Enhancing trust in farm assurance systems: a multistakeholder perspective

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Abstract

Farm assurance systems provide an infrastructure (standards and certification services) to ensure food safety, animal welfare and environmentally responsible practices at farms. Yet, farm assurance systems face challenges that threaten their legitimacy and 'social licence to operate (SLO)' – especially when public shows increased concerns about the social and environmental impact of farming. Drawing from the SLO literature, we explore the relationship between key SLO constructs (distributional fairness, procedural fairness and confidence in governance) and trust in farm assurance in two independent studies: a qualitative study with farmers and assurance providers (N=37) and a survey of general public (N=500). The results suggest that (from a perspective of farmers and assurance providers), gaps in accountability for impact of assurance, gaps in inclusiveness of farmers and inconsistencies in governance impact trust in farm assurance. Distributional fairness, procedural fairness, and confidence in governance have positive effects on consumers' trust in the farms' assurance system, however consumers' engagement with food systems has unique influence against the three constructs. Combined, the two studies serve as a platform for a conceptual model of trust building for farm assurance.

1. Introduction

Farms and food producers play a critical role in society's well-being as they provide food and other essential products necessary for human survival. However, the operations of farms also pose a significant risk to the well-being of local communities and the public as a whole. This

is partly due to food-related risks such as food poisoning, but also because of the impact on the environment, including soil, water, emissions, and biodiversity, as well as social concerns such as modern slavery, working conditions, and animal welfare.

Farm assurance systems are used to monitor farms and mitigate risks associated with their operations. They utilize a set of standards and regulatory tools, both voluntary and mandatory, as reference points for monitoring. Compliance with these farm assurance standards, whether mandatory or voluntary, is necessary for organizations to continue their operations, access markets both domestically and internationally and achieve continuous success. These standards, along with associated services provided by assurance systems, are often referred to as mechanisms that provide a social license to operate (SLO). This term is commonly used in Canada, where the agricultural sector holds a Social License in Agriculture Conference. Certification bodies such as the Independent International Organization for Certification (IIOC), which represents leading actors like BSi, BV, Intertek, and Dekra, conceptualize the value of certification in terms of "More than a License to operate" (IIOC, 2022). In everyday language, saying that a firm has lost its social license to operate means that it has lost the trust of a broad range of stakeholders.

The literature on Social Licence to Operate (SLO) examines critical issues related to building trust and striving for higher standards that are recognized and beneficial for other stakeholders, such as local communities and the general public (Baines and Edwards, 2018; Baumber et al., 2019; Sinner et al., 2020; Zhang et al., 2015). This focus is closely aligned with the fundamental purpose of standards and assurance services. For example, farm assurance programs that certify animal welfare practices provide a record of how animals are treated on farms, which consumers are not able to observe directly. Through farm assurance, information asymmetry between consumers and farms is reduced (Castaldo et al., 2009; Verbeke and Ward, 2006). As a result, consumers must have confidence in the accuracy of assurance providers' accounts of animal welfare. Trust is therefore a critical asset for those who provide farm assurance services (Eden et al., 2008).

Drawing from the literature on Social Licence to Operate (SLO), we investigate the relationship between key SLO concepts and trust - in the context of farm assurance. Specifically, we consider distributional fairness, procedural fairness, and confidence in governance as crucial components in building trust in farm assurance (Zhang et al., 2015). Distributional fairness involves ensuring that resources are allocated equitably, and in the context of assurance, this means holding farm assurance systems accountable for their impact on stakeholders. Measuring this impact is one of the mechanisms that fosters trust. For instance, the ISEAL Alliance supports assurance systems in accounting for an impact, while also conducting impact studies to bolster the credibility of assurance practices[1]. Procedural fairness refers to the perceived justice in decision-making processes. In the context of assurance, it means involving stakeholders in the development of standards (Balzarova and Castka, 2012; Wiegmann et al., 2017). Previous studies have shown that including stakeholders in the process of setting standards increases their confidence in the standards and assurance (Castka and Corbett, 2016). Finally, confidence in governance pertains to the regulatory system's ability to hold actors accountable (Zhang et al., 2015). This construct is also essential in building trust in the assurance system, as inconsistencies in assurance practices like inconsistent audits and fraudulent activities among certifiers and firms have eroded trust in these systems. This problem has become so significant that the International Organization for Standardization (ISO) has established a task force on brand integrity within the TC 176 Committee.

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[1] https://www.isealalliance.org/about-iseal/who-we-are

The three constructs of social license to operate (SLO) are highly relevant to farm assurance. However, the literature on these constructs has developed independently and there is a lack of a comprehensive perspective on how distributional fairness, procedural fairness, and confidence in governance relate to trust in assurance systems. We aim to fill this gap by studying this relationship in the context of farming. Firstly, we conducted a qualitative study with farmers and assurance providers (N=37), which revealed how assurance practices can undermine trust in farm assurance. Secondly, we conducted a survey of the the public (N=500) to investigate the relationship between consumers' perceived SLO and their trust in farm assurance systems. Additionally, we studied how consumers' engagement with food systems affects their perception of farm assurance.

The concept of SLO has not been a central focus in research related to standards. As Demuijnck and Fasterling (2016) argue, related concepts such as legitimacy, stakeholder management, or social contract theory (p.676) have been preferred in theorizing about SLO. However, as we explained at the beginning of our paper, SLO is a well-established narrative within the industry and is also aligned with key trust-building aspects in the assurance systems domain. The literature on SLO has been developed in various domains, such as forestry and mining, where its use suggests that such conceptualizations have been useful. Our goal is to achieve a similar outcome in the context of farm assurance, or more broadly, assurance systems in general.

2. The contextual background

2.1. Farming

Farming is a vital sector in the global economy. Farming provides food products and ingredients for food processing, which are essential for human survival. At the same time, farms' operations present a significant risk to well-being of local communities and to general public. Primarily because of the significant environmental and social impact of farming activities. The environmental impacts include contamination of soil and water, significant emissions in the entire value chain (i.e., manufacturing of fertilizers) and negative impact on biodiversity. Social concerns include labour practices (i.e., modern slavery or other forms of exploitations of workers), working conditions and labour practices as well as animal welfare related issues.

Farm assurance systems are in place to monitor farms and their social and environmental compliance. Just like any other assurance, farm assurance systems rely on quality infrastructure (OECD, 2021): a network of actors (auditors, inspectors, regulatory bodies and others), who are collectively collaborating to developing and enforcing standards for testing, inspections or certification of sites and personnel (TIC, 2018). Farms are required to comply with local regulations (i.e., farm environmental plans) as well as with various 'private' standards (i.e., standards imposed by retailers and food producers). For instance, if a farm supplies milk to global supermarket chains, it has to also adhere to standards and certification that are demanded by the buyer.

Farm assurance systems are utilized throughout the entire value chain. This includes farms, processing facilities, distribution facilities, and retail locations. Compliance is evaluated against numerous criteria at all levels of the value chain. Criteria at the farm level includes, but is not limited to, food safety, animal welfare, water quality, soil quality, and emissions. Further down the value chain, the focus shifts towards product traceability, food safety, and transportation emissions. All parties involved in the value chain are subject to multiple audits and inspections.

Farm assurance systems primarily focus on the value chain actors. However, local communities and the public can also benefit from farm assurance, even though their awareness of farm assurance systems is often limited. For instance, farms' compliance with standards and regulations, such as energy management, waste treatment, emissions management, and product safety, ensures public health. These standards ensure that local communities and the general public benefit from reduced emissions, clean water, and safe products. Such benefits can be directly observable in some cases. For instance, if farms' operations cause water contamination in the region, such contamination affects local communities' living standards and well-being directly. In other cases, the impacts can be challenging to ascertain. For instance, farming emissions contribute to global warming and the emissions footprint of a particular country. However, there may not be a directly observable impact on local communities or the general public.

2.2. Challenges

Farm assurance systems in farming are increasingly subject to scrutiny and criticism. For example, Varol (2020) demonstrates that water quality in farm catchment areas has deteriorated despite the introduction of monitoring systems and farm assurance. Bain (2010) asserts that assurance systems do not necessarily improve working conditions on farms. Collectively, the literature suggests that farm assurance systems might be on a trajectory to lose their legitimacy. General public has been showing an increasing level of interest in food related matters and in farm practices (Royer, 2015) and question the legitimacy of farming (for instance, due to the pollution of the 'public' space). Indeed, the impact of farming on water quality, soil quality and biodiversity is increasingly understood by general public and subject to increased criticism. Such awareness is coupled by publicly available data that can (and often in real time), demonstrate farms' performance (i.e., data from satellites on biodiversity, water quality or else). Reid and Castka (2023) warn that these changes will radically change farm assurance in near future. For example, various stakeholders will be increasingly engaged as part of 'secondary monitoring' of farms – by having access to remote sensing data and satellite images. It is therefore timely to consider how farm assurance systems can enhance their trust.

3. Social licence to operate (SLO)

Social license to operate (SLO) concept provides a framework to investigate "a community's perceptions of the acceptability of a company and its local operations." SLO has been used in various settings, most in industries that have high impact on local communities, such as mining (Zhang et al., 2015), forestry and aquacultural sectors (Baines and Edwards, 2018; Sinner et al., 2020). The SLO concept has been also used to conceptualise the impact on indigenous communities (Boiral et al.). SLO is also defined more broadly – not necessarily as a mechanism to address local communities – but also as trust building mechanism with general public. Accordingly, SLO has been used in other domains of enquiry, for example for development of frameworks for social licence to operate for sharing economy (Baumber et al., 2019) or in the financial sector (O'Brien et al., 2015).

Central to the concept of SLO is the notion of 'trust'. The extant SLO literature focuses in particular on how trust can be built – pointing at importance of communication, disclosure, transparency or consultation. The SLO literature also provides a generic roadmap for building relationships and trust with stakeholders. The literature outlines various factors that are central to SLO (Gellynck et al., 2006; O'Brien et al., 2015; Sinner et al., 2020). In general the key factors are centred around trust (as a desired outcome) and factors contributing to

development of trust with the stakeholders (Baumber et al., 2019). The key factors are outlined in Table 1. Table 1 also summaries how the SLO factors translate into the context of farm assurance.

Table 1 Conceptual foundations for the study

SLO factor	Definition from the SLO literature [1]	Key question for social and environmental standards
Distributional fairness	"Fairness of outcomes of resource allocation"	What can farm assurnace systems do to enhance their contribution to societal well-being?
Procedural fairness	"Procedural fairness refers to perceived justice in the processes of decision-making by those carrying out a particular practice such as mining"	What can farm assurnace systems do to enhance stakeholder involvement in setting-up of standards and monitoring processes?
Confidence in governance	"Ability of a regulatory system to held actors accountable"	What can farm assurnace systems do to enhance the quality of governance?
Adaptability	"Ability to change practices in the face of changing expectations"	What can farm assurnace systems do to reinvent themselves and change in the face of changing expectations?

Notes: [1] Definitions from (Zhang et al., 2015).

4. Research method

In this study, we combine qualitative and quantitative approaches to explore the relationship between SLO and trust. We conduct two studies. Study 1 is a systems study and focuses on unravelling the complexity of building trust in the context of farm assurance. The study draws its insights from a group of primary stakeholders, i.e., actors who are directly involved in the farm assurance. The data was collected through interviews (see Table 2). The interviews included personal visits (including visits at farms) as well as ZOOM meetings. The respondents cover a broad range of actors – some operating at the national level others operating globally and a mix of stakeholders that operate on the regulatory side (auditors, certifies, accreditors) as well as users (in our case farmers). Our overarching approach to data collection was guided by the saturation logic: we kept adding interviews as we grow our understanding about the phenomena and stopped when we reached a point of saturation. The data collection was centred around the conceptual foundations that are outlined in Table 1. Each area (distributional fairness, etc.) was discussed, focusing specifically how trust can be build and what are the impediments and shortcomings of the current approach to farm assurance.

Table 2 List of respondents (STUDY 1)

Organisation	# of interviewees	Form
Accreditation body (Global)	1	ZOOM
Accreditation body (Global)	1	ZOOM
Assurance provider (Global)	1	ZOOM
Accreditation body (National)	2	In-person
Government agencies (National)	1	In-person
Governmental agencies (National)	5	Hybrid

Assurance provider (National)	2	In-person
Assurance provider (Global)	1	In-person
Government (National)	1	In-person
Regional Council (Regional)	4	ZOOM
Standards setting organization (National)	1	In-person
Accreditation Body (National)	1	In-person
Farmers (3 representative sites)	6	In-person
Retailers (Domestic and International)	1	ZOOM
Land trusts and indigenous leaders	9	Hybrid
TOTAL	37	

Study 2 was a survey of the public in New Zealand. In this study, we investigated the relationship between the public's perception of distributional fairness, procedural fairness, confidence in governance, and trust in farming assurance. Additionally, we explored how the level of engagement of the public with food systems affects this relationship. The survey had a total of 500 respondents, representative of the population in terms of age, gender, rural or urban location, and region in New Zealand. The study was conducted by a market research agency between November 10 and 15, 2022.

In addressing the research question, we employ a hierarchical regression analysis. As the first step, we built the constructs for SLO which we test in the regression analysis. We measure SLO using three key constructs, namely distributional fairness, procedural fairness, and confidence in governance and consumers' trust in the farms' assurance system, and in measuring those three constructs, we adopt the scales from the study by Zhang et al. (2015). The items developed by Zhang et al. (2015) were adapted to the context of farms' assurance system. The level of engagement with food systems is derived from the scale developed by a NZ market agency Forward. The items have been used in multiple food related studies and confirmed as reliable scales to establish consumers' engagement with food systems. The five scales in Study 2 are presented in Table 3.

Table 3 SLO and other scales and Items used in the study

Scales	Items
Distributional fairness	Generally speaking, the farm management assurance systems provide economic and social benefits to New Zealand
	People like me receive a fair share of the benefits from farm management assurance systems
Procedural fairness	Farm management assurance systems listen to and reflect community and societal opinions.
	Farm management assurance systems are prepared to change its practices in response to community and societal concerns.
Confidence in governance	Farm management assurance systems can be counted on to ensure farms do the right thing.
	Farm management assurance systems are able to hold the farms accountable.
Trust in assurance systems	Farm management assurance systems ensure that products deserve to be labelled as sustainable
	Farm management assurance systems act in the best interest of society
	Farm management assurance systems do what is right
Engagement with food systems	I care very much about health and wellbeing to the point that this impact what food I eat everyday
	I do not mind spending more for good quality produce
	I often have discussions with people about food products and brands

I spend a lot of time watching TV shows about food, health, or wellbeing

5. Findings (Study 1)

5.1 Distributional fairness

Distributional fairness refers to "outcomes of resource allocation" (Zhang et al., 2015). In the context of farm assurance, the distributional fairness it refers to accountability for the impact on their stakeholders. In other words, do assurance system provide adequate benefits to all stakeholders?

Farm assurance system monitor a wide range of farms' operations: from monitoring, inspecting, testing and certifying food products as safety to monitoring animal welfare, soil quality or water quality. Assurance systems thus directly address societal problems and, more broadly, externalities and 'hidden' aspects of farm operations. Some assurance systems (such as Fairtrade) address directly matters of distributional fairness (distribution of profits within the supply chain). Other assurance systems contribute indirectly. For example, freshwater monitoring systems ensure adequate levels of water quality in catchment areas – for the benefit of local communities.

The question of distributive justice (and whether some actors are disproportionately affected), is a complex question. In part, the difficulties stem from challenges associated with determining the actual impact of farm assurance activities. The contrafactual is difficult to conceptualize and measure. For example, water quality in farming can be measured in the catchment area (where multiple farms coexist and operate) and such monitoring can (theoretically) replace the monitoring activities of farm assurance systems. Therefore, an evaluation of whether or not farm assurance systems provide worthy outcome of resource allocation is difficult to ascertain.

Putting the 'contrafactual' argument on the side, farm assurance systems often lack approaches to determine the impact of their own activities – let alone the contrafactual evidence. Performance indicators and results of monitoring activities– such as reduction in emissions, improved water quality or similar – are rarely in the public domain. Moreover, it is also difficult to attribute any particular social or environmental impact entirely to farm assurance systems.

Farmers arguably obtain multiple 'benefits' from farm assurance. For example, results from certifications, audits or inspections are used for regulatory reporting. Certifications provide farmers with an access to supply chains and markets. Farm assurance systems can also assist organisations in increasing the value of the products (i.e., by verifying the hidden attributes of products). At the same time, farmers bear the cost of the compliance due to inefficiencies in assurance practices (over which have little control). For example, in terms of:

- Administrative requirements and high workload requirements (i.e., obtaining a wide range of information) whilst lacking skills and resources to satisfy the requirements;
- Number of requirements (some requirements perceived as an "overreach", requirements not backed by science (i.e., frequency of test to establish lactation curve);
- Scope of requirements (growing demand in terms of various social and environmental aspects – i.e., GHG and social compliance audits);
- Duplication for data collection and reporting (i.e., lack of integration of audit requirements across different regulatory and mandatory social and environmental standards – despite a clear overlap of requirements).

The gaps in impact measurement and processual inefficiencies erode the trust in farm assurance systems. For example, at farm level, the frustrations related to duplication of efforts lead to cynicism and disconnect with standards. Farmers recognise the inefficiencies of assurance processes, bear the cost of the inefficiencies yet at the same time, do not have sufficient influence to address such distributional unfairness. Consequently, such powerlessness erodes their trust. Such mistrust does not necessarily translate into a mistrust for all individual assurance systems. Rather, it is a mistrust related to the entire *portfolio* of standards. The problem therefore lies in the accountability (who is being held accountable for distributional fairness of farm assurance systems?).

5.2 Procedural Fairness

Procedural fairness refers to 'perceived justice in the process of decision making' (Zhang et al., 2015). In the context of assurance systems, it mainly relates to processes associated with standard setting and revisions of standards.

Arguably, farm assurance systems have processes in place to manage stakeholder inclusion. Mandatory systems, for example, rely on public consultations, whilst voluntary standards on multi-stakeholder participation in standards development as well as on gaining feedback from participating actors. The extent to which these mechanisms address procedural fairness, is debatable.

Participation of stakeholders in standard setting is often challenging. In part, due to poor resourcing and support for participation. Likewise, it is also due to lack of capabilities of stakeholders to substantially contribute to standards development process. Mainly to these two reasons, the current practice (and current level of procedural justice) does not provide strong foundations for building trust amongst stakeholders. Farmers have a limited say in the portfolio of requirements that they have to comply with. They also have limited say on which requirements would be used. Consequently, their buy in into farm assurance is impacted by the lack of procedural fairness.

5.3 Confidence in governance

Confidence in governance refers "to ability of the system to hold the actors accountable" (Zhang et al., 2015). Farm assurance systems have complex governance systems. Often, the governance is based on a two-tier system – consisting of accreditation bodies and certification bodies. The rules for each tier are codified and encapsulated in standards or in regulatory documents. In voluntary standards, for example, the standards are agreed internationally and adopted across the globe. Mandatory farm assurance systems are driven by legislatory needs and reinforced by national or local regulatory agencies.

Although the underlying governance processes are well established, the consistency of the system varies. In voluntary domain, scandals in food chains ('horse meat' scandal), in forestry (certification of illegal timber) or falsification of certificates (quality management standards) demonstrate that farm and other assurance systems are also polluted by fraudulent practices – even in standards that are promoted as trustworthy. Moreover, in voluntary domain (so called 'soft legislation'), it is hard to hold the actors accountable. In mandatory domain, farm assurance systems may also not necessarily deliver upon their purpose; i.e., improving water pollution in catchment areas or ensuring adherence to animal rights.

The variation can be also explained by the design of farm assurance systems: a focus on systems indicators (i.e., indicators that focus on presence/absence of a set of farm practices) is disproportionally higher to measurement of an impact (and focus on performance-based indicators). The problem cascades through the entire system. For example, lack of performance indicators makes quantification of the contribution to public well-being difficult, which in turn mutes the opportunities to develop trust with general public. Even though such unawareness does not necessarily mean that general public mistrusts social and environmental standards, it also means that the relational tie between public and farm assurance systems is fragile.

6. Findings (Study 2)

Following Zhang et al. (2015), we created the composite scores of the five constructs in Table 3 by calculating the mean scores of their respective items. The five composite scores were subjected to the hierarchical moderated regression analysis. Since the regression analysis involves interaction effects, all variables are standardized to minimise collinearity effects in the regression. The results of the regression analysis are presented in Table 4.

Table 4 Hierarchical Moderated Regression Analysis

	Model 1	Model 2	VIF Model 2
Distributional fairness	0.32**	0.32**	3.23
Procedural fairness	0.20**	0.24**	2.94
Confidence in governance	0.43**	0.40**	3.26
Engagement with food systems	-	-0.02	1.03
Distributional fairness × Engagement with food systems	-	0.04	3.93
Procedural fairness × Engagement with food systems	-	0.13**	3.08
Confidence in governance × Engagement with food systems	-	-0.14**	4.00
R^2	0.76	0.77	-

The results show that distributional fairness, procedural fairness, and confidence in governance have positive relationships with consumers' trust in the farms' assurance system (all βs are statistically significant at $p < 0.01$). The confidence in governance appears to be the strongest predictor of consumers' trust ($\beta = 0.43$), and a closer observation on the confidence interval at 95%, its effect on consumers' trust is significantly stronger than that of procedural fairness ($\beta = 0.20$).

The degree of involvement with food systems does not moderate the relationship between distributional fairness and consumers' trust. However, it does have a positive moderating effect on procedural fairness (0.13 at $p < 0.01$), indicating that the more engaged consumers are with food systems, the stronger their trust in farm assurance. These findings suggest that consumers who are highly involved with food systems are particularly interested in procedural fairness in farm assurance. To establish trust with this group, it is important to focus on consultations and involving them in the process of setting standards and criteria for farm assurance.

Surprisingly, engagement with food systems has a negative moderating effect on confidence in governance (-0.14 at $p < 0.01$). This means that the higher the level of consumers' engagement with food systems, the lesser the effect of consumers' confidence on governance in their trust in the farm assurance systems. This result is even more surprising given that, as mentioned earlier, confidence in governance is the strongest predictor of consumers' trust in farm assurance systems in general. These results suggest that consumers who are highly

involved with food systems may be sceptical about the consistency of assurance provision. Moreover, these consumers seem to discriminate between the three constructs. Overall, our findings show that distributional fairness, procedural fairness, and confidence in governance have positive effects on consumers' trust in farm assurance systems, and that the level of engagement with food systems has unique influence against the three constructs.

7. Discussion

Assurance systems play an important role in farming and other industry sectors (Lewis et al., 2008). In this paper, we have focused understanding trust – studying the impediments as perceived by farmers and assurance providers as well as perceptions of the public.

The SLO literature often focuses on relationship with 'local communities' (Baines and Edwards, 2018). Local community refers to a group of people (stakeholders) that live in a common location. For example, farms coexist with local communities in catchment areas and share resources (water, soil, space). Noise, air or water pollution of any farm within any given catchment area thus affect local communities. Farm assurance systems – through their auditors or inspectors inspect farms and monitor a farm's practices. Unlike local communities, general public might not be directly affected by a farm's activities. Still, general public might be concerned about, for example, water quality or biodiversity in their region or country (Verbeke and Ward, 2006). Farm assurance systems therefore should align with public's perceptions about their operations. At the same time, the public does not have an in-depth understanding of farm assurance. It is probably unreasonable (and impractical) to expect the public to have detailed insight into operations of assurance providers. At the same time, our study demonstrates that the public recognises importance of distributive fairness, procedural fairness and confidence in governance in building trust in assurance. This is in particularly true for consumers with high engagement with food systems.

The trust in farm assurance can be therefore enhanced through a focus on the distributional fairness, procedural fairness and confidence in governance. Taking a processual perspective on assurance, we advocate to build the trust throughout the entire system. Figure 4 provides an overview on an analytical framework that we have developed.
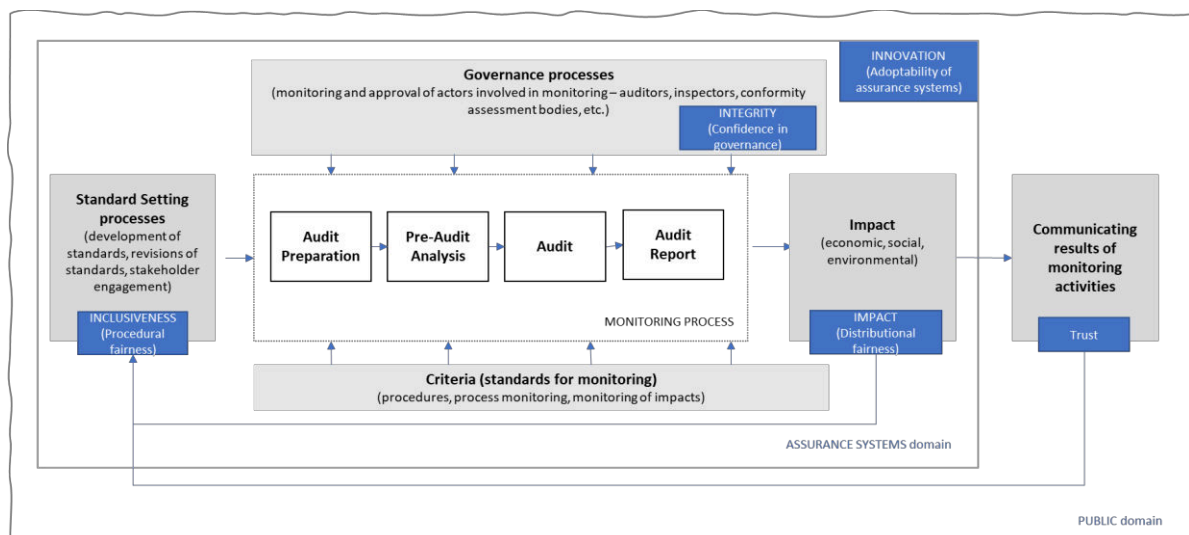

Figure 4 Analytical framework – SLO in the context of assurance systems

Farm assurance systems represent a complex, plurastic and decentralized network of actors. The complexity of the system exceeds the complexity of other domains that adopt the SLO

concept. For example, in mining, the trust building is concentrated to building relationships between the mining companies and local communities. In the context of sharing economy, it is likewise far less complicated matter (for instance, AIRBnB and trust building between residents, visitors and the organisation itself). In each of these domains, there are clear boundaries between the actors and clear accountabilities for actions of individual actors.

In the assurance domain, the boundaries are often blurred. For example, a farm can be monitored by governmental agencies and by voluntary assurance schemes. Both are part of an overarching "assurance system". Although both of these actors have similar objectives, they are not responsible for the performance of the entire systems. Rather their accountability is related to their own scheme (standard). Consequently, there exists an institutional vacuum for the accountability of the entire system.

7.1 Practical Recommendations

The analytical framework provided in Figure 4 outlines the path to enhancing trust in farm assurance systems. Farm assurance systems need to primarily focus on developing their capacities to measure and account for their impact (being it economic, environmental, social, or cultural). Such focus has important ramifications for all aspects of assurance: starting from how requirements and regulations are operationalized - all the way to how the results of assurance are disclosed, shared and communicated.

Focusing on impact will help engage stakeholders, especially secondary stakeholders, in assurance processes. Local communities, the public, and all other stakeholders should play a more central role in assurance systems. An intentional shift from a B2B to a B2C mindset in farm assurance is crucial, even if it is a long-term process. We have demonstrated that consumers who possess a high level of awareness about food systems are particularly concerned about procedural fairness. Thus, assurance systems must incorporate these consumers into the development of standard-setting processes. Alternatively, assurance systems must be transparent about their standard-setting process and offer evidence that standards were developed through rigorous stakeholder involvement. For the average consumer, trust includes a combination of impact, inclusiveness, and governance. Therefore, assurance systems must find ways to communicate the outcomes of assurance that address these three areas. One possibility is to disclose such information on packaging. Another option may involve more extensive educational and marketing campaigns to communicate the importance of assurance systems.

Regulatory and voluntary requirements are often overlapping – resulting in duplication of assurance processes, increased cost and 'audit fatigue'. Key actors involved in farm assurance need to find ways to collaborate, share data, share audit findings and continue to maintain the integrity of assurance systems. Decreased cost of technologies and rapid digitalization of international trade also mean that innovation of assurance systems is essential – to adopt to the changing expectation of stakeholders. This is a particular challenge. Most assurance practices are often 'analogue' and the assurance practice tends to rely on well-established processes. Even though the COVID-19 pandemic has accelerated digitalization of the sector, the progress needs to continue. The transformation to more 'digitalized' assurance has numerous implications, such as availability of qualified personnel. Apart from technologies, the quality infrastructure of assurance also needs to adapt to the changing environment.

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