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Defining incentives and claims in Aquaculture Improvement Projects (AIPs)

White Paper

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Colophon

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1. Introduction

Aquaculture improvement projects (AIPs) have recently emerged as a new form of market-based and non-state governance in the aquaculture sector (Bottema, 2019). They embody multi-stakeholder efforts that leverage the influence of the private sector to drive improvements in aquaculture production and ensure that these changes endure through improved policy and management strategies (Sustainable Fisheries Partnership (SFP), 2019). Distinctive of AIPs is to operate within a specified area defined by the shared use of a waterbody to address the cumulative impacts and shared disease risks affecting aquaculture – an approach often referred to as zonal management or a landscape/jurisdictional level approach (FAO, 2022).

Apart from a pathway to improved practices, some see AIPs as a stepping stone to aquaculture certification, such as the certification of the Aquaculture Stewardship Council (ASC), GLOBALG.A.P. and the Best Aquaculture Practices (BAP) of the Global Seafood Alliance (GSA) (CEA, 2016). While certification has become a widely accepted way to address sustainability issues within the aquaculture sector, only about 3% of global aquaculture production is certified (Naylor et al., 2021). The high costs of certification, poor literacy levels and administrative skills by producers and environmental production risks beyond the control of producers have been identified as key barriers to increased farmer compliance with sustainable aquaculture standards (Naylor et al., 2021). Small-scale aquaculture farmers, in particular, have been excluded from certification (FAO, 2022).

As such, AIPs can potentially represent a more inclusive, ‘developmental’ way to work with small-scale farmers (Bush et al., 2019) and raise the environmental

performance of multiple—not yet certified—farms and potentially increase access to markets that demand such practices (FAO, 2022).

Yet, despite their ambition to address shared social and environmental impacts of aquaculture among farms (Bottema, 2019), it has been an ongoing challenge to incentivise farms to participate in AIPs – especially when processor-driven incentives are lacking or weak. Therefore, the ASC, SFP, and the Monterey Bay Aquarium Seafood Watch (henceforth: Seafood Watch) commissioned this study to ‘examine the diverse types of incentives that can be created for broad-based participation in AIPs and the products coming from such projects’.

The paper is based on a comprehensive literature review and four empirical cases illustrating different experiences with improvement projects in and beyond aquaculture (see [Box 1](#)). The paper first identifies the main characteristics of AIPs ([Section 2](#)) and introduces the concept of “incentives” ([Section 3](#)), before reviewing the different incentives at play for engaging producers and other actors in improved production practices through certification or participation in AIPs ([Section 4](#)). How claims can be attached to products coming from AIPs is discussed in [Section 5](#). Finally, the paper discusses how different characteristics of AIPs create diverse incentives for different actors and makes suggestions about how to unlock incentives for actors to encourage more broad-based participation ([Section 6](#)).

Box 1. Methods and empirical cases

The paper is based on a comprehensive literature review to identify incentives for participation in and beyond eco-certification and related projects. A total of 33 peer-reviewed studies were included (see Annex A for the results of the literature review). Three semi-structured interviews with representatives from ASC, SFP and Seafood Watch were conducted.

Moreover, in collaboration with ASC, SFP and Seafood Watch, four empirical cases were identified to analyse existing examples of incentive structures and enabling conditions as a way to derive lessons across sectors on products in 'transition'. The cases include examples from aquaculture, fisheries, palm oil and coffee, which were analysed through comprehensive desk research and one key informant interview each. The following cases were included:

- The project 'Supermarket supported area-based management and certification of aquaculture in Southeast Asia' (**SUPERSEAS**) was a research project (2016-2020) by Wageningen University and its partners in Southeast Asia. The main objective was to examine how area-based management models for aquaculture production, including different AIPs, can reduce the social and environmental risks associated with smallholder aquaculture, and improve the terms under which smallholders are incorporated in domestic, regional and international retail-led value chains.
- **Tradin Organic** is a global trader and processor in certified organic produce. In 2015, Tradin Organic started its operations in Sierra Leone to develop inclusive agroforestry value chains that deliver high-quality organic cocoa and generate rural economic growth. Currently, Tradin works directly with over 35,000 smallholder farmers in Sierra Leone through its local subsidiary Tradin SL. Tradin engages with partners at all stages of the supply chain in order to pool subsidies, corporate funding and international and local expertise resulting in diverse (technical) assistance programmes and financial solutions to build reliable supply chains for quality organic raw materials for organic companies.
- The **Sustainable Palm Oil Programme in Côte d'Ivoire** (2017-2021) was a project between Solidaridad, ALDI SOUTH, ALDI Nord and the RSPO Smallholder Support Fund, which focused on improving the knowledge of palm oil smallholder farmers of best environmental practices, emphasising natural forests and high conservation values (HCV). Around 2,611 palm oil smallholders received training through Farmer Field Schools, and about 250 ha of forest land were restored.
- Two **Fisheries Improvement Projects (FIPs)** jointly implemented by the NGOs Pronatura and SmartFish in **Mexico**: the **Marismas Nacionales white snook** hook & line/gillnet FIP (2018-2023) and the **Gulf of California grouper, snapper, triggerfish and yellowtail** hook & line FIP (2019-2025), together with a range of different partners including fisher cooperatives, seafood buyers, government entities, and universities. The FIPs aim to make the selected fishery in a specific area sustainable. Through cooperatives, these FIPs each work with over 2,000 fishers.

2. Aquaculture improvement projects

“An aquaculture improvement project is a multi-stakeholder process to address the cumulative impacts and shared disease risks affecting aquaculture through a zonal management approach” (SFP, 2019). Following the model of fishery improvement projects (FIPs) in the wild-capture sector, AIPs share the same ambition of improving the environmental footprint of seafood production through projects incentivised by buyer demand or the possibility of market access (CEA, 2019). Stakeholders in AIPs include fish farmers, processors, buyers, implementing organisations (often NGOs) and government representatives – although not all are necessarily involved to the same extent.

To successfully address cumulative impacts and shared risks, AIPs typically operate at a scale beyond the farm level and include most farms in a defined area sharing a waterbody (FAO, 2022). AIPs then focus on promoting prioritised better management practices among engaged farmers to increase productivity, reduce harmful discharges into local waters, and mitigate the risk of disease transmission (CEA, 2016).

While the concept of AIPs originated more than a decade ago and various organisations have implemented AIPs, there is no common definition of what constitutes an AIP. CEA (2016) therefore proposes that AIPs should at least 1) have a clearly stated goal related to substantive improvements to aquaculture production; 2) show transparent and measurable reporting on progress against project goals; and 3) include market-based incentives for fish farmers either in terms of profit or market access.

However, the uncertainty of what constitutes an AIP goes beyond these three prescriptive characteristics and rather concerns the fundamental project setup. For example, are AIPs a transitional route to certification or are they complementary to certification by primarily reaching out to those producers whose practices are far from certification, or both? AIPs can be described in a number of ways, based on their different characteristics and the characteristics of the production systems involved. These can be combined in several ways (Table 1) (CEA, 2016).

Table 1. Characteristics of AIPs and the production systems

Characteristics	Options or forms in which these may appear		
1. AIP level	a. Zonal improvement: the AIP targets all (or many) farms within a region, often targeting disease reduction or other regional goals.		
2. End goal	a. No certification: the AIP does not have a goal for farms to achieve certification. Example: Hainan Tilapia AIP, China	b. Quasi-certification (rating) or non-GSSI benchmarked certification: the AIP goes towards a non-GSSI benchmarked standard, such as national government certification, or a rating, e.g. ASIC. Example: Selva shrimp AIP, Vietnam.	c. Certification: the AIP aims to get farms to achieve GSSI benchmarked certification (e.g. ASC, BAP) Example: ASC improver project, Indonesia, iBAP projects
3. Product type	a. Niche: the product(s) coming out of the AIP are targeted at a niche market because of their characteristics (or are consumed locally). Example: Selva shrimp AIP, Vietnam (organic black tiger shrimp)		b. Commodity: the product(s) coming out of the AIP target the mainstream market. Example: ASC improver project, Indonesia (white legged shrimp)
4. Supply chain engagement	a. Bottom-up: projects started by producers or local value chain actors for market benefit. Example: Shrimp Club's East Java Shrimp AIP, Indonesia		b. Top-down: desire expressed by intermediate or end buyers to achieve stable sourcing. Example: Selva shrimp AIP, Vietnam (Blueyou Ltd.)

Characteristics	Options or forms in which these may appear	
5. Supply chain integration/consolidation	<p>a. Integrated/consolidated supply chains: involves a relatively small number of larger producers and/or integrated companies that carry out several functions in the chain. Shorter supply chains.</p> <p>Example: salmon in Norway</p>	<p>b. Fragmented supply chains: involves a large number of small-scale and larger producers, with many intermediaries in the chain. More actors involved, more spot market transactions.</p> <p>Example: <i>L. vannamei</i> in Southeast Asia</p>
6. Production system	<p>Extensive: more likely to share resources such as water, less resource efficient per unit, but low intensity of input use.</p> <p>Example: Selva shrimp AIP, Vietnam</p>	<p>b. Intensive: with biosecurity systems, so more contained systems, more resource efficient in per unit terms, but with high levels of feed use, and effluent generation.</p> <p>Example: pangasius, tilapia, <i>L. vannamei</i>, <i>P. monodon</i> AIP ASC, Vietnam</p>

Source: CEA (2016) and Bottema (2019). Examples provided include both active and completed AIPs.

Some of these characteristics should be seen as a continuum, which means that in practice it may not be possible to clearly categorise AIPs as presenting one form or the other so the options should be seen as two ends of a continuum. This shows the potential diversity of AIPs. This also has an impact on the type of incentives for participation in and claims for AIP-derived products different AIPs can generate, which we will discuss further in [Section 6](#).

While AIPs can be organised in different ways, the SFP have developed a set of guiding principles for sustainably managed aquaculture, that can be applied by AIPs, namely:¹

1. National and Regional Governance: development of management plans, and establishment of management areas, setting relevant science-based limits on the outputs of aquaculture (effluent, chemicals, escapes), and ensuring traceability with verification.
2. Best Practices: producers are formally organised and adopt and enforce codes of good practice, farmers and managers use data to inform and improve management actions, and aquaculture inputs are traceable and from sources that are managed in responsible ways.
3. Disease Risk: health management plans and emergency disease response plans are developed, biosecurity protocols and disease responses are

coordinated across the zone, and disease incidents and management actions are monitored and reported.

4. Resource Management: industry and governments move toward management based on environmental carrying-capacity limits, with science-based thresholds and the assessment of environmental impacts are regularly monitored and reported.
5. Feed: the fishmeal and oil in aquaculture feed is sourced from well-managed fisheries free of abusive labour practices, and all feed ingredients are fully traceable to their source, and to the final product.

The types of practices promoted in AIPs depend on the goals of the AIP and are specific to the species, production system, and specific location. They may include practices to promote productivity, reduce disease, support verification, reduce negative environmental impact, and support workers and communities. Likewise, the strategies that different AIPs use to promote adoption of those practices vary, and may include activities such as farmer training and workshops, organising farmer groups and cooperatives, developing codes of good practice, training farmers on value-added production activities, developing audit systems to ensure and document compliance, providing and/or advocating for improved technical assistance or extension services, conducting or supporting regional assessments (disease, carrying-capacity, environmental impact, social

¹<https://sustainablefish.org/how-we-work/aquaculture-improvement-projects/framework-for-sustainably-managed-aquaculture/>

3. Understanding incentives and their effect on behaviour

Economists Levitt and Dubner (2005) put it bluntly, “an incentive is simply a means of urging people to do more of a good thing and less of a bad thing”. Thus, incentives are the rewards and penalties received or promised for behaving in a certain way. This is particularly interesting from a ‘performance’ point of view, as higher incentives are thought to lead to more effort and better performance (Bitzer, 2016). In the context of AIPs, incentives are an important way of motivating farmers to adopt improved fish farming management and practices. Incentives can be positive and negative (sometimes referred to as ‘disincentives’).

Box 2. Three basic types of incentives

Economic incentives (material gain/loss)

Social incentives (reputation gain/loss)

Moral incentives (conscience gain/loss)

Source: Levitt & Dubner, 2005

There are three basic types of incentives: economic, social and moral (Levitt & Dubner, 2005), as people value extrinsic rewards, care about their image vis-à-vis themselves or others, and enjoy doing an activity (Gneezy et al., 2011). **Economic incentives** involve providing a tangible, material reward with a monetary value for showing desired behaviour – often considered the main incentive to steer behaviour. However, “when people engage in trade, produce goods and services, [...] they are attempting not only to get things but also to be someone, both in their own eyes and in the eyes of others” (Bowles, 2016). This draws attention to **social incentives**, as intangible, non-material gains such as increased social status, which respond to people’s desire to be seen to do the right (and not the wrong) thing.

These also include incentives to maintain or enhance the reputation of a company or protect against the risk of being associated with unsustainable practices. **Moral incentives** also offer intangible, non-material gains, but aim for inherent satisfaction, such personal happiness or fulfilment, by enabling people to do the right thing.

Incentives can be purposefully created – through market mechanisms (market-based incentives, e.g., consumer pressure or buyer demand) or by way of regulation (regulatory incentives, e.g., fines, subsidies, tax benefits (Khanna & Anton, 2002)).

Incentives often work in unintended ways. For example, offering economic incentives for certain behaviour (e.g. improved environmental performance) may signal that achieving this goal is difficult or it may signal assumptions about a person’s greediness. Both signals can reduce other incentives for showing the desired behaviour (Gneezy et al., 2011). Therefore, relying (too much) on economic incentives can backfire. When people are paid for something they know they should be doing anyway, the moral basis for behaving this way gets devalued – which makes the situation even worse (Bowles, 2016).

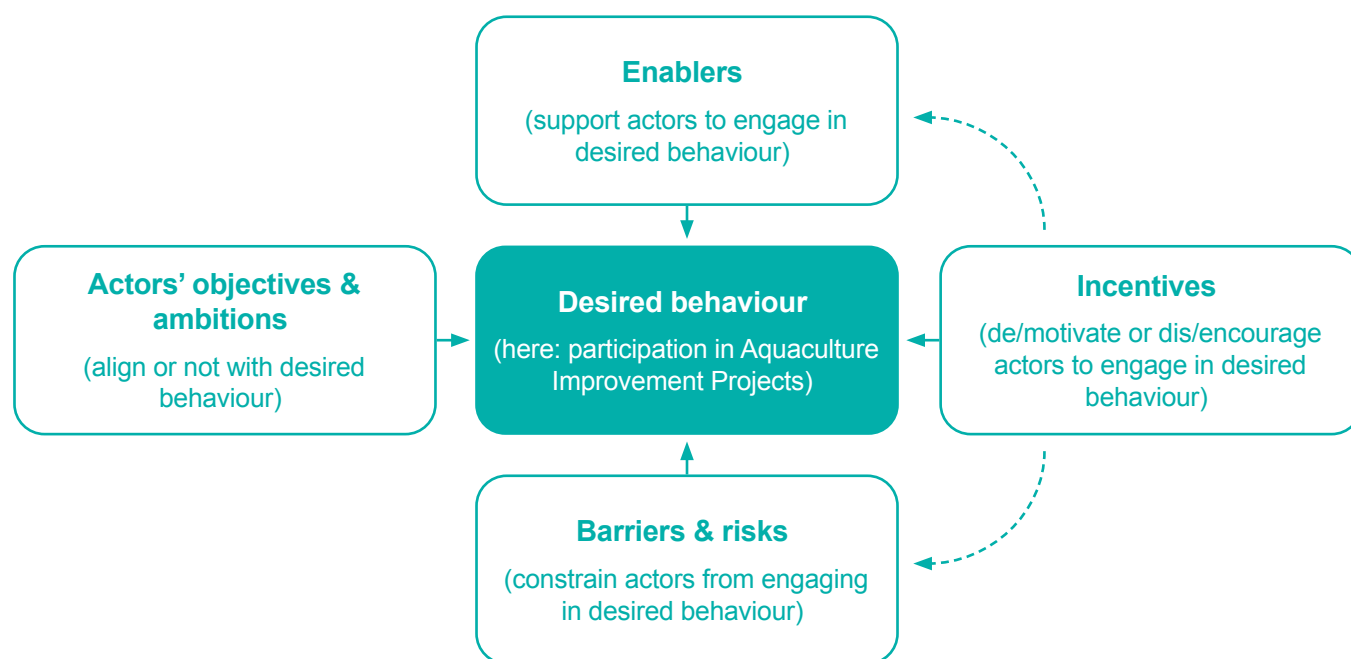
To avoid these unintended effects, effective incentive schemes often include economic, social and moral incentives – noting that ‘effective’ is relative, as there are always people who will, for various reasons, not respond to, or try to cheat, incentive schemes (Levitt & Dubner, 2005). Incentive effects also reduce over time and when incentives are removed, efforts may discontinue or even be lower than before the incentives were introduced (particularly when economic incentives dominate) (Gneezy et al., 2011).

Incentives do not exist in a vacuum, but operate within a political, social and economic context (Bitzer, 2016). This situational context, and how it is perceived by actors, impacts the effectiveness of different types of incentives. There are both **enablers** coming from the situational context, which support actors in responding

to incentives, and **barriers and risks**, which constrain actors in responding to incentives. This also explains why incentives may not produce optimal results without addressing issues related to the situational context.

Figure 1 offers a conceptual model to understand incentives and their effect on behaviour.

Figure 1. Connecting incentives to actors' behaviour



4. Incentives for improved fish farming: participation in certification and AIPs

4.1. Incentives for producers

Studies concur that economic incentives, such as improved market access or price premiums, are driving the certification-related adoption decisions of fish farmers (Ahsan, 2011; Chikudza et al., 2020; Azizah et al., 2020). In some cases, when farmers—especially larger producers—receive signals of market demand for certified farmed fish, they seem to be willing to invest in certification to gain a competitive advantage relative to other fish farmers and to avoid future non-compliance with stricter market requirements (Samerwong et al., 2018 (shrimp in Thailand); Amundsen & Osmundsen, 2020 (salmon in Norway, Chile and Scotland); Chikudza et al., 2020 (European finfish); Lucas et al., 2021 (European aquaculture)). However, smallholders usually require support from buyers to enable them to change their practices. With different demands from different buyers, farmers also often need to become certified for multiple standards.

Market signals for certification are best transmitted in buyer-driven supply chains with strong coordination (Bush, 2018), whereas fragmented supply chains, with large numbers of small producers and traders or brokers, pose a barrier to demand-driven certification, let alone traceability systems (Tran et al., 2013). Small-scale producers often lack concrete information about consumer markets and depend on what their immediate buyers demand, regardless of global market dynamics (Samerwong et al., 2018; Azizah et al., 2020). Also, markets do not necessarily reward producers through improved prices, as the transmission of price premiums from retailers to producers is weak (Roheim et al., 2018; Naylor et al., 2021). Low or uncertain material rewards for producers discourage them from obtaining certification, as do situations where spot market prices for conventionally farmed fish are high (Gulbrandsen et al., 2022; Azizah et al., 2021).

For small-scale producers, certification may not be an option, even in the presence of strong market demand, as barriers and risks may be simply too high. A recent study on small-scale pangasius farmers in Bangladesh revealed that existing aquaculture practices were far from the level demanded by certification (Haque et al., 2021). Upgrading to such levels, or improved practices more generally, would require capacities and capital investment, which many small-scale fish farmers do not have (Ngoc et al., 2021). Lacking or limited economies of scale in production diminish their ability to make a return on their investment in standard compliance (Samerwong et al., 2018).

Non-adoption decisions also need to be viewed in the context of already high production costs (e.g. for seed and feed, operational costs) and high production risks, including fish diseases, demand uncertainty and price fluctuations, and small margins (Ahsan, 2011; Alam & Guttormsen, 2019; Boocharoen & Anal, 2021). As such, small-scale farmers may be interested in improved aquaculture methods, provided that they can lead to higher productivity (Azizah et al., 2020; Ngoc et al., 2021).

Aquaculture is by no means exceptional in this regard. Studies from agricultural value chains also view financial benefits as the main driver for joining certification schemes (Cashore, 2002). Even when looking at broader sustainable agricultural practices not linked to certification, the conclusion remains the same. “Programmes linked to short-term economic benefit (increased productivity or profitability) have a higher adoption rate than those aimed solely at providing an ecological service”, state Pineiro et al. (2018) in a broad-based scoping review. Our three non-aquaculture cases similarly emphasise that material rewards are critical for farmers. The cocoa case in Sierra Leone also revealed how short-term economic incentives (e.g. a higher price offered on the conventional market) can outweigh longer-term economic incentives (e.g.

access to inputs), which can jeopardise the success of an improvement project. This requires careful communication to raise awareness of all potential material rewards, with clear indications of when these are expected to materialise. The FIP case showed that fishers can only take advantage of economic incentives if they are enabled to deliver to markets that value sustainability efforts, for which efforts need to go far beyond fishery management issues and include improved cold chains, value addition, and improved business management.

Social and moral incentives do not weigh as heavily in adoption decisions by fish farmers as material benefits (Samerwong et al., 2018; Ngoc et al., 2021). Achieving reputational benefits seems to be particularly important for large-scale producers with direct linkages to supermarkets and other large buyers, in particular in salmon and European finfish value chains (Amundsen & Osmundsen, 2020; Chikudza et al., 2020; Gulbrandsen et al., 2022), but it has not been noted as a particular incentive for small-scale fish farmers in developing countries. However, being seen to engage in particular practices can be important as a prerequisite to joining certain groups, such as farmer organisations or village savings and loan associations, as the cocoa study from Sierra Leone showed, or visibility to the government entities involved in the hopes of gaining access to certain resources and subsidies, or to facilitate attaining certain permits, as was shown by the FIP case. This case also showed that fishers were motivated to join the FIP by long-standing relationships with the implementing NGO.

Many studies point to an awareness of the negative impacts of aquaculture among fish farmers, which can translate into a general desire to address such impacts (Bush, 2018; Amundsen & O, 2020; Chikudza et al., 2020; Boocharoen & Anal, 2021). Yet, not all farmers are concerned with sustainability considerations (Azizah et al., 2020), particularly as productivity continues to take priority (Boocharoen & Anal, 2021;

Ngoc et al., 2021). Moreover, certification requirements are sometimes perceived as inadequate or irrelevant for addressing the negative impacts of aquaculture in the local context (Amundsen & Osmundsen, 2020; Samerwong et al., 2018).

Studies investigating the participation of farmers in AIPs are scarce but also point to the prevalence of economic incentives for farmers, particularly price. The SUPERSEAS research suggests that access to cheaper inputs and the management of disease risks can also be important incentives for farmers to participate in AIPs (Bottema, 2019). Other studies confirm a high awareness of disease risks and a high willingness to act across producing countries (Ahsan, 2011; Samerwong et al., 2019; Xuan et al., 2021; Phong et al., 2021). However, farmers may need to act collectively for shared risk management, which can be undermined by the individualistic attitudes of farmers, issues of mistrust, and competition for markets (Bottema, 2019). High interdependence between farmers in open production systems offers greater incentives for horizontal collaboration compared to closed production systems (Bottema, 2019).

Where improvement projects include building of some kind of collective action, and improvement of organisations such as cooperatives, another incentive for farmers to join could relate to the improved access to credit, and insurance that this might bring (Ha et al., 2013).

4.2. Incentives in the supply chain

Processors of farmed fish are often motivated to demand certification from their suppliers if it serves to obtain a competitive advantage and gain or maintain access to certain markets and retailers (Olsen et al., 2021). It is also often driven by a desire to mitigate risks in the supply chain and secure supply. At the same time, a study from 2018 found low demand for certification in certain species, such as salmon in the UK and Norway, which would lower the incentives of processors to invest in certification of suppliers (Vormedal & Gulbrandsen, 2020). However, this seems to have changed in recent years, as, according to ASC certification data, the number of ASC certified salmon farms increased from 228 farms in January 2018 to 609 in January 2022, now representing almost 60% of Norwegian farmed salmon.

This also holds for retailers – their motivation to ask processors for certified farmed fish depends on a desire to assure supply, reduce reputational risks, consumer demand (which varies by country and species), the level of price premiums (which also differs varies by species) and/or their ability to use eco-labels for product differentiation (which is expected to decline in the future, as more certified products become available) (Asche et al., 2021; Gulbrandsen et al., 2022).

Economic incentives of processors and retailers to demand certification are thus variable and not particularly strong. Social and moral incentives, by contrast, can be considerable. Both types of buyers stand to gain from reputational benefits through a visible commitment to sustainability and improved transparency of company actions or, under pressure from media and NGOs, to be protected from reputational risks of being associated with unsustainable practices (Olsen et al., 2021). This can also be important on a business-to-business level in the absence of consumer awareness (Gulbrandsen et al., 2022). Finally, certification can correspond to the moral incentives of processors and retailers to work towards a sustainable aquaculture industry (Olsen et al., 2021).

Similar social and moral incentives can apply to the participation of processors and buyers in AIPs (Bottema, 2019), although here, reputational benefits can be more concretely related to an impact story which can be communicated at a business-to-consumer level. This is also visible in the non-aquaculture cases of this paper.

Participation may further be incentivised through financial support (e.g. co-funding of project costs) and the prospect of reduced risk of supplier failure (Bottema, 2019), particularly if disease control in shared water bodies is part of project activities (Vormedal & Gulbrandsen, 2018). The stability of (high-quality) supply is the main economic incentive for processors and buyers to support improvement projects in the cocoa, fisheries and palm oil cases of this paper.

Retailers' incentives to support AIPs are closely related to their sourcing policy. For retailers emphasising sustainable sourcing, AIPs can be an opportunity to expand their supply of certified fish or sustainable products beyond certified farmed fish. Some retailers already have an explicit policy of buying seafood from AIPs, in addition to listing certification (MSC, ASC, BAP, and/or GSSI benchmarked) in their sourcing policies (e.g. Albert Heijn and Walmart US), whereas others only mention certification and FIPs, but do not recognise AIPs (e.g. Lidl and Carrefour) (Table 2). However, the fact that AIPs are mentioned in the policies does not guarantee that actual sourcing is done from AIPs. It is also unclear what is defined as a credible AIP by these companies. At the same time, the palm oil case study showed that retailers could still have an incentive to become involved in an improvement project, even if their sourcing policy only refers to certification. However, in this case, it was essential to the retailer that certification was the end goal.

Table 2. Examples of seafood sourcing policies of supermarkets in UK, USA, Canada and EU

Country	Retailer	Standards	Source (with hyperlink)***
Canada	Walmart Canada*	MSC, BAP, GSSI equivalent, AIP , FIP	Walmart Canada Seafood Policy
	Loblaws*	MSC, ASC, GSSI equivalent, ISSF, AIP , FIP	Loblaw responsibility: commodities
France	Carrefour**	MSC, ASC, Bio, FIP	Carrefour CSR commitment
	Auchan	MSCm ASC, GLOBALG.A.P., BAP, GSSI equivalent, Bio,	Auchan sustainable fisheries and aquaculture policy
Germany	Aldi Nord**	MSC, ASC, EU organic label, GLOBALG.A.P., FIP	Aldi Nord fish purchasing policy
	Lidl**	MSC, ASC, BAP, Bio, ISSF, GLOBALG.A.P., FIP	Lidl fish and seafood purchasing policy
Netherlands	Albert Heijn*	MSC, ASC, GSSI equivalent, AIP , FIP	Albert Heijn minimum product requirements
	Jumbo group	MSC, ASC, GLOBALG.A.P., GSSI equivalent	Jumbo group quality and sustainability policy
United Kingdom	Tesco**	MSC, Tesco Aquaculture Requirements, FIP	Tesco PLC seafood sourcing policy
	Lidl GB**	RFS, MSC, BAP2*, GLOBALG.A.P., ASC, RSPCA assured, FIP	Lidl GB Sustainable fish and seafood policy
USA	Walmart US*	MSC, ASC, BAP, and/or GSSI benchmarked, AIP , FIP	Walmart US Seafood Policy
	Kroger**	MSC, BAP, ASC, GLOBALG.A.P., GSSI equivalent, ISSF, FIP	Kroger ESG Report 2021

Notes:

* Retailers who explicitly include AIPs in their policies.

** Retailers who mention FIPs but not AIPs.

*** The assessment is based on publicly available documents, the above has not been verified with the specific retailers.

One of the case study respondents suggested that importers also have an important role in sourcing from AIPs: in some cases, supermarkets may tender for a particular annual volume (e.g. of shrimp), and the importer who wins the tender will then need to ensure this order is filled, while the supermarket will only check if the product characteristics fit in their sourcing policy. In such cases, when filling the order, the importer has the freedom to decide where the product comes from. While all importers have requirements related to the food safety of products, which is assured through certification such as HACCP, BRC or GFSI benchmarked), there are also some who are interested in receiving more information about sustainability practices and the status of improver projects. However,

the latter is not captured in certification. According to SFP, many buyers make use of SFP's FIP progress ratings and require FIPs to be at least A-C-rated (e.g. US Foods²). However, an equivalent is not common yet for AIPs.

We could find very little information about incentives of other actors relevant to the supply chain, such as input and service providers, including feed and seed, technology, and finance, although they could be of key importance to the success of AIPs. Generally speaking, these types of actors are likely to have similar economic, social and moral incentives as the supply chain actors.

4.3. Incentives for support by governments

Governments in producing countries can have several incentives to promote improved aquaculture practices and certification, for example, to contribute to the United Nations' Sustainable Development Goals (SDGs),³ although weak institutional environments can constitute considerable barriers to effective support (Haque et al., 2021). Amidst fierce international competition, the national governments of Thailand and Indonesia chose a strategy of strong support for certification for their shrimp sectors in an effort to advance their industries' bargaining position in the global market while anticipating future global market requirements (Samerwong et al., 2018; Azizah et al., 2020). Certification, including state-initiated standards with lower requirements compared to international standards, is also a way to respond to pressure from international buyers and NGOs and signal the credibility of domestic aquaculture production (Samerwong et al., 2018; Azizah et al., 2020). Finally, both the Indonesian and Thai governments consider certification as a way to improve fish farming practices and food security while protecting aquatic ecosystems (Samerwong et al., 2018; Azizah et al., 2020).

Recently, other governments, such as Vietnam and China, made (some) efforts to move towards ecological sustainability. For example, Vietnam has been moving towards improved spatial planning for the marine economy, including aquaculture (UNDP, 2022). This offers opportunities to get governments more engaged in AIPs, as a way to develop and test practical approaches to more sustainable development patterns, provided that they fit with national aquaculture development strategies. Local governments, in particular, can be incentivised to participate in AIPs if they can showcase the project as a success to the next government level (especially the national government)

(Bottema, 2019). In general, if improvement projects align with policy targets that have been set, this will motivate civil servants to participate in such projects. This is, for example, shown by the FIP case, where one government entity responsible for certifying fishers for their on-vessel practices was motivated to participate as it directly helped them to fulfil their annual quota of issuing such certificates.

4.4. Enablers (and barriers) for participation in AIPs

The literature and the empirical cases highlight a number of enablers for farmers' adoption of improved production practices and participation in improvement projects:

1. Farmer organisation. Effective modes of farmer organisation enable collective action, requiring that farmers are intrinsically motivated to cooperate and coordinate to minimise production risks (Joffre et al., 2019; Haque et al., 2021). Farmer clusters, i.e. small-scale horizontal farming formations, diversify information and attract more extension services, which influence the perception of market risk and adoption of improved aquaculture practices (Joffre et al., 2019). The FIP case highlighted that stronger and more organised associations of fishers are more easily able to implement improvements.
2. Horizontal information sharing between farmers using a common water source is an important enabler for area-based management, as it creates a higher awareness of disease-water risks and may override the influence of individual perceptions of on-farm risk management strategies (Lien et al., 2021).

² <https://sustainablefish.org/tools-science-services/fip-evaluation-program/>

³ <https://www.asc-aqua.org/aquaculture-explained/how-does-buying-asc-labelled-seafood-change-things/how-asc-contributes-to-the-uns-sustainability-development-goals/>

3. Capacity building. Farmers need to be trained in good agricultural practices which raise yields and safeguard environmental sustainability. Participatory methods of training, such as farmer field schools, help raise awareness and ownership of farmers, as in the cocoa case in Sierra Leone shows.
 4. Local presence of buyer/processor. Having a local presence as a processor or buyer helps in working intensively with local stakeholders (farmers, traders/middlemen, and local government). According to the cocoa case in Sierra Leone, this allows close contact and stronger ties with farmers through frequent visits. The aquaculture cases also showed that local processors have a stronger incentive to engage as it supports them to secure continuous supply.
 5. Government support can be an important enabler for improved practices and participation in AIPs or directly in certification. For aquaculture, the following supportive policies have been identified as important: extension services and training to farmers to support improved aquaculture practices, provision of aquaculture insurance, subsidies for specific cost-intensive environmental practices (e.g. chemical or biological wastewater treatment options) and concrete support to comply with specific regulations (e.g. on antibiotic use) (Samerwong et al., 2018; Joffre et al., 2020; Haque et al., 2021; Phong et al., 2021). The incentives are, therefore, mainly economic, by providing financial support, reducing risk, and reducing transaction costs.
 6. Regulation is another way in which governments can support the creation of incentives. The European Commission's adoption of the proposal for a Directive on corporate sustainability due diligence in February 2022, for example, is expected to create an environment in which all large European companies are required to identify and, where necessary, prevent, end or mitigate adverse impacts of their activities on human rights and the environment. At present, some European member states already have national due diligence legislation in place.
- Implementation of such rules would provide an economic incentive for companies in the form of fines in case of non-compliance and the potential of legal action for damages from victims.⁴ This will provide incentives for AIPs especially when there is insufficient certified product available.
7. Age and education seem to be important enablers for improved aquaculture practices – and thus, possibly for participation in AIPs. Studies on Bangladeshi pangasius farmers and Vietnamese shrimp producers suggest that younger and middle-aged farmers, as well as more educated farmers, tend to be more open to responsible practices and certification (Haque et al., 2021; Xuan et al., 2021).
 8. Risk perception influences the adoption of different types of advanced practices. (Joffre et al., 2019). Farmers adopt practices with an acute perception of market risk, indicating that they are aware of market prices and production cost uncertainty. Risk transfer models can incentivise producers to invest in governance beyond the farm by mitigating production and environmental risk. These models need to induce horizontal collaboration between farmers, address the collective risks that farmers face (i.e. they need to take place at a scale where there are shared risk experiences) and need to build on existing social networks (Bottema, 2019).
 9. Key barriers to improved production practices include a lack of support to farmer organisations, high production costs, high production risks, lacking access to formal credit, demanding requirements of new practices and fragmented value chains with no centralised governance (Ahsan, 2011; Tran et al., 2013; Haque et al., 2021). The latter also leads to barriers for (impact) investors to invest in aquaculture (Inandar et al., 2017). Another barrier for smallholders to enter markets that value sustainable products may be the logistical and infrastructural challenges they face to get their perishable product to such markets.

⁴ https://ec.europa.eu/commission/presscorner/detail/en/ip_22_1145

5. Claims in the supply chain

5.1. Existing assurance models

Beyond their work at the production level, AIPs aim to enhance transparency and traceability within the supply chain and build up buyers' and customers' recognition and trust in the farmed fish product (Bottema, 2019). This raises the question of how produce coming from AIPs can be attached to claims that can be communicated along the supply chain. To attach claims to AIP products, assurance is needed, which facilitates transparency on practices in the chain and passing this information on to buyers, consumers, NGOs, or the state (Bush et al., 2019). Different assurance models exist, each with its advantages and disadvantages (Table 3).

The most commonly used assurance model is **third-party certification** linked to different codes of good practice or sustainability standards. Certification is a farm-based model which assesses practices and behaviours through the collection of farm-level data and communicates producers' compliance through product labels. Examples include ASC, BAP and GLOBALG.A.P.

Alternative models have emerged to move beyond the narrow focus on individual farms. For example, **seafood rating programmes**, such as those by Seafood Watch and others in the Global Seafood Ratings Alliance. Such rating programmes give a general assessment of a country or region's industry, which can be communicated through a traffic light system, but do not provide detailed insights into specific production areas (Moore et al., 2019).

PAM, developed by Seafood Watch, aims to bring together actors in a specific geographic area such as local and national governments, farmers, processors, and input providers, in a specific production region, and end buyers, banks and technology companies to co-design, implement, and verify environmental and social improvements in this area (or commodity) (Moore et al., 2019). The Asian Seafood Improvement Collaborative (ASIC) has developed '**ASIC Shrimp**', an improvement

programme, which according to Moore et al. (2019), follows the principles of the PAM. There are three levels, ASIC Improving (once a farm has joined the programme), ASIC Compliant (with verified assurance that production occurs without any critical areas of concern) and ASIC Leader (which recognises producers who have implemented the most responsible and sustainable practices) (ASIC, 2022). This model has been described as more inclusive of smallholders than individual certification (Pauwelussen & Bush, 2020).

Another example of assurance in a landscape or jurisdictional approach is the **VSA** model, developed by IDH, which is an area-based mechanism to accelerate the production and market uptake of sustainable commodities by helping companies verify the sustainability of an entire jurisdiction (Bottema et al., 2021). Various public and private actors work together to achieve common goals, agreed in a Compact (a non-binding agreement), and these are linked to conducive policy processes. While this approach seems promising for commodities like palm oil, with a few large scale actors, it may be more challenging in a context where there are many smallholders, as is often the case in aquaculture.

A final model is what Roheim et al. (2018) have termed the 'sustainable seafood aggregator' (SSA). This new actor provides assurance services to retailers that the seafood products purchased are from a credible sustainable source, for example, through branding. What sets this actor apart from other NGOs and consultants is that they assume financial risk by purchasing the product and that they are publicly accountable for the quality of information, guidance and products they provide. Examples of this model include the company SmartFish in Mexico for capture fisheries (which is linked to an NGO active in FIPs under the same name) and Blueyou in Switzerland for aquaculture (which also provides consulting services).

Table 3. Assurance models at farm-level and beyond

Assurance model	Description	Sustainability claims	Advantages	Disadvantages
Individual or group certification	Farmers comply with farm-level standards and are either individually or collectively with other farmers certified. There are various international and national-led standards and certification schemes.	<ul style="list-style-type: none"> • Third-party certification and labelling linked to specific standards • Business-to-business, but especially business-to-consumer 	<ul style="list-style-type: none"> • High credibility of claims due to different levels of internal and external checks and controls • Retailer recognition • Willingness to pay by consumers for products with labels in certain markets 	<ul style="list-style-type: none"> • Limited (consumer) demand • Exclusion of small-scale producers due to limited capacity and high costs • Narrow farm-level focus • Long process before producers are certified • Proliferation of multiple labels
Seafood rating programmes	Seafood rating programmes publicly share information on the performance of selected aquaculture operations, often at regional or national scale.	<ul style="list-style-type: none"> • Rating is based on assessment and verification by programme initiators • Business-to-consumer 	<ul style="list-style-type: none"> • Can be used as a starting point for certification • Help businesses evaluate their sourcing options • No costs to industry being assessed 	<ul style="list-style-type: none"> • Limited detail of assessments (often aggregated at province or country level) • No standardised verification from one rating to another
Partnership Assurance Model (PAM)	PAM brings together governments, farmers and committed buyers to co-design, implement, and verify environmental improvements throughout the production process.	<ul style="list-style-type: none"> • Traffic light ratings based on 'fit-for-purpose' verification of an area, however not public thus far • Use of sustainability metrics (global sustainability standards adapted to local contexts) 	<ul style="list-style-type: none"> • Reach farmers that have not embraced standards • Beyond individual farm-level to a broader area • Based on committed multi-stakeholder involvement 	<ul style="list-style-type: none"> • No formal accountability mechanisms for non-compliant partners • No identification of cumulative impact of multiple farms across regions
Verified Sourcing Areas (VSA)	The VSA model connects buyers of agricultural commodities to coalitions of stakeholders in production areas to reward the sustainability of specific regions with access to markets.	<ul style="list-style-type: none"> • Sustainability objectives of a region are formulated as 'Compacts', on which local stakeholders report and score progress 	<ul style="list-style-type: none"> • Based on local multi-stakeholder initiatives • Possibility to include diverse commodities under one VSA • Accountability of partners 	<ul style="list-style-type: none"> • No prescribed framework for verification • No transparency on whether or not verification is taking place • Started only recently: no mainstream model yet
'Sustainable seafood aggregator' (SSA)	The SSA model introduces a new actor in the chain, who provides assurance that the products they sell are from a sustainable source. They assume both reputational and financial risk.	<ul style="list-style-type: none"> • Can be based on certification but could also be linked to a credible AIP (or FIP) • In some case they may make claims about the specific origin of the product (but claims can also be related to a portfolio of products) 	<ul style="list-style-type: none"> • More cost-efficient way of providing assurance services by identifying credible supplies of sustainable seafood • Can play a role in identification of both small and large-scale producers of sustainable seafood • The SSA provides brand assurance for retailers, which means they are held accountable for potential unsustainable practices in aquaculture or the fishery rather than their clients. 	<ul style="list-style-type: none"> • So far, only operating in niche products and markets • Challenging to scale up in current fragmented value chains in (commodity) market

Source: Roheim et al., 2018; Bush et al. 2019; Moore et al., 2019; ASIC, 2022; Bottema et al., 2021.

One of the challenges related to making claims from AIPs for retailers are among others that it is difficult to monitor the progress of AIPs, because there is no agreed framework to measure progress against. Another issue is that, compared to certified aquaculture products, the products originating from AIPs may appear to be a 'step back' in sustainability levels from certified aquaculture products (personal communication, SFP). The SSA assurance model, can potentially circumvent these issues, as the actors involved would take on the monitoring role by attaching their brand name to the credibility of the claims. However, a potential downside is the further proliferation of labels and standards in a market that already has a wide variety (Nilsen et al., 2018).

5.2. Facilitating claims in AIPs

As some of these assurance models are relatively new, the stakeholders involved are still working on developing appropriate and credible mechanisms for verification. In our two non-fish improvement projects (cocoa and palm oil), claims in the supply chain can easily be made because they work with (or towards) certification. In the cocoa case, a digitised traceability system is supposed to complement future certification. The selected FIP cases did not aim to achieve MSC certification, and the case study interviews also highlighted that in practice, even if certification is the goal of a FIP, it is not necessarily always possible to achieve it due to the many challenges that exist. Similarly, not all AIPs work towards certification or quasi-certification. Attaching claims to such products is made more difficult by the lacking clarity about what constitutes a (credible) AIP. This makes it difficult to 'brand' products from AIPs and for retailers to gain recognition for efforts to support them (Bush, 2016).

The characteristics of the AIP described in [Section 2](#) have a direct bearing on the types of claims that can be attached to its products. The existence of formal transition programmes such as iBAP and localG.A.P. may facilitate making claims about such farms in transition, although, in practice, little is communicated

about the status and progress of farms in those programmes. For AIPs that are not on the pathway towards certification, as well as for those that are, but are, in addition, making joint efforts at the zonal level, other types of claims are required. Recognising the challenges with respect to claims for landscape approaches, that are similar to those for AIPs, ISEAL (2022) developed several other types of claims that could be made, that would provide recognition for the process of an improvement project, rather than the outcomes alone. The document also includes guidance on how such claims could be monitored, verified, and communicated. These claims could also apply to AIP-derived products:

- Structure and governance claims are related to the stakeholders engaged, and the type of governance, progress and monitoring framework, financing, and risk management systems. These can be about the progress towards putting these systems in place, or the outcomes of having them in place.
- Performance claims are related to improvements for critical sustainability issues. A credible and accurate monitoring framework is needed, with clear metrics, a list of information sources, and a data management protocol. Claims can be either status claims (current performance), trend claims (change in performance) or subjective value claims (e.g. 'responsible' or 'sustainable'). Apart from environmental sustainability, such performance claims could also be related to contributing to 'inclusion'. While certification has been criticized for excluding smallholders, who may struggle to meet the technical requirements and lack the needed capital for the needed upfront investments for certification (Lebel et al., 2008), AIPs can be a means to support them to gain access to markets, and credit.
- Supporting action claims can be of interest to sourcing companies who want to make claims about their role in improvement projects or landscape approaches. This can be about engagement, action, or contribution.

5.3. Communicating results

Communication about the wider impact of improvement projects is relatively limited (e.g. some website or social media posts) and is not visible on the product itself. Consumer-facing companies may be able to communicate about the progress they are making and the results they are achieving in AIPs through their websites. A recent study from Germany finds that consumers care more about sustainability claims of farmed fish than about the (eco-)label itself (Risius et al., 2019). This suggests that there is scope for specific sustainability claims beyond a product label.

However, farmers and other actors upstream in the supply chain face major challenges to communicate their efforts. At present, there are already some online platforms that try to address this issue such as the AIP Directory,⁵ which communicates progress and sustainability outcomes via stage classifications and FishSource,⁶ which provides information on whether AIPs have had an impact on sustainability issues at the provincial or state levels. Another initiative under development is “A Greener Blue” (AGB, n.d.). AGB is a ‘food systems solution activator’, which mobilises domain experts to tackle challenges facing our food systems. Participants identify challenges, align on realistic solutions, and transform their ideas into freely available tools. For aquaculture, the shared objective is to develop a single respected, validated, and useful digital platform to better support the seafood industry. Work is in progress, in partnership with GSSI and other organisations, to create a shared open-access platform for purchasers, processors, aggregators, and producers. The Seafood MAP platform will provide greater transparency for aquaculture products and support smallholders and local fisheries that lack certification. Producers can upload information on their

sustainability efforts and become more visible to buyers. The success of this effort will depend on the trust that people have in claims made on such a platform and, therefore, on the assurance models employed.

Other innovations to facilitate assurance and communication about claims include the use of digital technologies such as blockchain, Farmforce and Landscale. Blockchain technology can be used to trace fish products and the circumstances under which they have been produced, until individual farm-level. This provides a means to improve assurance, for buyers to differentiate products, and for farmers to communicate their efforts to downstream actors in the value chain, including consumers. Examples are already found in aquaculture, such as the Sustainable Shrimp Partnership’s implementation of blockchain in Ecuadorian shrimp.⁷ Farmforce is a cloud-hosted web and mobile platform that provides digital traceability in procurement from smallholder farmers. Where these two tools have the farm as their entry-point, Landscale is a tool for measuring and verifying a set of social, environmental, production and governance outcomes at a landscape scale.⁸

⁵ <https://aipdirectory.org/>

⁶ <https://www.fishsource.org/>

⁷ <https://www.sustainableshrimppartnership.org/blockchain-technology/>

⁸ <https://www.landscape.org/>

6. Towards incentive models for AIPs

6.1. Incentives related to different types of AIPs

The literature review and case studies have shown that, in principle, there are sufficient and wide-ranging incentives for different stakeholders to participate in improvement projects. However, whether these incentives actually appear depends on the type of AIP. In [Section 2](#), we presented six characteristics of AIPs or the production systems involved, each with two or three options of how they may appear. This results in a multitude of potential different combinations of the characteristics. Each of these combinations also leads to a different outcome for the likelihood of certain incentives appearing for different actors. For example, top-down AIPs that have an international

buyer in the lead may result in higher incentives for this particular group than for farmers. In practice, most AIPs (and production systems) are likely to be positioned somewhere in between the two options, and they are more a continuum rather than a clear-cut choice.

While, to date, not much research has been conducted about the relationship between the characteristics and the incentives for different actors, Table 4 provides an attempt at unpacking this for some actors. This is based on Bottema (2019), in combination with insights from the case studies and other key informant interviews.

Table 4. Incentives by characteristic of the AIP or the production system involved

Characteristics	Incentives for different options		
1. AIP level	a. Zonal improvement Farmers: Provides opportunity to address common issues that cannot be addressed alone. Local buyers: More incentives to engage as it could provide more secure supply from farmers that are more productive, potential ability to verify improvements towards designated goals - whether certified or not – which could attract investors or secure loans. End buyers: Less incentives (at present) to engage. Emerging connection to ESG reporting. Government: Potential to align with policies for certain geographical areas and to contribute to the SDGs.		b. Farm-level improvement Farmers: Provides an opportunity to (potentially) achieve farm-level goals and certification. Local buyers: Secure supply from farmers, more secure demand from buyers. End buyers: Provides better ability to make marketable claims than zonal improvements, which in turn could provide incentives to local buyers and farmers. Government: Means to reach individual farmers to spread specific practices.
2. End goal	a. No certification Farmers: Ability to address specific common/joint challenges.	b. Quasi-certification or non-GSSI benchmarked Farmers: Gain access to certain buyers/markets, Buyers: Facilitates claims in some markets.	c. Certification Farmers: Gain access to certification for specific markets, potential price premiums (but not always the case) Buyers: Facilitates claims, ensures market access.

Characteristics	Incentives for different options	
3. Product type	<p>a. Niche</p> <p>Farmers: Price premium for specific product, with certain characteristics ability to coordinate marketing and sales efforts and reach more stable markets, access to economic resources (loans or government grants) to keep developing the technology and know-how needed to maintain productivity for niche species, potential ability to verify improvements towards designated goals - whether cert or not - could attract investors or secure loans.</p> <p>Buyers: Secure supply of product with specific requirements; likely to provide a price premium for this product.</p>	<p>b. Mainstream</p> <p>Farmers: May help achieve production efficiency and/or reduce disease risk.</p> <p>Buyers: Secure supply of product. Income generated through volume rather than margin, AIPs could mitigate the larger risks associated with this.</p>
4. Supply chain engagement	<p>a. Bottom-up</p> <p>Farmers: Able to address their specific area-level risks and challenges.</p> <p>Local buyers:</p>	<p>b. Top-down</p> <p>Farmers: Direct links with buyers, potentially assured buyer, and/or access to inputs</p> <p>Buyers: Stable sourcing of reliable product.</p>
5. Supply chain integration/consolidation	<p>a. Integrated/consolidated</p> <p>Integrated companies: Gain market access.</p>	<p>b. Fragmented/spot market:</p> <p>Farmers: Improved organisation and better connections to buyers.</p> <p>Buyers: Gain stable supply and direct connection to farmers, with more control over the product characteristics.</p>
6. Production system	<p>a. Extensive</p> <p>Farmers: Urgency to address risks off-farm appears to increase the more open systems are; provides more incentives to collaborate at landscape level. Open systems typically have low harvest and productivity volumes so it is harder for these to access markets. AIPs can help with accessing markets and increasing climate resilience and representation.</p>	<p>b. Intensive</p> <p>Farmers: more intensive farming have higher disease risks, at the same time there is often less felt need for collaboration at landscape level.</p>

Source: Bottema (2019) and insights from case studies.

This table shows that, given the multitude of potential combinations, it is challenging to indicate which of these combinations will result in the most convincing incentives for everyone involved and that the combination of characteristics should, therefore, also depend on the goals that an AIP is trying to achieve,

and on which actors need to be convinced most of the necessity to join a particular AIP. The information does provide insight into the potential options that AIP implementers could consider and the potential impact these choices have on the emergence of different actors' incentives.

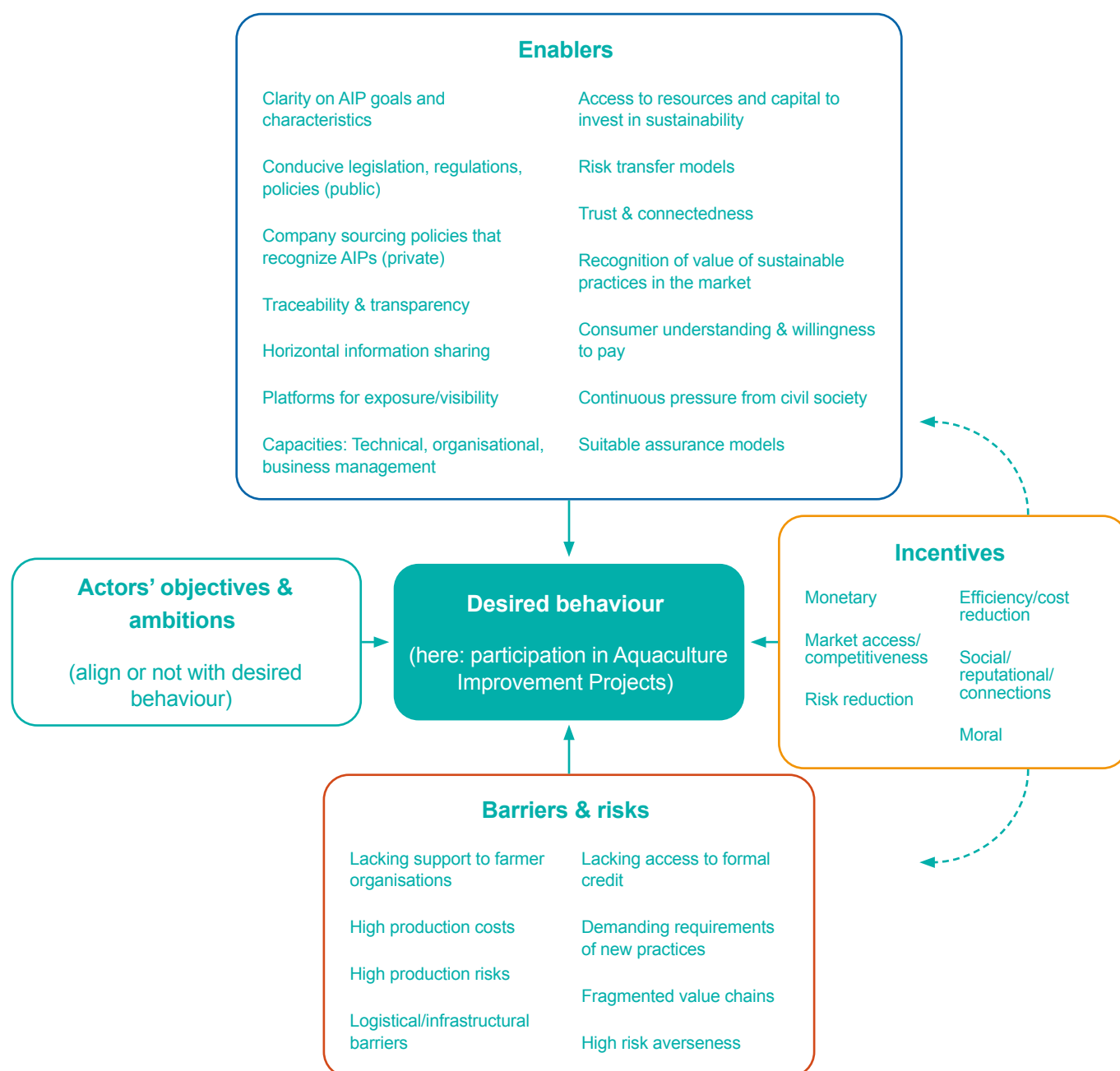
6.2. 'Unlocking' incentives

While the choice of a particular combination of AIP characteristics will likely result in certain incentives emerging for some actors, this does not necessarily mean that these incentives can actually be 'unlocked' by these actors. For this to happen, certain enablers will need to be put in place.

Based on the incentives and enablers described in [Section 4](#), a summary table was developed (Annex B), which describes the different incentives by actor

type and connects this to enablers. The result of this exercise is presented in Figure 2, which shows the conceptual model of [Section 3](#), populated with these insights. While in our conceptual model, we initially only differentiated between economic, social and moral incentives, the multitude of economic incentives can be further divided into monetary, market access/competitiveness, risk reduction, and efficiency/cost reduction incentives.

Figure 2. AIP incentives and enablers



A key consideration for AIP implementers during the planning, implementation and monitoring of their AIP should, therefore, be whether the conditions are present or can be created to unlock the incentives for different actors. While the activities or strategies applied by AIPs, described in [Section 2](#), include some of the activities that are needed to do so, we propose that a more structured approach is needed that specifically focuses on enabling incentives. This also has consequences for the types of partners that should be involved in AIPs to cover the capacities needed for this range of enablers.

The AIP toolkit,⁹ which is based on the FIP process, describes five stages for AIPs (1. Development, 2. Launch, 3. Implementation, 4. Evidence of improvements in aquaculture management and changes in aquaculture policy, and 5. Evidence of improvements on the water). In particular, stages 1 and 3 provide opportunities to better integrate the incentives and enablers. This could be facilitated by explicitly exploring them in the AIP development stage, e.g., by including this in the needs assessment (and the needs assessment template) and the stakeholder mapping, which examines the incentives and influence of different stakeholders. The theory of change of jurisdictional or landscape approaches¹⁰ may provide a good starting point for this, as it considers incentives for different stakeholders. However, at present, it fails to expand on how these can be unlocked. We,

therefore, suggest that in the planning stage AIPs, develop their own theory of change in which they make more explicit how this will be done, by adding specific activities to that end. This can then also help during the mapping of stakeholders to ensure the right partners are involved and in developing a work plan and budget that explicitly takes this into consideration. In addition, AIP implementers can consider including process claims (i.e. structure and governance claims, performance claims, and supporting action claims) into their monitoring and verification framework. This could also be facilitated by including such claims in the reporting indicators in the AIP Directory and FishSource. At present, only one AIP in the AIP Directory has provided concrete evidence of policy and management changes, and so far none have provided evidence of improvements on the water. Providing options to report on process indicators, as suggested in [Section 5.2](#), could support AIPs in showing the efforts they are making. Obviously, this should not replace making progress on sustainability outcomes.

⁹ https://s3.amazonaws.com/sfpcms.sustainablefish.org/historical-assets/publication_9/SFP_AIPToolkit.pdf

¹⁰ <https://jaresourcehub.org/theory-of-change/>

7. Conclusion

This paper examined the (potential) incentives and enablers for participation in aquaculture improvement projects of different actors through a literature review and four case studies in the aquaculture, wild capture fisheries, cocoa and palm oil sectors. The results show that there are a wide range of incentives, including economic incentives (including monetary, market access/competitiveness, risk reduction, and efficiency/cost reduction), social incentives, and moral incentives. The types of incentives that feature most prominently and for whom depend on the specific characteristics of the AIP. From the diversity and extent of the economic incentives that were found, it is clear that the economic incentive of market demand, which in turn leads to increased sales volumes and higher producer prices, needs to feature prominently in incentive models. However, the most compelling incentive models combine elements of all three types of incentives.

Regardless of the incentives that may exist in a particular AIP in theory, it may not always be possible for actors to access or unlock them in practice. There is, therefore, a need to put in place enablers for this to happen, and this may need to become much more explicit in AIP implementation. This requires inclusive business models in which buyers make offtake commitments, while also supporting their organisational, technical and business capacities.

To facilitate making claims about AIP-derived products, in particular those that do not work towards certification or rating, other types of claims could be considered, namely structure and governance claims, performance claims, and supporting action claims, which provide more visibility on the efforts involved in implementing improvement projects at the area or landscape level. Apart from sustainability indicators, performance claims could potentially include 'inclusion' indicators, for AIPs that make additional efforts to organise smallholder farmers and include them in international markets. Making credible claims requires appropriate and credible assurance models that fit sustainability efforts beyond individual farm-level and that smallholders are able to comply with. Alternative models that focus on landscape or area-level indicators have emerged and actors involved have been working on claims related to such efforts.

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Annex A. Literature review: detailed results

Table 5: Incentives for participating in certification and AIPs: results from a literature review

	Economic (dis)incentives	Social (dis)incentives	Moral (dis)incentives
Aquaculture farmers related to certification	<ul style="list-style-type: none"> • Expectations of increased income (+) (Ahsan, 2011) • Market/consumer demand (+) (Amundsen & Osmundsen, 2020; Bush, 2018) • Increased sales volumes/market access (+) (Chikudza et al., 2020; Azizah et al., 2020; Samerwong et al., 2018) • Price premium (+) (Chikudza et al., 2020) • Costs of certification (–) (Amundsen & Osmundsen, 2020; Chikudza et al., 2020; Lucas et al., 2021; Boocharoen & Anal, 2021), including compliance with demanding requirements seeing the poor baseline practices of many small-scale farmers (–) (Haque et al., 2021; Marschke & Wilkings, 2014) • Competitive advantage compared to others, as price alone does not suffice – or to avoid future non-compliance when export requirements become more stringent (+) (Chikudza et al., 2020; Gulbrandsen et al., 2022; Lucas et al., 2021; Samerwong et al., 2018) • No demand for certification in certain markets, e.g. Eastern Europe; domestic markets of production countries (–) (Haque et al., 2021; Lucas et al., 2021) • Substantial market demand for non-certified fish from domestic market (–) (Azizah et al., 2020) • High spot market price of salmon (–) (Gulbrandsen et al., 2022) • Reducing the risk of disease or environmental impacts that can feed back on the resilience of their own production system (+) (Samerwong et al., 2018; Phong et al., 2021; Boocharoen & Anal, 2021) 	<ul style="list-style-type: none"> • Good image/reputation through ecolabels (+) (Amundsen & Osmundsen, 2020; Chikudza et al., 2020; Gudbrandsen et al., 2022) • Proof of good behaviour through ecolabels (+) (Chikudza et al., 2020) • Improved relationship with local community (+) (Amundsen & Osmundsen, 2020) • Pressure by national governments (+) (Marschke & Wilkings, 2014) 	<ul style="list-style-type: none"> • Lack of identification of certification requirements, as they often seem random and inflexible (–) (Amundsen & Osmundsen, 2020) or not applicable to local realities (–) (Samerwong et al., 2018) • Awareness of negative impacts of aquaculture (e.g., working conditions, chemical use, wastewater) which need to be addressed (+) (Amundsen & Osmundsen, 2020; Chikudza et al., 2020; Boocharoen & Anal, 2021) • Doing things better (+) (Bush, 2018) • Most stakeholders in Indonesia are not yet concerned with sustainability (–) (Azizah et al., 2020) • Productivity is more important than sustainable practices (Azizah et al., 2020; Ngoc et al., 2021) • Farmers belief that their own experience and techniques are more applicable for dealing with diseases and environmental improvements than what they consider 'theoretical' solutions embodied in the standards (–) (Samerwong et al., 2018)

	Economic (dis)incentives	Social (dis)incentives	Moral (dis)incentives
Aquaculture farmers related to AIPs	<ul style="list-style-type: none"> • Price premium (+) (Bottema, 2019) • Reduced risk of sub-optimal yields (+) (Bottema, 2019) • Farmed fish more resilient to disease (+) (Bottema, 2019) • Competition between farmers (–) (Bottema, 2019) 	<ul style="list-style-type: none"> • Issues of mistrust between farmers (–) (Bottema, 2019) 	
Processors related to AIPs	<ul style="list-style-type: none"> • Financial support for project activities (initial implementation) (+) (Bottema, 2019) • Reduced supply chain risks (+) (Bottema, 2019) • Secure supply (+) (Bottema, 2019) • Increased access to international buyers (+) (Bottema, 2019) 	<ul style="list-style-type: none"> • Improved reputation (+) (Bottema, 2019) • Improved supply chain transparency (+) (Bottema, 2019) 	<ul style="list-style-type: none"> • Selva Shrimp standard supports more effective conservation of mangrove forests (+) (Bottema, 2019) • Improved coastal protection and water quality (+) (Bottema, 2019)
Processors related to certification	<ul style="list-style-type: none"> • Uncertain price premium (variation) (–) (Olsen et al., 2021) • Low retailer demand for certified salmon in UK and Norway (–) (Vormedal & Gulbrandsen, 2018) • High spot market prices for (conventional) salmon (–) (Vormedal & Gulbrandsen, 2018) • Costs of certification (–) (Olsen et al., 2021) • Competitive advantage, as certified fish has recognition value (+) (Olsen et al., 2021; Vormedal & Gulbrandsen, 2018) • Achieve biological control (disease control in collective waters) (+) (Vormedal & Gulbrandsen, 2018) 	<ul style="list-style-type: none"> • Improved dialogue with local communities for a better standing with stakeholders (+) (Olsen et al., 2021) • Visible commitment to sustainability (+) (Olsen et al., 2021) • Improved transparency of company actions (+) (Olsen et al., 2021; Vormedal & Gulbrandsen, 2018) • Improved reputation (+) (Olsen et al., 2021) 	<ul style="list-style-type: none"> • Improved company performance (+) (Olsen et al., 2021) • Desire to improve beyond national regulations (+) (Olsen et al., 2021) • Standardisation across subsidiaries/sub-companies (+) (Olsen et al., 2021)

	Economic (dis)incentives	Social (dis)incentives	Moral (dis)incentives
Retailers related to certification	<ul style="list-style-type: none"> • Premiums for certified farmed fish vary by species (higher for rainbow trout produced in Europe; lower for pangasius and tilapia produced in Vietnam and China) (–)(+) (Asche et al., 2021) • Product differentiation (+) Hobbs (2003) although this is expected to decrease (Asche et al., 2021) • Compliance costs along the supply chain (–) (Hobbs, 2003) • Low consumer demand, e.g. in UK and Norway, for certified fish and low consumer awareness (–) (Gulbrandsen et al., 2022) 	<ul style="list-style-type: none"> • Respond to public scrutiny of aquaculture (+) (Olsen et al., 2021) • Improved reputation with consumers and the public (+) (Olsen et al., 2021) • Difficult to put ASC certification into a compelling message for consumers (–) (Gulbrandsen et al., 2022) 	<ul style="list-style-type: none"> • Certification as a way to work toward a sustainable aquaculture industry (+) (Olsen et al., 2021)
Governments related to certification	<ul style="list-style-type: none"> • Increase aquaculture production in the face of disease risks (+) (Samerwong et al., 2018) • Enable domestic producers to maintain the country's competitive position (+) (Samerwong et al., 2018; Azizah et al., 2020; Ngoc et al., 2021) • Increase bargaining position of domestic producers and exporters in the global market (+) (Azizah et al., 2020; Ngoc et al., 2021) • Anticipate future global market requirements (+) (Azizah et al., 2020) 	<ul style="list-style-type: none"> • Pressure from buyers (and NGOs) in key export markets for aquaculture products (+) (Samerwong et al., 2018) • State-initiated standards to respond to international pressure (+) (Samerwong et al., 2018) • Certification to signal credibility of domestic aquaculture production to export markets (+) (Samerwong et al., 2018) 	<ul style="list-style-type: none"> • Ambition to improve farming practices, food safety and protect aquatic ecosystems (+) (Samerwong et al., 2018; Azizah et al., 2020) • Ambitions for high coverage (inclusiveness) among producers leads to low basic requirements (–) (Samerwong et al., 2018) • Harmonisation of multiple national certifications to increase uptake (+) (Azizah et al., 2020) • Improving farm-supporting facilities, such as roads and electricity, is equally important as certification (–) (Azizah et al., 2020)
Governments related to AIPs	<ul style="list-style-type: none"> • Support access to remunerative export markets (+) (Ngoc et al., 2021) • Fit with national development strategy for aquaculture (+)(–) (Bottema, 2019) 		<ul style="list-style-type: none"> • Support adoption of good environmental practices by fish farmers (+) (Ngoc et al., 2021) • Combine economic incentives with addressing social and technical challenges (+) (Ngoc et al., 2021)

Annex B. Incentives and enablers

Table 6: Summary of incentives and enablers for AIPs, by actor

Actor	Type	Incentives	Enablers to 'unlock' incentives
Aquaculture farmers	Economic	<ul style="list-style-type: none"> • Increased income/price premium • Market/consumer demand • Increased sales volumes/market access • Competitive advantage • Reducing the risk of disease or environmental impacts/increased resilience • Improving yields • Cost reductions/increased efficiencies • Access to technical experts and capacity development 	<ul style="list-style-type: none"> • Recognition of value of sustainable practices in the market • Other types of value addition • Ability to enter high value markets • Effective/well-managed cooperatives • Business management skills • Technical capacities for aquaculture production • Agency over selling decisions • Transparency and traceability/'shorter' supply chains
	Social	<ul style="list-style-type: none"> • Good image/reputation/proof of good behaviour • Improved relationship with local community • Pressure by national governments 	<ul style="list-style-type: none"> • Platform for exposure/visibility • Strong national and international regulatory frameworks for sustainable aquaculture and responsible business conduct in general.
	Moral	<ul style="list-style-type: none"> • Awareness of negative impacts of aquaculture interest to "do things better" 	<ul style="list-style-type: none"> • Building of trust between farmers and between farmers and other actors/building on existing social relations • Government involvement/support

Actor	Type	Incentives	Enablers to 'unlock' incentives
Processors	Economic	<ul style="list-style-type: none"> Financial support for project activities Reduced supply chain risks/secure supply (volumes/quality) Increased market access/access to international buyers Competitive advantage Price premium Demand for certified fish Secure supply Improved company performance Standardisation across subsidiaries/sub-companies 	<ul style="list-style-type: none"> Recognition of value of sustainable practices in the market Transparency and traceability/'shorter' supply chains Platform for exposure/visibility Ability to support farmers Willingness/ability to interact with communities
	Social	<ul style="list-style-type: none"> Improved reputation/visibility of company's commitment to sustainability Improved supply chain transparency Improved dialogue with local communities 	
	Moral	<ul style="list-style-type: none"> Conservation of mangroves, coastal protection, water quality Desire to improve beyond national regulations 	
Retailers	Economic	<ul style="list-style-type: none"> Price premiums for certified/sustainably farmed fish Fulfilling sourcing policy commitments Product differentiation Consumer demand for sustainable fish Fines related to due diligence regulation 	<ul style="list-style-type: none"> Recognition of the value of sustainable practices in the market Interest and understanding among consumers of what 'sustainable aquaculture entails and a willingness to pay for it. Transparency and traceability/'shorter' supply chains
	Social	<ul style="list-style-type: none"> Reputation Working toward a sustainable aquaculture industry 	
Input & suppliers	Economic	<ul style="list-style-type: none"> Securing demand for products Competitive advantage Price premium 	<ul style="list-style-type: none"> Transparency and traceability Recognition of the value of more sustainable inputs (esp. feed) Platform for exposure/visibility
	Social	<ul style="list-style-type: none"> Reputation Visibility 	

Actor	Type	Incentives	Enablers to 'unlock' incentives
Governments	Economic	<ul style="list-style-type: none"> • Increase aquaculture production • Support access to remunerative export markets/maintain competitiveness • Increase bargaining position of domestic producers and exporters in the global market • Anticipate future global market requirements • Fit with national development strategy for aquaculture • Harmonisation of multiple national certifications to increase uptake 	<ul style="list-style-type: none"> • Supportive aquaculture strategies/ conducive policy environment for responsible business conduct
	Social	<ul style="list-style-type: none"> • Pressure from buyers (and NGOs) in key export markets • State-initiated standards to respond to international pressure • Signalling credibility of domestic aquaculture production to export markets • Addressing social challenges/improve incomes and wellbeing 	
	Moral	<ul style="list-style-type: none"> • Ambition to improve farming and environmental practices, food safety and protect aquatic ecosystems 	
Civil society/ certifiers	Economic	<ul style="list-style-type: none"> • Maintain/increase funding support from donors. • Expand the use of particular ratings/standards 	<ul style="list-style-type: none"> • Recognition of value of sustainable practices in the market • Platform for exposure/visibility • Ability to support farmers
	Moral	<ul style="list-style-type: none"> • Achieve environmental, economic development, or wellbeing goals. 	