient, it does not volatilize like nitrogen compounds, thus, it is the most practical global proxy for these requirements, despite the challenges of its likely fluctuations during the year. The ASC developed the phosphorus load requirement based on a unit of production, making it an indicator of how well a farm is minimizing nutrient discharges per ton of fish produced. From an environmental standpoint, farms should aim for as low an annual load of phosphorus per ton of fish as possible. Farms can lower their phosphorus load on the environment by using a better feeding strategy (ratio and feed distribution), improving feed conversion efficiency through the improvement of the environmental conditions in the farm and utilizing feed that is more digestible and has lower phosphorus content. Production facilities are encouraged to develop methodologies to reduce their phosphorus burdens over time, while ensuring farmed fish are getting the appropriate nutrients to protect the nutritional content and health of farmed species. The input of phosphorus is desired to be set at the lowest level possible. Production facilities shall continue to develop methodologies to reduce their phosphorus demand.

Nitrogen has also been identified as an indicator of water quality for freshwater ecosystems. The role nitrogen has on the acceleration of eutrophication is a concern that stakeholders wanted acknowledged and addressed. Therefore Nitrogen requires monitoring and its release and use on farms must meet ASC requirements.

2.3 Criterion: Conserve aquatic benthic habitats

INDICATOR	
2.3.1	Maximum allowable Total Organic Carbon (TOC) or redox potential or sulphide levels in sediment inside and outside of the Allowable Zone of Effect is not exceeded
2.3.2	Faunal levels meet requirements
2.3.3	The biochemical oxygen demand of the farm is calculated
2.3.4	The maximum allowable amount of 'free' sulphides in sediment is not exceeded

Rationale— Sea-based farming can result in increased organic deposition underneath and adjacent to farms. The accumulation and mineralization of this excess organic matter in sediments can cause stress on benthic organisms through oxygen depletion and the toxic effects of hydrogen sulfide. The impacts on benthic communities due to increased organic matter sedimentation, oxygen deficiency (hypoxia and anoxia) and toxic effects of H₂S are well-known (e.g., Pearson and Rosenberg, 1978; Hargrave et al., 2008b) and can include changes in the size and structure of benthic infaunal communities.

This suite of indicators provides multiple layers of security related to benthic impacts, using a chemical proxy for health combined with biodiversity measurements both below and a distance from the cages. There is a need for farms to evaluate and minimise their impacts on benthic habitats and the limits given in the following indicators.

2.4 Criterion: Conserve land-based habitats

INDICATOR	
2.4.1	Conversion of wetlands or mangrove into farms is prohibited
2.4.2	Coastal and riparian barriers meet requirements
2.4.3	Earth from farm construction is not discharged into water bodies
2.4.4	Certified farms donate to a restoration fund

Rationale— Farm siting, expansion and operation can influence surrounding habitats on which biodiversity depends and that create ecosystem services. Farms should therefore take into consideration surrounding habitats including natural wetlands.

For example, wetlands provide fundamental ecological services and are sources of biodiversity at species, genetic and ecosystem level. Wetlands constitute a resource of great economic, scientific, cultural and recreational value for communities. Wetlands play a vital role in climate change adaptation and mitigation. Wetlands should be restored and rehabilitated, whenever possible, and conserved by ensuring wise use. The Convention on Wetlands of International Importance, known as the Ramsar Convention, provides the

framework for national action and international cooperation for the conservation and wise use of wetlands and their resources. Responsible aquaculture shall not result in the loss of any wetland habitat. Although it may be difficult to restore severely damaged wetlands without considerable expertise, there is potential for the revitalization of these critical habitats.

The zones between water bodies and the adjacent terrestrial ecosystems (i.e., riparian buffers) often serve as habitat for vulnerable or endangered species and, in the case of heavily used landscapes, are the only remaining habitats for many such species. Buffer zones with natural vegetation are also helpful to minimize erosion and run-off.

ASC Standards requires that all new farms be constructed with a minimum natural buffer zone between the farm and the natural watercourse adjacent to a farm.

2.5 Criterion: Interaction with wildlife

INDICATOR	
2.5.1	There are no mortalities of endangered or redlisted species as a result of the farm operations (includes farm impact on habitat that they depend)
2.5.2	There are no incidences of intentional use of lethal predator control
2.5.3	Lethal incidents are publicly available and limited
2.5.4	Acoustic deterrents are not used

Rationale— The suite of requirements related to the farm’s interaction with wildlife (including mortalities and lethal incidents of predators or other wildlife) is intended to ensure that certified farms have minimal impact on populations of wildlife, placing limits on both accidental and intentional mortalities of these species where needed.

The ASC also recognizes that, on rare occasions, a farm may encounter exceptional circumstances that might merit lethal action against a predator, therefore permits an exception to the prohibition on lethal action in situations where the farm can provide evidence of an assessment that demonstrates lethal action against a particular predator is appropriate, necessary and presents no risks to wild populations or ecosystems. This exception cannot be applied to threatened, endangered or critically endangered species by the IUCN Red List or state, local or national governments.

3. PRINCIPLE: Protect wild aquatic populations

Issue: Aquatic impact

Impact: The intention of this principle is to ensure that farms do not harm the health, genetics and biodiversity of wild aquatic populations. This principle addresses impacts associated with disease and parasite spreading, escapes, siting, introduction and cultivation of exotic and transgenic species or GMO, exotic pests, predator control collection of wild shrimp as post larvae and broodstock. When species are introduced into an area without a proper assessment of potential risks, they may cause increased predation and competition, disease, habitat destruction, genetic stock alterations and in some cases, extinction.

3.1 Criterion: Use of wild caught seed

INDICATOR

3.5.1 Wild seed, post larvae, fingerling and broodstock supply is sustainable

Rationale— There is concern over the adverse impact on wild populations of their use in aquaculture. Therefore the use of wild seed should be from a sustainable source with traceability included. If there is doubt then wild-caught seed should not be used and for example broodstock produced in a closed loop.

3.2 Criterion: Introduction of non-native species

INDICATOR

3.2.1 There is no culture of non-native species

3.2.2 Seed and broodstock are genetically similar to local populations

Rationale— According to the FAO (2005), introduced species are considered one of the major threats to global biodiversity and can also have significant social and economic impacts. Aquaculture has been one of the major pathways for introducing non-native aquatic plants and animals that in some cases have become harmful invasive species. Accidental or intentional introductions of non-native species have become an alarming global environmental problem. The ASC Standards defines “exotic species” as non-native species living in areas outside their native boundaries and “established species” as an introduced population that is currently reproducing and sustaining in the wild without further introductions of any kind. The ASC believes these standards are in line with FAO guidelines that permit the culture of non-native species only when they pose an acceptable level of risk to biodiversity. This requirement does not permit introductions of non-native species, unless farming of the species already occurs in the area at the time of the adoption of the ASC Standards.

3.3 Criterion: Prevention of escapes

INDICATOR	
3.3.1	An escape prevention management plan is implemented
3.3.2	Proper equipment is in place to prevent and trap escapes
3.3.3	Equipment that prevents and traps escapes is properly maintained
3.3.4	Escape events are followed-up and reported
3.3.5	Escapes are recorded and do not exceed maximum allowable amounts
3.3.6	Unexplained losses are published
3.3.7	Minimum allowable percentage of males or sterile fish in a culture unit is met
3.3.8	There is no intentional release of fish into the environment

Rationale— Escaped farmed species have the potential to disrupt ecosystems and alter the overall pool of genetic diversity through competition with wild fish and interbreeding with local wild stocks of the same population. Genetic diversity is an important conservation issue, as escaped farmed species have the potential to negatively impact the genetic diversity of wild species by interbreeding. Therefore, escape prevention is an important aspect of ASC Standards. Severe weather events are the most likely cause of catastrophic escapes from farms. ASC Standards require that farms be designed to prevent catastrophic escapes due to human error and/or storms. This is an issue of risk reduction in relation to the fluctuation of weather patterns.

Farms should be able to demonstrate evidence of best management practices for the prevention of escapes. This may include the removal of escapes from channels, drains and settlement ponds; maintenance of structures; mesh at outlets; and other containment mechanisms. Strict standards are set for net pen maintenance and escape procedures while also requiring farms to collect data on stocking and recovery. The requirements require transparency about unexplained loss to help the farm and the public understand trends related to the cumulative numbers of losses of fish that go unnoticed during production. There is also the potential for the unintentional release of farmed species from transport containers. Thus, whether the transfer of farmed species to the farm or the transfer of harvested size fish to markets or processing facilities, a risk is present and must be minimized. Additionally, farms need to be built to withstand weather conditions based on regional norms for weather in the farming region.

3.4 Criterion: Prevention of pathogen transfer to wild populations

INDICATOR

3.4.1 The impact of farm pathogens on wild populations is evaluated and managed

3.4.2 The farm commits to collaboration with stakeholders on pathogen transfer research

Rationale— Farms interact with wild species populations that live or migrate near them. A concern is the interaction with wild species with regard to pathogens and parasites. Requirements under this criterion work in combination with health and disease requirements to address these concerns by establishing best practice in managing potential disease and parasite risks to wild populations. The requirements recognize that the cumulative impacts from a group of farms in an area can become harmful even when an individual farm is operating its own production in a responsible way.

4. PRINCIPLE: Health and disease management

Issue: Health of species

Impact: The ASC Standard strives for disease and pest management practices that have the lowest impact possible on the surrounding ecosystem and address key risks relating to the detection and control of infectious diseases. Managing the health of farmed species depends on the overall management of the farm, including the responsible use of veterinary medicines, chemicals and biological products. This must be undertaken in a manner that focuses on ensuring fish health and maintaining food safety and quality, while also minimizing the impacts to human health and the environment.

The intention of this Principle is to address negative impacts of farming associated with disease, parasites and therapeutic chemical inputs. The ASC recognizes the role of proper species handling, biosecurity and minimized levels of fish stress as an important element in good husbandry and in reducing levels of disease on farms, mortalities and therapeutic treatments. In addition to addressing environmental risks, compliance with these requirements helps ensure farmed species health and welfare. Stressful conditions on farmed species increase risks of disease outbreaks that can affect both farmed and wild species. The excessive or improper use of disease and/or parasite treatments can have toxic impacts on wild populations or alter habitats.

The ASC Standard wants to avoid development of resistance to treatment and use of therapeutants may lead to contamination of farm effluents introducing antibiotic resistant bacteria in the receiving waters, which can potentially have a negative effect on the local ecosystem.

4.1 Criterion: Health Management Planning

INDICATOR	
4.1.1	The farm implements a Health Management Plan
4.1.2	Minimum frequency for visits and inspections from a designated veterinarian
4.1.3	Health status of fish is maintained at all stages during transfers
4.1.4	Maximum allowable stocking density is not exceeded
4.1.5	Minimum allowable average growth rate is met
4.1.6	Preventative measures are taken to minimise risk of pathogens
4.1.7	The farm participates in an Area-Based Management (ABM) scheme for managing disease and resistance to treatments that includes coordination of stocking, fallowing, therapeutic treatments and information-sharing

Rationale— Farmed species are susceptible to numerous diseases that have the potential to be amplified and transferred, thereby posing a risk to the health of fish and other wild organisms in adjacent ecosystems. A proactive approach to health management on the farm is needed to mitigate the above risks, achieved through a detailed health management plan that ensures the adequate identification of potential disease risks, appropriate screening and disease prevention measures, effective adaptive measures and pathways to continuous improvement. Frequent visits by the designated veterinarian are required and other fish health professionals as needed.

Maintaining daily records on fish health, behaviour, mortality and clinical signs is important for early detection and management of disease. The standard requires that all grow-out units and brood stock tanks are inspected in sufficient detail to detect abnormal behaviour and abnormal mortality. Abnormal behaviour must be investigated and recorded. Any mortality above a defined level triggers a tiered investigation process that ensures prompt isolation of affected stock, disease testing and expert advice as appropriate.

It is important that farmed species health and welfare is maintained on certified farms, examples of how the ASC ensures this includes indicators for growth and stocking density, as it is expected that farmed fish under good welfare conditions will show a good growth performance, as well as regulating fish stocking density, with the right balance between space efficiency, farming performance, disease control and fish welfare considered. There needs to be responsible use of therapeutants, biosecurity and interaction with adjacent ecosystems.

Area-based management (ABM) is a requirement and linked to other Principles in the ASC Standard. Some salmon-growing jurisdictions have begun to require ABM or are considering it because neighboring farms can achieve significantly improved results when coordinating management of diseases and biosecurity measures. Conversely, a lack of coordination can lead to negative outcomes, such as resistance to treatments. Farms that don't have ABM schemes already established in their jurisdiction will need to show leadership in working with neighboring farms to establish such a scheme, even if the regulatory structure doesn't require it.

4.2 Criterion: Waste Management

INDICATOR	
4.2.1	All farm wastes are managed responsibly to include disposal, storage and recycling
4.2.2	Sludge / bio-solids are handled responsibly

Rationale— The intention of this criterion is to ensure that all waste produced by a farm is recycled, reused or disposed of properly and does not affect neighbouring communities. Quantifiable indicators have been proposed that imply the implementation of a management plan and the separation of wastes, depending on their destination.

The requirement for the percentage of recycled waste reflects the fact that some farms are in extremely remote locations with no viable recycling systems nearby. Still, it is important to set a minimum percentage of recycled waste in the requirements, understanding that many farms may be able to greatly exceed that minimum.

Organic waste and sediment produced or accumulated through the farming activity can be a significant pollution source once are discharged into natural water bodies, hence they must

be disposed properly and not discharged into natural water bodies. Sludge from ponds must be disposed of properly and not discharged into public water bodies (i.e., places that are shared or belong to the government), given that sludge can be a significant pollution source.

Biosolids are a mixture of organic waste and sediment produced or accumulated through the farming activity. Biosolids discharged into natural water bodies are of concern because solids can restrict light penetration in water bodies, accumulate downstream, cover plants and habitat and cause general shallowing of water bodies. Additionally, the organic component of biosolids will exert an oxygen demand as the organic matter decays. The simplest and best way to minimize these impacts is to remove sediments from the water column and allow organic matter to decay prior to discharge. Functionally, this infers the use of a settling basin to let solids settle out of the water column, and for bacterial decomposition and oxygen depletion to occur at the same time prior to disposal of biosolids. To provide assurance of appropriate disposal of biosolids, these requirements include a small number of BMPs.

The construction and operation of farms involves the use of hazardous chemicals (e.g., combustibles, lubricants and fertilizers) and generates waste. The storage, handling and disposal of such hazardous materials and waste must be done responsibly, according to the law minimizing their respective potential impacts on the environment and human health.

4.3 Criterion: Medicine and chemical use

INDICATOR	
4.3.1	Records of storage and use of all medicine and chemicals are maintained
4.3.2	There is no use of therapeutic treatments including antibiotics or other treatments that are banned in the importing or producing country or critically important for human medicine
4.3.3	There is no prophylactic use of veterinary medicines or substances (excluding vaccines) prior to any evidence of a specific disease problem
4.3.4	Only medication prescribed by a veterinarian is used
4.3.5	Antibiotic use is calculated
4.3.6	Use of antimicrobial treatments is publicly disclosed
4.3.7	There is no use of dangerous or banned chemicals
4.3.8	The use of net treatments is restricted
4.3.9	Use of antibiotic treatments (including medicated feed) is limited and falling
4.3.10	Use of toxic chemicals, such as parasiticide is restricted and meets requirements
4.3.11	Bio-assay- Resistance analysis is conducted

Rationale— Veterinary medicines and chemicals can play an important role in maintaining species health and survival, however, the over use of these medicines and chemicals can have environmental as well as human health impacts. The standard requires compliance with an appended protocol for health surveillance and disease response. Only therapeutants allowed for use will be those that are not banned from use in the importing country or the exporting country. These are essentially indicators of effectiveness of the Veterinary Health Plan.

The ASC standards encourage the use of alternative disease prevention measures before medicinal treatments. These requirements are intended to raise awareness within the aquatic veterinary community on the use of medically important antimicrobial drugs in food-animal production, and the public health risks associated with antibiotic resistance, with antibiotics classified by the WHO as “critically important” for human health prohibited.

Prophylactic use of antimicrobial treatments, and treatments that aren’t prescribed by a licensed professional, are unacceptable under the requirement because they open the door to overuse and abuse of therapeutants. In the event that veterinary medicines and chemicals are used, they must be based on a diagnostic test, and all labelled instructions must be precisely followed. The specialist shall also indicate how to apply, handle and store veterinary medicines and chemicals.

Shellfish are primitive organisms with rudimentary immune systems and, once they leave the hatchery, there is no economical way to deliver drugs or antibiotics to significant numbers of animals. Perhaps the best hope of controlling the spread of disease is through the use of management practices that call for the pathological inspection of animals to ensure that infected animals are not moved into areas that do not currently have endemic infections.

The use of alternatives to chemical treatments for farm management, such as the use of cleaner fish for sea lice control, is permitted and encouraged under the ASC Standard. However, any cleaner fish or other species used for management during production must be native species in order to prevent introduction of new species to an area.

Stakeholders share a common interest and common goal of reducing the use of parasiticides and reducing the risk of needed chemical treatments to the environment. The requirement is consistent with industry efforts to reduce both frequency and amount of parasiticide used, as well as with initiatives to develop treatment methods that do not release active parasiticides into the environment.

Copper (Cu), an abundant trace element found in a variety of rocks and minerals and generally present as an ingredient in many antifoulants, is an essential micronutrient necessary for a wide range of metabolic processes in animals and plants, however it will become toxic at elevated levels. In situations where copper is used the requirements ensure precautionary healthy levels of copper in the benthos, including better management practices of not cleaning copper treated nets in the aquatic environment and requiring that land-based cleaning facilities have the appropriate effluent treatment to minimize release of Cu from farms into the environment. In addition, the variability in environmental factors makes it very difficult to identify a generic threshold of copper in the environment that can be used to define the environmental risk hence the farm must demonstrate that the level just outside of the AZE is consistent with reference sites and the background levels in the area.

4.4 Criterion: Mortalities

INDICATOR	
4.4.1	Mortality events are recorded and assessed, with a suitable response made
4.4.2	Dead fish are regularly removed and responsibly disposed of
4.4.3	Survival rates meet requirements
4.4.4	Maximum allowable percentage of disease-related mortality on the farm during the most recent production cycle is not exceeded
4.4.5	Production is of a single year class

Rationale— The most telling indicator of fish health management is the rate of mortality in the culture system. Actual mortality is difficult to determine and isolate because there are several factors that can be attributed to mortality, such as predation, theft, escapes and disease, with survival also dependent upon different factors (e.g., water quality, feeding and pond size).

Healthy farms must keep detailed records of all mortalities. Repeated high mortality rates, or a high rate of unexplained mortalities, may indicate poor management or poor siting.

Mortality removal is a necessary step to reduce the decomposition of animals in culture systems or in the exposed environment. There is a need for the appropriate disposal of dead animal to prevent the spread of disease and to help minimize additional predation, therefore daily removal and proper disposal of mortalities is needed.

5. PRINCIPLE: Use resources responsibly

Issue: Efficient use of resources

Impact: Aquaculture requires the use of resources (other than water) that include feed inputs (e.g., wild-forage fisheries, terrestrial plant and animal protein), non-therapeutic chemical inputs and consumables (e.g., building supplies and energy consumption), etc. Extraction, production and/or consumption of these resources have the potential to negatively impact marine and terrestrial ecosystems. Harvesting forage fish resources in particular can have impacts on marine food webs. This principle intendeds to address these negative impacts that stem from resource use, including feed and other inputs into production and promote efficient use of resources in terms of feeding management and adoption of practices designed to minimize feed inputs (or maximise feeding efficiency).

5.1 Criterion: Feed

INDICATOR

5.1.1 Farms source feed in compliance with the ASC feed standard

Rationale— Aquafeeds are made from a range of ingredients that are sourced from global supply chains. To ensure these materials come from responsibly managed production systems, feed mills should produce a responsible sourcing policy and undertake a systematic risk assessment of their supply chains. This must include social and environmental issues that are specific to suppliers (e.g. child labour), the location of the company (e.g. geopolitical issues), as well as the individual feed ingredients (e.g. environmental impacts of producing certain raw materials).

Soybeans and oil palm derived ingredients form a major ingredient in aquafeed. The production of the raw material (soy beans and oil palm) knows many environmental and social concerns (e.g.: deforestation/land clearing, fertilizer use, herbicide/pesticide use, water use, native community displacement, etc.) which need to be addressed urgently. The Roundtable for Responsible Soy (RTRS), Proterra and the Roundtable for Responsible Palm Oil (RSPO) are acknowledged to be credible third-party certification schemes which also have credible chain of custody options available.

5.2 Criterion: Efficient use of feed and wild fish

INDICATOR

5.2.1 Maximum allowable Economic feed conversion ratio (EFCR) is not exceeded

5.2.2 Maximum allowable Fish Feed Equivalence Ratio (FFER)* is not exceeded

Rationale— Most wild small pelagic fish resources are either fished at capacity or are overfished. These fish, sometimes referred to as “forage fish”, are eaten by humans but are primarily reduced into fish meal and fish oil for use in animal and aquaculture feed. Demand

for these resources is growing and will continue to increase as the aquaculture industry expands and as the fish are increasingly directly consumed by humans or by other industries. There is concern that increased demand could lead to the overfishing—and collapse—of small forage fish stocks.

Wild small pelagic fish play a critical role in the ecosystem and the marine food chain. Some conservation groups and scientists are concerned that even fisheries that are not classified as overfished from a population perspective are, or could be, overfished from an ecological perspective. Good fisheries management is crucial to ensuring that these fisheries are sustainable.

As the aquaculture industry expands, the demand for fish meal and fish oil from wild pelagic fisheries will expand if dependency on these resources continues to increase on a per-unit production basis, as has been the case historically. Inclusion of an indicator and requirements related to efficiency of use and/or dependency of aquaculture producers on forage fisheries is important to encourage future decreases in dependency on these fisheries and is an important extra layer of security to reduce pressure on wild fisheries.

5.3 Criterion: Energy use

INDICATOR	
5.3.1	Energy sources at the farm is identified, with the total energy used calculated and verified
5.3.2	Greenhouse gas emissions on the farm and for feed are calculated
5.3.3	Maintenance records for farm equipment are available
5.3.4	A commitment to recycling is made by the farm

Rationale— Climate change represents perhaps the biggest environmental challenge facing current and future generations. Because of this, energy consumption used in food production has become a source of major public concern. Energy is consumed throughout the culturing, harvesting, processing and transportation stages of production. There are also many other energy drains to consider, such as energy consumed during the construction of facilities, while maintaining and updating facilities, during the production of those construction materials, and during the production of liming materials, fertilizers and other inputs.

It is recommended that growers develop means to improve efficiency and reduce consumption of energy sources, particularly those that are limited or carbon-based. The ASC Standard acknowledges that, at this time, there is insufficient data available for setting energy use requirements. Therefore, the ASC Standard requires the collection of energy consumption data by audited farms in order to be able to set up energy requirements in the future. To be useful for addressing the issue of carbon emissions in the future, data collection needs to be as exhaustive as possible so that the conversion of energy consumption to carbon emissions will be feasible.

5.4 Criterion: Water Use

INDICATOR
5.4.1 Records of water use are available
5.4.2 Water resources are used responsibly
5.4.3 Saline water is not discharged into freshwater bodies or land

Rationale— Water use is an increasingly important global issue and its efficient use is an important part of sustainable production. By requiring farmers to monitor the amounts of freshwater used on the farm, the requirements seek to establish a baseline. It is recommended that growers improve efficiency and reduce consumption of reticulated freshwater, with the expectation that performance thresholds may be established in future iterations of the requirements.

When groundwater is used directly or mixed with brackish water for aquaculture, the salinization of freshwater aquifers can occur. Over-pumping can lower the head in the freshwater aquifer and saline water can enter and mix with freshwater. The ASC Standard recognizes that the responsible operation of an aquaculture facility shall not lead to the salinization of freshwater aquifers.

6. PRINCIPLE: Be socially responsible on the farm

Issue: Address social impacts of the farm

Impact: Aquaculture must be done in a socially responsible manner that ensures the operations benefit farm workers. This principle addresses potential negative social impacts related to farm development and operation based on the core principles of the International Labor Organization (ILO) as well as other matters on which the UN has agreed, which are considered to be the fundamental rights of individuals. Complaint procedures and protection for whistle blowers are critical to achieving and maintaining fair and equitable working conditions. Relevant training available for workers and managers should be provided by the farm.

6.1 Criterion: Child Labour

INDICATOR
6.1.1 There are no incidences of child labour
6.1.2 Young workers are protected

Rationale— Adherence to the child labor codes and definitions included in this section indicates compliance with what the ILO and international conventions generally recognize as the key areas for the protection of child and young workers. Children are particularly vulnerable to economic exploitation, due to their inherent age-related limitations in physical development, knowledge and experience. Children and youth need adequate time for education, development and play. Therefore, they should not have to work or be exposed to working hours and conditions that are hazardous to their physical or mental well-being. To this end, the requirements related to what constitutes child labor will protect the interests of children and young workers at farms certified to these requirements.

6.2 Criterion: Forced Labour

INDICATOR
6.2.1 There are no incidences of forced, bonded or compulsory labor
6.2.2 Workers have the right to leave the farm

Rationale— Forced labour—such as slavery, debt bondage and human trafficking—is a serious concern in many industries and regions of the world. Ensuring that contracts are clearly articulated and understood by workers is critical to determining that labour is not forced. The inability of a worker to freely leave the workplace and/or an employer withholding original identity documents of workers are indicators that employment may not be at-will. Adherence to these policies shall indicate that an aquaculture operation is not using forced, bonded or compulsory labour.

6.3 Criterion: Discrimination

INDICATOR
6.3.1 There are no incidences of discrimination
6.3.2 The farm has an antidiscrimination policy
6.3.3 Maternity rights and benefits are respected

Rationale— Unequal treatment of employees, based on certain characteristics (such as sex or race), is a violation of workers’ human rights. Additionally, widespread discrimination in the working environment can negatively affect overall poverty and economic development rates. Discrimination occurs in many work environments and takes many forms. In order to ensure that discrimination does not occur at certified aquaculture farms, employers must prove their commitment to equality with an official anti-discrimination policy, a policy of equal pay for equal work, as well as clearly outlined procedures to raise/ file and respond to a discrimination complaint in an effective manner. Evidence, including worker testimony, of adherence to these policies and procedures will indicate minimization of discrimination.

6.4 Criterion: Health and Safety

INDICATOR
6.4.1 Workers are trained in health and safety practices, procedures and policies
6.4.2 All health and safety related accidents and violations are recorded and corrective action taken when necessary
6.4.3 There is evidence of employer responsibility and/or proof of insurance (accident or injury) for 100% of worker costs in a job-related accident or injury when not covered under national law.
6.4.4 Personal Protective Equipment is available, maintained and properly used by workers
6.4.5 Divers are certified
6.4.6 Health and safety risk assessments are conducted and implemented

Rationale— A safe and healthy working environment is essential for protecting workers from harm. It is critical for a responsible aquaculture operation to minimize these risks. One of the key risks to workers is hazards resulting from accidents and injuries. Consistent, effective and regular worker training in health and safety practices is an important preventative measure. When an accident, injury or violation occurs, the company must record it and take corrective action to identify the root causes of the incident, remediate, and take steps to prevent future occurrences of similar incidents. This addresses violations and the long-term health and safety risks. Finally, while many national laws require that employers assume responsibility for job-related accidents and injuries, not all countries require this and not all

workers (in some cases migrant and other workers) will be covered under such laws. When not covered under national law, employers must prove they are insured to cover 100 percent of worker costs when a job-related accident or injury occurs.

6.5 Criterion: Fair wages

INDICATOR

6.5.1 The employer pays at least minimum wage as defined by law or industry standard, or ensures that wages cover basic needs plus some discretionary income, whichever is higher.

6.5.2 Wage-setting and rendering is transparent

Rationale—Wages and the process for setting wages are important components of the ILO core principles. Therefore, it is important for socially responsible employers to pay or be working toward paying a basic needs wage. Certified farms shall also demonstrate their commitment to fair and equitable wages by having and sharing a clear and transparent mechanism for wage-setting and a labour conflict resolution policy that tracks wage-related complaints and responses. Payments shall be made in a manner convenient to workers. Having these policies outlined in a clear and transparent manner will empower the workers to negotiate effectively for fair and equitable wages that shall, at a minimum, satisfy basic needs.

6.6 Criterion: Freedom of association

INDICATOR

6.6.1 Workers have access to representatives (for example trade unions), are able to join organisations chosen by themselves and to bargain collectively without managerial interference

Rationale— Having the freedom to associate and bargain collectively is a critical right of workers because it enables them to engage in collective bargaining over issues such as wages and other working conditions. Freedom of Association and the effective recognition of the right to collective bargaining is one of the core principles of the International Labor Organization’s (ILO) “Declaration on Fundamental Principles and Rights at Work.” The declaration was adopted in 1998 by the 86th International Labor Conference and has since been ratified by the overwhelming majority of ILO’s 183 member nation-states. Although this does not mean all workers of a certified aquaculture operation must be in a trade union or similar organization, workers must not be prohibited from accessing such organizations when they exist. If they do not exist or are illegal, companies must make it clear that they are willing to engage in a collective dialogue through a representative structure freely elected by the workers. Companies shall ensure that workers interested in collective bargaining or joining a union or worker organization of their choice are not subjected to discrimination.

6.7 Criterion: Disciplinary practices and fair treatment

INDICATOR
6.7.1 There are no incidences of abusive disciplinary practices
6.7.2 There is evidence of an effective disciplinary policy
6.7.3 Harassment of workers is prohibited

Rationale— The rationale for discipline in the workplace is to correct improper actions and maintain effective levels of worker conduct and performance. However, abusive disciplinary actions can violate workers’ human rights. The focus of disciplinary practices shall always be on the improvement of the worker. Fines or basic wage deductions shall not be acceptable as methods for disciplining workforce. A certified farm shall never employ threatening, humiliating or punishing disciplinary practices that negatively impact a worker’s physical and mental health or dignity.

6.8 Criterion: Working hours

INDICATOR
6.8.1 There are no incidences of violations or abuse of working hours and overtime laws or expectations
6.8.2 Overtime is limited, voluntary, paid at a premium rate and restricted to exceptional circumstances
6.8.3 Minimum time-off requirements are respected
6.8.4 Maternity leave and considerations are respected
6.8.5 Transport to and from the farm is provided for workers

Rationale— Abuse of working hours is a widespread issue in many industries and regions. Workers subject to extensive overtime can suffer consequences in their work-life balance and are subject to higher fatigue-related accident rates. In accordance with better practices, employees in certified aquaculture operations are permitted to work—within defined guidelines—beyond normal work week hours but must be compensated at premium rates. Requirements for time-off, working hours and compensation rates as described should reduce the impacts of overtime.

6.9 Criterion: Fair contracts (including subcontractors)

INDICATOR	
6.9.1	Workers' contracts are fair
6.9.2	Farms show evidence of a policy to ensure social compliance of its suppliers and contractors

Rationale— Fair contracting is important to ensure transparency between the employer and employee and fairness in the employment relation. Short-term and temporary contracts are acceptable but cannot be used to avoid paying benefits or to deny other rights.

6.10 Criterion: Conflict resolution / worker relations

INDICATOR	
6.10.1	Farms show evidence of fair grievance policies and procedures
6.10.2	Grievances are addressed within a given timeframe

Rationale— Companies must have a clear labour conflict resolution policy in place for the presentation, treatment and resolution of worker grievances in a confidential manner. Employers shall put in place systems or policies that allow workers to communicate freely on any issues of concerns. Such a system should protect the anonymity of “whistle-blowers.” Employers shall also keep records and track and resolve issues to the maximum of their ability.

6.11 Criterion: Conditions on the farm

INDICATOR	
6.11.1	Adequate living conditions (where provided) for workers are available
6.11.2	Adequate facilities for women are available

Rationale— The protection of the workers that reside or live on the farm's property is an integral part of the employer's responsibility. To maintain the health and performance of workers, farms will provide clean, sanitary and safe living quarters with access to clean water and nutritious meals. A safe and healthy working environment is essential for protecting workers from harm.

6.12 Criterion: Education and training

INDICATOR

6.12.1 Education and training is provided by the farm

Rationale— Education and training can be beneficial to companies and enable workers to improve their incomes. Such human capital development should be encouraged where it is in the interest of the company. Incentives, such as subsidies for tuition or textbooks and time off prior to exams, should be offered. The offer of training may be contingent on workers committing to stay with the company for a pre-arranged time. This should be made clear to participants before they start the training.

6.13 Criterion: Corporate policies for social responsibility

INDICATOR

6.13.1 There are company-wide social accountability policies

Rationale— Companies must be able to demonstrate that not only are the specific farm sites applying for certification able to meet this robust set of social and labor requirements, but that they also have company-wide policies related to these key issue areas that are in line with ASC's social requirements.

7. PRINCIPLE: Be a good neighbour

Issue: Responsibility for community impacts of the farm

Impact: This principle aims to address broader off-site potential social impacts associated with aquaculture production, including interactions with local communities, public access to land and water resources. Where possible, aquaculture must also benefit local communities and, at the very least, not negatively affect communities, prevent land use conflicts and ensure social injustice.

Conflict resulting from a lack of agreement over how resources should be used can severely impact the social sustainability of an aquaculture operation. Regular proactive communication and consultation can build trusting relationships with local communities and prevent or minimize conflicts. By fostering an open dialogue and engagement, farmers can strive to earn the trust of local communities and gain the social license to operate. Farms that are improperly sited can cause land use conflicts and social injustice.

7.1 Criterion: Community relations

INDICATOR	
7.1.1	An assessment of the farm's social impact is conducted and implemented
7.1.2	There is presence and evidence of an effective (resolution of complaints) policy and mechanism for the presentation, treatment and resolution of complaints by community stakeholders and organizations
7.1.3	Farm actions are responsible
7.1.4	Indigenous groups are consulted

Rationale— Credible social sustainability standards must be able to respond to real human concerns that arise in communities located near the farm in addition to those within its overall operations. The intent of these requirements is to enable communities to have a clear, fair and transparent way of interacting with producers and for producers to have frameworks to have interaction through dialogue and negotiation with surrounding communities in order to properly identify, avoid, minimize and/or mitigate risks, impacts and potential conflicts.

7.2 Criterion: Access to resources and freedom of movement

INDICATOR	
7.2.1	Farm structure shall not impede movement
7.2.2	Farm shall not restrict access to public resources or impede aquatic animals
7.2.3	Farms shall not cause a visual, noise and odor disturbance

Rationale— Companies should make a maximum effort to not affect the surrounding community’s access to vital resources as a result of its presence and activities. A main driver for the requirements is to minimize user conflicts. Some change in access is expected. What is to be prevented is an unacceptable degree of change.

7.3 Criterion: Local employment

INDICATOR
7.3.1 The farm shall engage in fair local hiring
7.3.2 Workers shall have suitable employment permits

Rationale— Aquaculture can be very beneficial to rural village economies as a major source of employment. However, farmers often resort to hiring migratory workers and asking them to stay on, or close to, the farm. In doing so, the potential value aquaculture farming has to local rural economies is lessened. The criteria is formulated to ensure people within the local work force are duly considered for jobs on the farm, and migratory workers are only hired when people within the local workforce do not meet requirements.

7.4 Criterion: Fair contract farming

INDICATOR
7.4.1 Written contract agreements shall be provided
7.4.2 Contracts shall comply with basic provisions
7.4.3 Negotiations shall be open and transparent

Rationale— Contract farming arrangements are increasingly part of the business practices in the aquaculture sector. However, these arrangements do differ from labor contract arrangements in that the contract does not revolve around labor in exchange for wages, but is rather an arrangement between two independent parties that both carry risks by committing to and implementing the contract. In the context of the scope of this requirement, contract farming applies to the farm owner/operator either in outsourcing (to another farm) or as a signatory party in a contract-farming arrangement with the receiver of the harvest. The concern that the requirement is seeking to address is that contract farming arrangements are open to skewed, unequal and non-transparent arrangements. In short, often the less influential parties are not made fully aware of what they are committing to and sometimes compliance to mutual obligations is enforced by only one party. This should not be the case. Three specific indicators are set to ensure that the contracting process itself is fair and transparent.

[end]