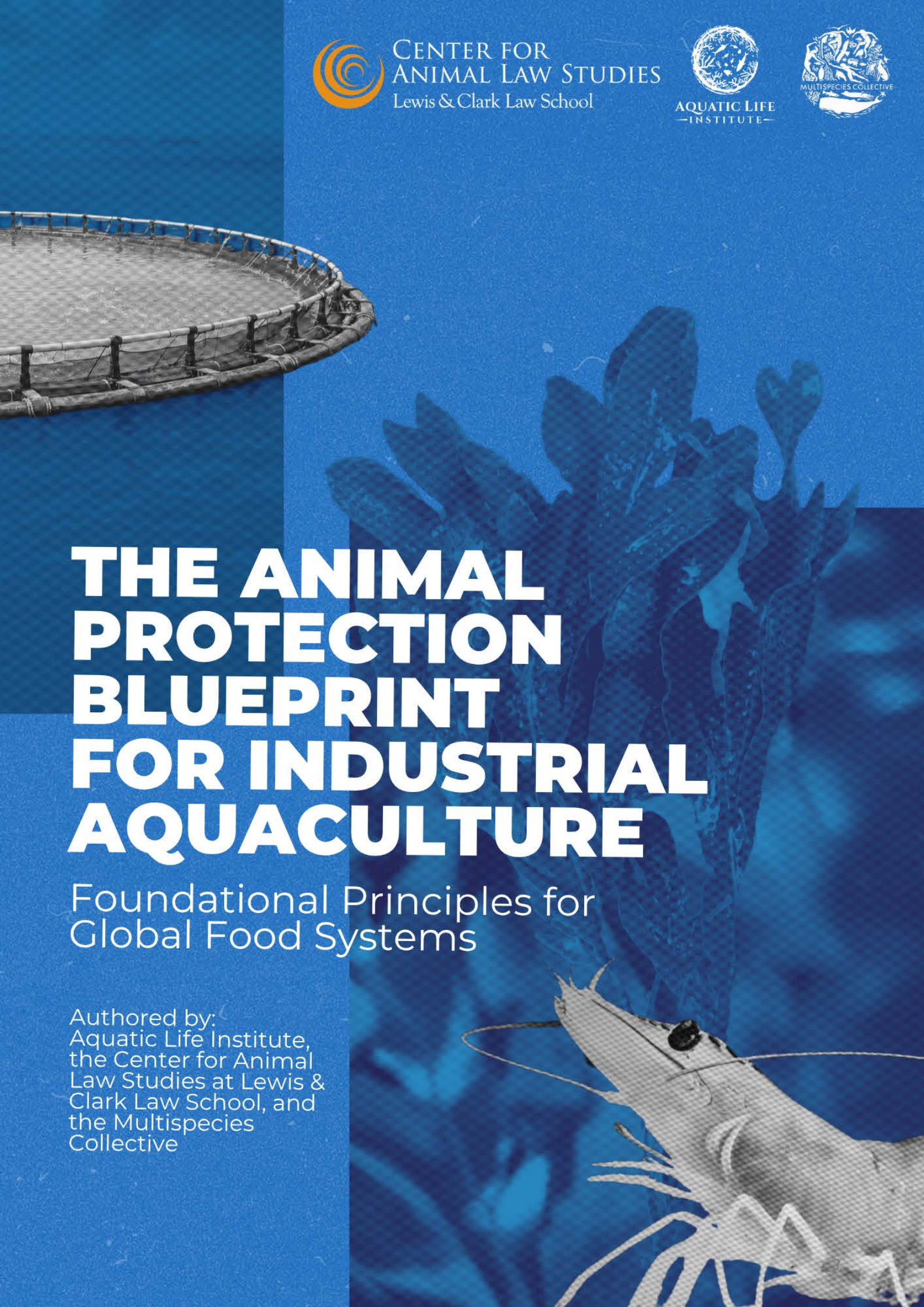




CENTER FOR
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AQUATIC LIFE
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THE ANIMAL PROTECTION BLUEPRINT FOR INDUSTRIAL AQUACULTURE

Foundational Principles for
Global Food Systems

Authored by:
Aquatic Life Institute,
the Center for Animal
Law Studies at Lewis &
Clark Law School, and
the Multispecies
Collective

The Animal Protection **Blueprint** for Industrial Aquaculture¹

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Background and Purpose

This Blueprint is grounded in the long-term goal of transitioning away from the industrial farming of sentient aquatic animals. Consistent with this objective, stakeholders should avoid expansion into new species, production systems, and geographic regions. In the interim, and acknowledging the suffering of billions of aquatic animals currently farmed in industrial operations, this Blueprint establishes principles to reduce the suffering of those currently farmed and to prevent the expansion of farming into new species, systems, and geographic regions. In that vein, this Blueprint establishes a set of principles to guide the integration of aquatic animal welfare into aquaculture governance, markets, and food systems. The Blueprint is designed to be jurisdiction-neutral and adaptable across international, national, subnational, and corporate contexts, but does not intend to replace local knowledge about industry, regulatory practice, or cultural and political sensitivities in the relevant jurisdiction.

Industrial animal aquaculture operates within broader environmental, public health, and economic systems, where aquatic animal welfare intersects and competes with resource use, food security, and livelihoods. In this context, aquatic animal welfare refers to the conditions that shape animals' physical and psychological states throughout their lives, including their ability to experience good physical health and positive welfare, appropriate living environments, reduced stress and pain, and humane handling and slaughter.

For the purposes of this Blueprint, industrial aquaculture refers to large-scale commercial systems that intensively farm aquatic animals for food and other commercial purposes. The Blueprint recognizes that substantial differences exist between industrial production systems and small-scale, Indigenous, traditional, and community-based forms of aquatic animal production, which fall out of this document's scope, and may involve distinct social, cultural, and governance considerations.

As aquaculture continues to scale, farmed aquatic animals are exposed to a range of interconnected welfare harms, including high stocking densities, poor water quality, disease and parasite burdens, handling and transport stress, harmful hatchery and recirculating aquaculture system (RAS) practices, artificial lighting regimes that disrupt

¹ This document was prepared by Aquatic Life Institute; the Farmed Animal Protection Project, Center for Animal Law Studies at Lewis & Clark Law School; and the Multispecies Collective at the University of Birmingham Law School.

natural behaviors, and the absence of effective stunning and slaughter practices. This expansion in production also drives indirect harms to other aquatic animals, including animals captured for aquafeed, impacted by genetic and environmental pollution, or used as cleaner fish in sea lice management systems. Climate change further compounds welfare risks through rising water temperatures, changing disease dynamics, and increased mortality events. Despite their severity, these issues remain inconsistently addressed by policymakers and industry and are not yet systematically integrated into global, state, or local governance, market, and production frameworks.

While this Blueprint recognizes the increasing diversity of aquatic species affected by aquaculture and the need for a precautionary approach to animal sentience, its principles are primarily intended to address the welfare of farmed finfish, crustaceans, and cephalopod molluscs, where the scientific evidence base and welfare challenges are currently most developed.

Use and Development

This Blueprint acts as a starting point for advocacy by establishing a shared set of minimum principles, rather than a complete or exhaustive welfare framework, and can be customized for varying circumstances. It is intended to be adapted, strengthened, and supplemented by local stakeholders according to regional contexts, scientific developments, and legal systems. It can function as a guidepost for stakeholders; a practical reference point for policy, standards, and investment decisions; and a foundation for accountability. Corresponding indicators listed are inclusive and not exhaustive.

The Animal Protection Blueprint for Industrial Aquaculture was co-developed through a multi-stakeholder process led by Aquatic Life Institute, the Center for Animal Law Studies at Lewis & Clark Law School, and the Multispecies Collective, with input from experts and participants engaged through the 2026 International Aquaculture Law & Policy Symposium. Although the Blueprint has been developed by organizations based primarily in the United States and United Kingdom, it encompasses feedback provided by a global range of participants involved in the Symposium.

Reference

Aquatic Life Institute, Center for Animal Law Studies at Lewis & Clark Law School, & Multispecies Collective. (2026). *International Aquaculture Law & Policy Symposium*. https://law.lclark.edu/centers/animal_law_studies/aquaculture-symposium/2026/

The Animal Protection **Blueprint** for Industrial Aquaculture

Foundational Principles for Global Food Systems

1. Sentience and Moral Consideration

Sentience, defined as the ability to have positive or negative experiences, has long influenced which beings are granted moral consideration and protection. Scientific evidence supporting the sentience of aquatic animals continues to grow across a widening range of species, though many remain understudied. Where scientific uncertainty exists, decision-makers should apply a precautionary approach and presume the possibility of sentience rather than requiring conclusive proof before extending welfare protections to those species. Recognition of sentience also entails acknowledging species-specific capacities and needs including, for many farmed species, natural migratory and ranging behaviors that confinement inherently frustrates.

Aquatic animal sentience should be increasingly recognized across scientific, legal, and ethical forums, including national legislation, regulatory systems, international instruments, and market-based standards. This recognition should inform the development and implementation of substantive welfare protections across aquaculture systems.

Indicator(s):

- Explicit sentience language in:
 - legislation/regulation
 - certification standards
 - corporate policies
 - multilateral guidance frameworks
- Adoption of precautionary frameworks that presume the possibility of sentience where scientific uncertainty exists.

2. Welfare within Interconnected Governance Systems

Aquaculture poses significant environmental and public health risks, including eutrophication, habitat destruction, antibiotic resistance, dependence on wild aquatic animals for feed, and disease. Antimicrobial use in aquaculture is a particularly acute public health concern: routine and prophylactic administration, which is often necessitated by crowding and disease in farmed settings, accelerates antimicrobial resistance and compromises One Health outcomes. The routine use of antimicrobials in aquaculture contributes to the global antimicrobial resistance crisis, which is increasingly recognized as one of the most significant threats to public health worldwide.

Aquatic animal welfare is closely linked to these impacts, with animal health and welfare measures like lower stocking densities serving environmental and public health goals. Aquatic animal welfare should be explicitly integrated into environmental, climate

adaptation, climate mitigation, and public health policy frameworks, recognizing its interdependence with ecosystem integrity and One Health outcomes.

Policymakers should acknowledge and transparently evaluate situations where environmental, public health, economic, and welfare objectives may conflict, ensuring that aquatic animal welfare considerations are explicitly assessed rather than omitted.

Indicator(s):

- Explicit integration of aquatic animal protection into:
 - national environmental, climate, or One Health strategies
 - public health policy frameworks
 - ecosystem-based management plans
 - multilateral guidance (e.g., One Health, biodiversity frameworks)
 - surveillance, reporting, and reduction targets for prophylactic and other non-therapeutic antimicrobial use in aquaculture

3. Aquatic Animal Protection and the Limits of Sustainability Claims

The growth of the aquaculture industry relies in part on its portrayal as a more “sustainable”, “responsible”, and “ethical” source of animal protein. These claims are ill-defined and typically exclude animal welfare from their metrics.

Aquatic animal welfare should be explicitly integrated into definitions and criteria of “sustainable”, “responsible”, and “ethical” food production within national strategies, certification schemes, Environmental Social Governance (ESG) frameworks, and international guidance. Because ‘sustainable’ and ‘responsible’ claims are frequently deployed in marketing aquacultured animal products without substantiation, animal welfare and environmental marketing claims should be harmonized and subject to robust public enforcement.

Indicator(s):

- Inclusion of aquatic animal welfare criteria within:
 - national food system or sustainability strategies
 - certification scheme definitions of “sustainable” or “responsible” seafood
 - ESG and sustainability reporting frameworks
 - international guidance on sustainable food systems
- Mandatory disclosure standards for environmental and animal-welfare marketing claims
- Harmonized labeling requirements addressing when and how certain welfare claims can be made on products

4. Environmental Conditions in Aquaculture

Water quality parameters such as dissolved oxygen levels, ammonia and nitrogen levels from waste or uneaten food, pH, and temperature are some of the main determiners of

aquatic animal welfare. Aquaculture systems should be required to maintain water quality and environmental conditions within species-specific thresholds.

Additionally, aquaculture facilities should account for and mitigate their ecosystem impacts, including prohibiting systems that inevitably lead to interactions with wild species, such as net pen finfish farming and should prohibit aquaculture siting close to marine protected areas (MPAs) and sensitive ecosystems.

Indicator(s):

- Presence and enforcement of:
 - species-specific water quality thresholds (e.g., oxygen, temperature, ammonia)
 - environmental impact limits linked to welfare outcomes
 - requirements mitigating interactions with wild species
 - integration of welfare considerations for both farmed and wild animals in marine spatial planning / MPAs, accounting for climate-driven stressors such as rising water temperatures
 - limits on harmful sea lice treatment methods (e.g., abrasive and thermal delousing)

5. Species-Specific Production and System Design

Significant variation between aquatic species' traits and needs can complicate welfare requirements. Production systems, including stocking density and infrastructure, should be designed and implemented using species-specific biological and behavioral thresholds, determined using the best available independent scientific evidence on aquatic animal welfare, behavior, cognition, and health. Where the best available science indicates, or where substantial uncertainty remains regarding whether a species can be farmed without inherent and unavoidable welfare harm, the appropriate response is prohibition of farming and a moratorium on expansion into that species.

Indicator(s):

- Defined and enforced:
 - species-specific stocking density thresholds
 - system design requirements aligned with biological, psychological, and social needs
 - infrastructure standards reflecting behavioral and physiological constraints
 - prohibition or restriction of production systems for certain species where the risk of poor welfare in farmed settings is inherently high

6. Nutrition, Inputs, and Upstream Impacts

Industrial animal aquaculture currently relies on billions of wild aquatic animals annually to produce feed for carnivorous farmed species, compounding the welfare, environmental, and social costs of commercial fishing. Additionally, animal feed increasingly incorporates

inputs from other intensive systems, including farmed chicken and insects, extending aquaculture's impact across multiple farmed species. Feed systems should meet physiological needs while minimizing welfare harms and broader environmental and resource impacts across supply chains.

Indicator(s):

- Adoption of standards or policies requiring:
 - nutritionally complete, species-appropriate feed formulations that prioritize traceability and sustainability of feed ingredients
 - assessment of upstream welfare and environmental impacts in feed supply chains
- Public disclosure of feed ingredient composition, sourcing, and associated welfare impacts
- Transitioning away from wild-caught fish feed for aquatic farmed animals

7. Behavioral Needs and Cognitive Considerations

Farmed aquatic animals are often raised in barren environments, lacking environmental enrichment and cognitive stimulation, especially in contrast to their wild counterparts. Harm to aquatic animals includes farming practices that disregard species needs, such as 24 hour lighting regimes and other practices that disrupt, restrict, and/or prohibit the natural behavior of aquatic animals. This harm occurs in various rearing systems, including hatcheries and recirculating aquaculture systems (RAS). Aquatic animal welfare requires that animals be able to express their natural behaviors. Production systems should incorporate validated enrichment and behavioral support, based on the best available science, reflecting species-specific cognitive and behavioral capacities. The development of behavioral and cognitive welfare standards should include aquatic animal welfare experts and independent scientific specialists.

Indicator(s):

- Inclusion of requirements for:
 - environmental enrichment and structural complexity
 - behavioral indicators in welfare assessments
 - species-specific protocols reflecting cognitive capacity
 - restrictions on barren or behaviorally restrictive systems
 - limits on artificial lighting regimes consistent with species' circadian needs
 - welfare requirements specific to hatcheries and RAS systems

8. Handling, Slaughter, and End-of-Life

Farmed aquatic animals typically have minimal or no protections that require humane handling and slaughter. Aquaculture often relies on inhumane methods to kill conscious animals, such as asphyxiation, exsanguination, and ice slurry. Humane handling and slaughter practices should ensure animals are effectively rendered insensible to pain before slaughter using validated, species-appropriate methods.

Indicator(s):

- Mandated use and verification of:
 - species-appropriate stunning methods prior to slaughter
 - validated protocols ensuring insensibility
 - limits on handling stress (e.g., crowding, air exposure, transport time)
 - monitoring and reporting of compliance with humane handling and slaughter requirements

9. Governance, Law, and Enforcement

Despite evidence of aquatic animal sentience, aquatic animal welfare is absent from most legal and regulatory regimes around the world. Aquatic animal welfare should be embedded in binding and non-binding legal and regulatory frameworks, with clear standards, enforcement mechanisms, and accountability across jurisdictions. Accountability mechanisms should be designed to address actors with the greatest capacity to influence welfare outcomes, including corporations, integrators, traders, and financial actors, rather than disproportionately burdening small-scale producers. Legal measures should be informed by the best available science on aquatic animal sentience and the precautionary approach should be exercised where possible.

Indicator(s):

- Presence of:
 - binding legal provisions addressing aquatic animal welfare
 - defined enforcement mechanisms (e.g., inspections, penalties)
 - mechanisms for redress when welfare provisions are violated (through regulators or the judiciary)
 - a designated competent authority with a statutory aquatic animal welfare mandate
 - transparency and reporting requirements on compliance

10. Market, Advocacy, and Systems-Level Change

Market mechanisms, consumer advocacy, and investment principles can drive change, but they complement, rather than substitute for, binding public governance. Public regulation, disclosure mandates, and, where warranted, restrictions on production remain essential.

In the meantime, aquatic animal welfare should be advanced through multi-lateral and corporate systems such as Environmental Social Governance (ESG) and Sustainable Development Goals (SDG) frameworks, and financial decision-making processes, including investor due diligence, risk assessment, and reporting systems.

Indicator(s):

- Demonstrated integration of aquatic animal welfare within:

- ESG frameworks, investor due diligence processes, and lending requirements established by development banks and other financial institutions
 - corporate procurement and sourcing policies
 - advocacy strategies coordinated across sectors
 - financial risk assessment and disclosure systems
 - alignment with SDGs and global sustainability initiatives
 - Development of policy tools to halt or reverse expansion of finfish and other farming, including species-level moratoria and just-transition mechanisms
 - Public funding and incentives for non animal-harming alternatives (e.g., cultivated and plant-based aquatic food products)
 - Just transition support for workers and communities to move away from farming aquatic animals
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