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Participatory Guarantee Systems for organic farming: reclaiming the commons

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Abstract

Using the definition developed by Hess and Ostrom (2007), we consider the content of organic farming labels as a system of intellectual common-pool resources. Access to this resource is threatened by phenomena of enclosure and commodification. Third party certification, which is controlled by private competitive operators, is becoming the unique channel to gain legal access to public labels in many countries. However, the high cost of this certification may exclude a large part of the community at the origin of the resource – especially small diversified farmers. It also threatens resource renewal. In this article, we describe an alternative mechanism called participatory guarantee systems (PGS). Participatory certification is based on peer-review assessment (involving producers from the community), additional control mechanisms are also mobilized according to the context, in order to measure compliance with the standard's specifications. PGS encourage producers to share knowledge, support ongoing learning processes and, thus, resource renewal. Drawing on design principles from Ostrom's approach, we analyse ten PGS initiatives in the world – Nature et Progrès (France), Ecovida (Brazil), Certified Naturally Grown (United States), Organic Farm New Zealand, the Asociacion Nacional de Productores/as Ecologicos (Peru), Vietnam PGS, PGS India, Ngong Organic Farmer Association (Kenya), Good Market Organic PGS (Sri Lanka) and BioSPG du Conseil National de l'agriculture Biologique (Burkina Faso) – and discuss their robustness and sustainability. We demonstrate their relatively robustness in terms of self-organization and suggest that their current development in many countries contribute to a re-appropriation of the commons.

Keywords

Organic farming, Intellectual Common-pool resources, Community-based certification, Participatory management, Commons, Case studies

Titre en français

Système participatif de garantie dans les labels du mouvement de l'agriculture biologique : une réappropriation des communs intellectuels

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Résumé

En utilisant la définition développée par Hess et Ostrom (2007), nous considérons le contenu des labels d'agriculture biologique comme un système de ressources communes intellectuelles. L'accès à cette ressource est menacé par des phénomènes de privatisation et de marchandisation. La certification par tiers qui fait appel à des opérateurs privés indépendant est devenu le seul moyen d'accéder aux labels publics dans de nombreux pays. Cependant, le coût élevé de cette certification peut exclure une grande partie de la communauté à l'origine de la ressource - en particulier les petits agriculteurs diversifiés. Elle menace également le renouvellement de la ressource. Dans cet article, nous décrivons un mécanisme alternatif appelé système de garantie participative (SPG). La certification participative est d'abord basée sur une évaluation par les pairs (impliquant les producteurs de la communauté), des mécanismes de contrôle supplémentaires sont également mobilisés en fonction du contexte, afin de mesurer la conformité à la norme. Les SPG encouragent les producteurs à partager leurs connaissances, à appuyer les processus d'apprentissage continu et, par conséquent, à renouveler la ressource commune. En nous basant sur les principes de conception d'Ostrom, nous analysons dix initiatives de SPG dans le monde - Nature et Progrès (France), Ecovida (Brésil), Certified Naturally Grown (États-Unis), Organic Farm New Zealand, Asociacion Nacional de Productores/as Ecologicos (Pérou), Vietnam PGS, PGS India, Ngong Organic Farmer Association (Kenya), Good Market Organic PGS (Sri Lanka) et BioSPG du Conseil national de l'agriculture biologique (Burkina Faso). Nous démontrons leur relative robustesse en termes d'auto-organisation et suggérons que leur développement actuel dans de nombreux pays contribue à une réappropriation des communs.

Mots-clés

Agriculture biologique, Ressources communes intellectuelles, Certification participative Communs, Etudes de cas

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1. Introduction

A considerable amount of research has documented how groups can organize themselves to use jointly and sustainably the same common-pool resource (CPR), as a commons. Ostrom's work outlines design principles that are conducive to the successful management of commons (Ostrom, 1990; Ostrom, 2005). However, these principles have largely been proven for cases involving natural CPR. In the last 2 decades, many scholars have considered knowledge and other intellectual resources as new commons[1] (Ostrom and Hess, 2007). Intellectual CPR are also the subject of social dilemmas that concern free-riding or resource degradation due to misuse. In addition, intellectual CPR are threatened by enclosure and increasing commodification, both of which reduce the number of users of a given resource. Insofar as the existence and renewal of these resources depend on the very contribution of its users, these processes can lead to their depletion. Studies of design principles for self-governing communities which share an intellectual resource, can evidence the applicability of Ostrom's framework for the new commons. This paper provides a case study of several communities that govern locally shared knowledge and resource in the form of an organic farming label.

Throughout the world, collective knowledge about the practices and impact of organic farming is a resource shared by farmers (who choose and signal their production method) and buyers (concerned about how the food they buy is produced). The knowledge about organic farming practices is codified through different organic farming standards and labels[2] around the world. In 2017, IFOAM – Organics International officially endorsed 48 different standards (IFOAM, 2017b). While these standards and labels share a common goal based on the founding principles of organic agriculture as set out by IFOAM – Organics International, there are different way to ensure compliance against these standards, which can complement as well as oppose each other. Most of the organic labels, which are often public, require an independent private third-party certification to grant the right to use the label. However, another type of guarantee mechanism corresponding to Participatory Guarantee Systems (PGS) exists. Recent research has documented the current development of PGS around the world, especially in sociology (Fonseca et al., 2008; Nelson et al., 2010; Cuéllar-Padilla and Calle-Collado, 2011; Blanc and Kledal, 2012; Whitney et al., 2014; Sacchi et al., 2015; Loconto et al., 2016; Home et al., 2017; Jansirani and Somasundaram, 2017; Kaufmann and

[1] The "new commons" refer to different innovations: free software, artistic or scientific creations under creative commons licenses, open sharing platforms for various goods and services, etc. (Coriat, 2015).

[2] The term 'label' has no inherent legal significance. We consider a label as a device including three fundamental elements: i) a standard, ii) a logo with its name, and iii) a guarantee mechanism.

Vogl, 2018; Loconto and Hatanaka, 2018; Montefrio and Johnson, 2019). When organic farming labels are governed by communities, rules are gradually designed and adapted in the framework of collective choices regarding the inclusion and exclusion of participants, participants' obligations, monitoring, sanctioning and conflict resolution, etc. In our research, we focus on how self-governed communities effectively guarantee compliance with their label's standards and preserve the collective resource. To achieve this, we drew on the eight design principles developed by Ostrom, which map out how the PGS are organized. For our analysis, we compared ten labels that involve a PGS – Nature et Progrès (France), Ecovida (Brazil), Certified Naturally Grown (United States), Organic Farm New Zealand, the Asociacion Nacional de Productores/as Ecologicos (in Peru), the Vietnam PGS, PGS India, Ngong Organic Farmer Association (Kenya), Good Market Organic PGS (Sri Lanka) and BioSPG du Conseil National de l'agriculture Biologique (Burkina Faso). We collected data from field observations and secondary data from grey literature.

This empirical work strives to enhance our understanding of a societal and theoretical issue. First, the current control system, which is dominated by independent private certification bodies, has sparked new debates about its exclusive legitimacy with regard to granting access and rights of use for public labels. In this article, we endeavour to establish whether a different model, such as PGS, could provide a robust and legitimate alternative. Second, although identifying the similarities between knowledge commons and traditional commons remains a challenge (Ostrom and Hess, 2007), we strive to examine the factors that are conducive to the successful management of intellectual CPR.

In the next section, we review how the commons are dealt with in the literature and present recent developments regarding intellectual commons. In section three, we suggest that organic farming labels could be considered as a system of intellectual common-pool resources and highlight processes that threaten this resource. In the fourth section, we present the case studies and the methodology used in our analysis. In the fifth section, we present our findings regarding PGS governance. Lastly, in the conclusion we discuss the importance of granting legal recognition to participatory certification systems. It would encourage institutional plurality that could be adapted to specific contexts and community attributes.

2. The theory of commons and intellectual common-pool resources

2.1. From natural to intellectual common-pool resources

The concept of the commons emerged from various works, which describe shared resources that are managed collectively by a community, without recourse to the state or the market, in accordance with a set of rules and a property rights regime to ensure that the shared resource can be used and regenerated in the long term (Ostrom, 1990). In a commons, the resource system is often collectively owned, while the extracted resource units become the property of individual users. This concept has been used for natural resources[3] (Agrawal, 2001; Agrawal and Chhatre, 2006; Poteete and Ostrom, 2008), which are characterized by their rivalry (units of the resource are subtractable) and the difficulty of excluding those who want to accumulate resource units. The number of users and their diverse interests may cause conflict, which can affect the sustainability of resource use and lead to resource depletion. These common-pool resources are then subject to a social dilemma. Therefore, to achieve good collective CPR management, it is important to establish rules governing resource access and use (amount, time or duration of use, etc.), a monitoring system to deal with the problem of free-riding (non-compliance with rules or rights of use) and a collective capacity to deal with problems (communication and coordination).

Recent works on the commons have focused on intangible resources, such as shared information and knowledge (Hess and Ostrom, 2003; Ostrom and Hess, 2007; Cardon and Levrel, 2009), arts and culture (Madison et al., 2009; Bazen et al., 2015), genetic resources (Frison and Coolsaet, 2017; Labatut and Tesnière, 2018), etc. These resources relate to knowledge and procedures. They are human-made or technology-driven and exist at local, regional or global levels. They are similar to natural resources inasmuch as they are also exposed to free-riding, difficulties of exclusion and the risk of resource degradation. However, intellectual resources also have unique properties. A major difference is the fact that intellectual resources are not physically subtractable (or limited) (Hess and Ostrom, 2003). The governance of intellectual resources strives to improve and expand them rather than preserve them (Coriat, 2011, 2015). Nevertheless, they are still vulnerable to degradation linked to inappropriate use. The privatization of knowledge, ideas and methods and the replacement of cooperative devices by market devices is also problematic. “Information that used to be ‘free’ is now increasingly being privatized, monitored, encrypted, and restricted" (Hess and Ostrom, 2003). Boyle highlights a new wave of “enclosures” (Boyle, 2003). These authors suggest that the type of

[3] These resources have low “excludability” and high “subtractability of use”.

ownership and the property rights regime that are applied to intellectual commons directly affect how knowledge is produced, distributed, appropriated and consumed and, therefore, how it is renewed.

Hess and Ostrom (2003) identify three components to describe how intellectual common-pool resources function. First, "artefacts" are the physical, observable or even countable part of the resource. It is quite easy to exclude individuals from using artefacts. Second, “facilities”, material or immaterial, store the artefacts and make them available. They usually include attribution rules that define the legitimate users, how the artefacts should be used and the mechanisms for monitoring compliance and enforcement. Facilities can become obsolete in the absence of regular maintenance. They can also be privatized. Third, "ideas" are understood as the resource’s intangible content or innovative information.

2.2. Design principles conducive to successful commons management

Based on empirical studies, Ostrom (1990) investigated the fundamental factors or *design principles* that determine the effectiveness and likely sustainability of a community institution. After several revisions (notably in response to comments made by Cox et al. (2009), Ostrom proposed the following design principles (Ostrom, 2010):

- (1A) Boundaries are clear between legitimate users and non-users
- (1B) Boundaries are clear between the specific common-pool resource and a broader resource system
- (2A) There is a congruence between local socio-environmental conditions and the rules for the appropriation and distribution of the resource
- (2B) Allocation of resource appropriation and distribution costs are consistent with the distribution of benefits
- (3A) Those responsible for users and/or users themselves ensure the monitoring of distribution of the resource
- (3B) They also ensure the monitoring of the state of the resource
- (4) If the resource is linked to a broader socio-ecological system, governance activities are organized in several nested layers
- (5) Individuals concerned are allowed to develop and modify rules (access to collective choices)
- (6) The conflict resolution mechanism is relatively rapid and inexpensive

- (7) Sanctions must be graduated according to the seriousness and repetition of the violation of the rules
- (8) Local rules are recognized by external governmental authorities, to some extent (subsidiarity principle).

Although our analysis focuses on intellectual resources, rather than natural resources, we consider that this framework is relevant for analysing the local governance of organic farming labels. Indeed, several earlier works have applied it to intellectual resources (Cardon and Levrel, 2009; Stern, 2011; Saeed et al., 2017).

3. Organic farming labels as a system of intellectual common-pool resources

3.1. The components of the resource

Organic farming emerges from the accumulation of scientific knowledge and practical experiences by local and international communities united in their criticism of how agricultural industrialization affects food quality and their concern about protecting nature. The various organic farming standards have a long history (Poméon et al., 2018), rooted in social and political movements, involving farmers and non-farmers (agronomists, doctors, consumers, etc.). These movements have created at the global level IFOAM – Organics International[4] in 1972 (Fouilleux and Loconto, 2016). It has achieved global notoriety thanks to its four founding principles (health[5], ecology[6], fairness[7] and care[8]), which still guide the narrative and identity of organic agriculture. When standards and labels are referred to and used, it generates an economic advantage for the users. This will continue as long as the value of the resource is maintained.

[4] IFOAM – Organics International's role is to define organic farming, its principles and scope and to determine what is considered organic and what is not. Today this membership-based organization with affiliates in more than 120 countries, is the only international umbrella organization for the organic world, uniting a diverse range of stakeholders contributing to the organic vision.

[5] "Organic Agriculture should sustain and enhance the health of the soil, plant, animal, human, and planet as one and indivisible." (IFOAM, 2005)

[6] Organic Agriculture should be based on living ecological systems and cycles, work with them, emulate them and help sustain them." (IFOAM, 2005)

[7] "Organic Agriculture should build on relationships that ensure fairness with regard to the common environment and life opportunities." (IFOAM, 2005)

[8] "Organic Agriculture should be managed in a precautionary and responsible manner to protect the health and well-being of current and future generations and the environment." (IFOAM, 2005)

Based on the work conducted by Ostrom and Hess (2007), we propose that the information contained in organic farming labels could be considered as an intellectual common-pool resource. This resource can be divided into “ideas”, “facilities” and “artefacts” (Box 1).

The ideas behind organic farming labels involve complex systems of cognitive resources: a set of knowledge about agricultural production practices and their effects; and the values linked to IFOAM’s four founding principles for organic agriculture. These ideas are then managed by facilities, which codify ideas into standards (including charters and specifications) and describe the guarantee mechanisms. The facilities make the artefacts (i.e. logo and name of the label) available to qualified users and they control their use, in accordance with a set of rules. An label’s reputation, i.e. the idea underlying the label, allows producers to sell labelled products to consumers who value these ideas. The artefact itself is not sold, but is available for use through an exclusive non-transferable certificate granted by a certification system.

Box 1: The three components of organic farming labels as an intellectual common-pool resource

ideas	principles of organic agriculture (health, ecology, fairness, and care) shared knowledge of agricultural practices and their effects
facilities	standards (charters and specifications) mechanisms of guarantee
artifacts	logo and name

Labels are subject to social dilemmas. For example, some users may label their products without fully complying with the label’s specifications especially since standards may be open to interpretation. This can be qualified as “overuse” or “misuse” and may compromise the label’s reputation, which could depreciate the quality of the label and reduce the value of the resource. This knowledge resource can also be undermined in the event of non-renewal, especially if the corresponding standards are perceived as failing to evolve in a changing environmental context.

3.2. The threats of « enclosure » on the resource

3.2.1. The nationalization and commodification of labels

In the 1960s, different collective initiatives around the world raised concern about the dominant productivist agricultural model.They promoted environmentally friendly practices and a new quality of life. These approaches identified sets of farming practices designed to preserve the soil’s natural fertility, water and air quality, biodiversity and improve access to healthy food. They also aimed to

re-establish confidence in trade. Transactions were developed along short distribution chains, through farmers' markets, consumer and/or producer associations and specialized stores. The first associative labels with a logo appeared at the same time. However, it was primarily the networks that conveyed information about sustainable production and marketing practices.

As demand for organic products increased in the 1980s, there was a growing need to monitor the misuse of organic labels and designation. Relationships based on trust became more difficult with market expansion and the increasing heterogeneity of participants. Consequently, some communities requested the public recognition of organic agriculture. As organic farming involved a number of public goods (environment, public health, etc.), several countries responded favourably to this call. The first public regulations concerning organic agriculture appeared in France in 1985; the first European regulations appeared in 1991 and the European label (standard and logo) emerged in 2009. In the United States, the first public regulations "Organic Foods Production Act" appeared in 1990 and the public label and certification arrived on the market in 2002.

As Hess and Ostrom (2003) point out, when national governments claim ownership of common-pool resources, they require financial and human resources to exclude illegitimate users and to manage the appropriation and distribution of the flow of resource units. To do this, the system of ownership of labels involving different levels of government became subsequently more complex. A major change occurred when inspection and sanctions were transferred to an accredited private certification body (CB)[9]. With this institutional arrangement, obtaining the public label became conditional on third-party certification (TPC).The CB is independent of the community of participants. It governs the right of access to and use of the resource in accordance with its own inspection plan[10]. This certification system is presumed to be effective (in terms of the guarantee's credibility) because of the distance between the owner of the standard, the user being audited and the certification body. In this system, the label also became independent of the distribution network, which meant that labelled products could be sold in mass retail outlets, for example. Countries also relies on fraud prevention services to complement the TPC's mechanism for monitoring misuse of public labels.

[9] in accordance with the ISO 17065 standard: CBs must meet certain criteria regarding independence, impartiality, confidentiality, efficiency and competence.

[10] Each CB proposes an inspection plan to guarantee compliance with the standard specifications that it wishes to certify. The owner of the standard is responsible for its validation. For instance, in Europe, numerous inspection plans monitor pesticide residues in organic products, although this is not required in the European standard. Thresholds of pesticide residues are fixed in a discretionary way. However, this is contrary to the philosophy of organic agriculture, which is based on indicators of means rather than results, especially because there is always the risk of involuntary external contamination. These monitoring plans are currently being harmonized in Europe with regard to "non-contractual" assessment grids for pesticide residues.

The new rules governing the guarantee mechanism gave rise to a fee-based certification process. Over time, label commodification was followed by more relaxed rules of access (the agricultural practices required for certification became less stringent), which allowed more producers to enter the market. As a result, in the 1990s, large industrial farms entered the organic agriculture market alongside the initial small-scale producers.

3.2.2. The exclusion of diversified small-scale agriculture

The guarantee mechanism under the TPC regime tends to impose itself through institutional isomorphism, as the only tool for developing and monitoring labels (Djama et al., 2011; Fouilleux and Loconto, 2016). The commodification of organic agriculture labels generated by the TPC monopoly constitutes a threat to the future ability of communities to collect, improve and distribute this information.

First, TPC may be very expensive for small producers. Control and traceability requirements involve cumbersome, formalistic and costly procedures (forms and records must be kept up to date for each type of product), which requires a degree of skill. The bureaucracy involved generates masses of information, which is expensive to process. The cost of auditing includes the auditor's salary and travel expenses and depends on the number of products to be labelled on the farm (i.e. time spent auditing each type of product). Thus, monoculture production systems and the agri-food industries have a competitive advantage over diversified small-scale farming or artisanal production systems. Although the costs of TPC may exclude some participants, especially small-scale farmers who were pioneers of organic farming, this does not necessarily mean that they do not respect organic practices. It simply means that they are excluded from using the official nomenclature of the organic label. They are also excluded from public statistics and not eligible for public subsidies linked to organic certification.

Secondly, a system based on TPC is market driven: certification is a market service, a tool with a market value that serves a market function. This implies that certified producers do not cooperate (or not always and not necessarily); while organic farming has developed into networks and through cooperative practices. The dominant TPC system separates the different aspects of a label: the design of standards, the guarantee mechanism and the knowledge sharing. Thus, it limits the renewal of the resource, i.e the ability to improve the standard with regard to collective learning. For example, the last European revision of the organic agriculture regulation in 2017 (which will be applied only in 2021) very much depends on a few powerful stakeholders since producers who cannot afford to pay the costs associated with TPC have no say in negotiations (Cheyns, 2011)

3.3. Reclaiming the commons using participatory guarantee systems

To overcome the hegemony of the TPC system, some producers have turned to community-based certification system, such as Participatory Guarantee Systems (PGS), particularly for local markets and short distribution chains. In the statement drafted at the international workshop in Brazil in 2004 on alternative certification, IFOAM – Organics International defines PGS as "locally focused quality assurance systems. They certify producers based on active participation of stakeholders and are built on a foundation of trust, social networks and knowledge exchange" (IFOAM, 2008a) and summarises the common key elements of PGS: 1. shared vision, 2. participatory, 3. transparency, 4. trust "integrity based approach", 5. Learning process and 6. Horizontality (IFOAM, 2007).

This participatory and non-market certification is primarily based on peer-review assessment, involving producers from the community, who are considered capable of verifing compliance against the standard commitments. Unlike the TPC system[11], PGS also seeks to provide a framework for continuous learning process. Through peer reviews and regular exchanges, PGS aims to solve practical problems and create a permanent social exchange in a local community network in a given territory. According to the FAO, PGS are credible, relevant and constitute an economically accessible mechanism (Loconto et al., 2016).

PGS have developed in many countries because they are generally less costly than third-party certification and more appropriate for small local entrepreneurs. The IFOAM database has reported more than 127 operational PGSs (and 115 that are being developed) in 43 countries (IFOAM, 2017a). Overall, these PGS constitute a hundred of thousands of peer-certified producers. An increasing number of governments have taken measures to support PGS initiatives. Some recognize PGS as a means to verify organic agriculture practices (such as in Brazil and India). Latin America is the continent with highest PGS awareness. India is the leading country with regards to PGS, with hundreds of thousands of PGS certified producers, thanks to the government's PGS programme.

According to IFOAM – Organics International data, the annual growth rate of certified producers from 2016 to 2017 was +34%. In countries where PGS are recognized by the governments in the national organic legislation, the figures are particularly significant, for example: Bolivia with +21%, Brazil with +38.5% and India with +48%. Oceania territories have also seen a huge increase in the number of certified producers from 278 in 2015 to 1385 in 2017.

[11] According to the ISO 17065 accreditation standard, auditors cannot interfere by providing advice during the audit

Many recent empirical studies document the context and the logic underlying the development of PGS in different countries (Fonseca et al., 2008; Nelson et al., 2010; Cuéllar-Padilla and Calle-Collado, 2011; Blanc and Kledal, 2012; Whitney et al., 2014; Sacchi et al., 2015; Loconto et al., 2016; Home et al., 2017; Jansirani and Somasundaram, 2017; Kaufmann and Vogl, 2018; Loconto and Hatanaka, 2018; Montefrio and Johnson, 2019). Nonetheless, none examine how modalities for monitoring PGS vary across countries and initiatives. We propose an analysis of this diversity, by focusing on a panorama of ten initiatives. According to Ostrom's design principles, we seek to evaluate the factors that determine their effectiveness in terms of managing the resource.

In the following section we present the data used for our analysis.

4. Study methods and data

4.1. Choice of PGS initiatives

In this research, we selected ten well-developed operational PGS initiatives from all over the world, in the North and South, recognized (officially or not) by IFOAM: Nature et Progrès in France, Ecovida in Brazil, Certified Naturally Grown in the United States (US), Organic Farm New Zealand, the Asociacion Nacional de Productores/as Ecologicos in Peru, the Vietnam PGS, PGS India, Ngong Organic Farmer Association in Kenya, Good Market Organic PGS in Sri Lanka, and BioSPG du Conseil National de l'agriculture Biologique (Burkina Faso)(Table 1).

In France, Brazil, US, New Zealand and Peru, the initiatives studied emerged from local collective citizen action to develop or maintain non-market access to a guarantee system. They correspond to the first wave of PGS that emerged before 2004. As a result of IFOAM's work to define PGS after the international workshop on alternative certification in Brazil in 2004, many market-driven PGS initiatives have emerged in developing countries with the support of locally-based NGOs. The latter use PGS as a more suitable means for small producers to gain access to high value-added markets, higher incomes and improved livelihoods, by adopting organic agriculture. This market-driven PGS corresponds to a second wave of emergence, as seen in Vietnam, Kenya, Sri Lanka and Burkina Faso, for example. In India, following the first NGO initiative, the government is now supporting the development of a public PGS.

We used data from the PGS initiatives'websites, from IFOAM PGS documents (Newsletters over 8 years, various reports (IFOAM-MAELA, 2004; IFOAM, 2008b, 2013) and academic works (Martin, 2017 ; Emmenegger, 2019). In the case of Nature et Progrès in France, we used our own observations and conducted regular interviews with members of local groups and with the national

federation between 2014 and 2018. In the case of Ecovida, we collected data using semi-structured interviews between September and December 2018 (Niederle et al., 2019).

Table 1: The ten PGS initiatives studied

PGS name	Nature et Progrès (NP)	Ecovida	Certified Naturally Grown (CNG)	Organic Farm NewZeland (OFNZ)	Asociacion Nacional de Productores Ecologicos del Peru (ANPE)	SPG organic Vietnam	Ngong Organic Farmers Association (NOFA)	PGS India Organic	Good Market Sri Lanka (GM)	BioSPG du CNABio
	France	Brazil	United States	New Zeland	Peru	Vietnam	Kenya	India	Sri Lanka	Burkina Faso
Recognition by	IFOAM	Brazilian public authority	IFOAM	IFOAM	Some local governments	IFOAM	East African Organic Movement	Indian public authority	IFOAM	Burkinabe public authority
creation date	1964	1998	2002	2002	2005	2008	2010	2011	2013	2013
statut	association	associations network	association	company limited by guarantee	association	association	association	national agency	company limited by guarantee	association
adopted standard	private associative standard	public standard of Organic agriculture	public standard of Organic agriculture	private standard of a certification body	public standard of Organic agriculture	adapted version of IFOAM standard	East African Organic Products Standard	public standard of Organic agriculture	IFOAM standard and International standard for forest garden products	public standard of Organic agriculture
Driver	citizen-driven PGS	citizen-driven PGS	citizen-driven PGS	citizen-driven PGS	citizen-driven PGS/market-driven PGS	market-driven PGS	market-driven PGS	Gouvernement-driven PGS	market-driven PGS	market-driven PGS

A comparative analysis was conducted using the Ostrom design principles presented above (2.2). The underlying hypothesis is that these principles make it possible to identify governance flaws and to discuss the effectiveness and robustness of the collective initiatives as intellectual commons.

4.2. Presentation of PGS initiatives

- *Nature et Progrès* (NP) in France was one of the first PGS in the world. It is a pioneering organization of organic farming in France and Europe. The association was created in 1964 and has developed its own standard that has been recognized as part of the Family of Standards officially endorsed as organic by IFOAM since 2011. Nevertheless, NP producers are not allowed to call their products "organic" due to the third-party certification requirements established by the European Union regulations. In 2018, the national federation consisted of 31 local groups, bringing together 993 professionals under the label (farmers, processors and restaurateurs). Each local group also includes consumers. In 2018, 1069 consumer members were closely involved in the implementation of certification verification and decision-making procedures.

- *The Ecovida* network, officially created in 1998, is active in southeast Brazil and aims to promote agro-ecology. The PGS uses the Brazilian national regulations for organic agriculture. In Brazil, the PGS is legally recognized as a form of guarantee that is equivalent to the TPC for obtaining the logo and the national "organic agriculture" designation. In 2018, Ecovida included 2466 certified farmers organized into 300 local groups and 30 regional groups (nuclei). The network also includes 40 social organizations and 8 consumer cooperatives that take part in some farm visits and are involved in the decision-making committee at regional level.
- *Certified Naturally Grown* (CNG) in the United States was originally developed in 2002 as a label for organic farming, by and for small family farms selling locally. Although using US national organic regulation, it was initially constructed in opposition to the public label because participatory certification procedures are not allowed. Nonetheless, this alternative was less antagonistic than expected by public authorities. CNG may be perceived as a transitional label because it includes a status "in conversion", which is not proposed by the national programme, and because it only labels produce for direct sale. In 2016, 750 producers sold under this label in 48 states and 4 Canadian provinces.
- *Organic Farm New Zealand* (OFNZ) was created in 2002 as an alternative to the TPC for certifying small-scale organic producers who sold locally. In New Zealand, there is no specific legislation covering organic products (except for exported products). The PGS is based on a private standard belonging to the main certification body BioGro. The OFNZ device allows participatory certification for individuals and groups (pods) of at least three members. In 2018, the OFNZ comprised 130 certified producers organized into 12 regional groups.
- *Asociacion Nacional de Productores/as Ecologicos del Peru* (ANPE) was implemented in 2005 as sustainable alternative to guarantee the ecological quality. The PGS adopts the national organic standard. Although the regulation does not recognize PGS for using public label, the competent authority has promoted PGS in various regions and some regional authorities have officially recognized and supported PGS. In 2018, the PGS ANPE included 2488 certified farmers organized into 281 local groups and 20 regional groups.
- The *Vietnam Organic PGS* was established in 2008 with the support of IFOAM – Organics International and other NGOs. It was based on a preliminary public standard and has subsequently been adapted. Producers are organized in local groups. In 2018, the PGS included 320 producers organized into 53 local groups.
- *PGS India Organic* is a governmental programme from the National Centre of Organic Farming (NCOF). It was launched in 2011 after several years of preparation. It was developed in cooperation with the first PGS initiative, the PGS Organic Council, which appeared in 2007 with

support of local NGOs. *PGS India Organic* uses the national regulation, National Standards for Organic Produce (NSOP), developed in 2010. In 2019, the PGS comprised 372 475 farmers involved, with 13 369 local groups organized into 326 regional councils.

- *Ngong Organic Farmers Association (NOFA)* is an association in Kenya that was launched under the umbrella of Kenya Organic Agriculture Network (KOAN). The PGS was implemented in 2010 and is based on the East African Organic Products Standards (EAOPS)[12] and the use of a common logo East African Organic Mark (EAOM). In this system, the label is collective and the local association is also in charge of the collective sale of organic products in bulk (each member is free to sell directly to consumers). In 2013, the initiative included 47 farmers and 6 groups.
- *Good Market Organic PGS* (GM) in Sri Lanka is a market-driven PGS that was set up in 2013. It is organized by Good Market initiative, which aims to connect social enterprises and responsible businesses with consumers via a weekly market in Colombo, specific retailers and an online platform. For crops products, standards are based on the IFOAM Standard or the International Standard of Forest Garden Products, both approved in the IFOAM Family of Standards. Verification methods include PGS, as well as third-party certification. The GM PGS device allows participatory certification for individuals and groups of at least three members. In 2016, 113 farmers were certified through the PGS system. Consumers can also participate, by voluntarily taking part in farm visits.
- *BioSPG du Conseil National de l'agriculture Biologique* (CNABio), in Burkina Faso, is one of the first PGS in West Africa. It was established in 2013 but is really operational since 2 years. The PGS is a private standard "endorsed" by the government. The PGS device allows participatory certification for individuals and groups of producers. In 2018, 23 group sites were certified including 286 producers (72% of women) in 6 regions.

[12] "As of today, third-party certification uptake of the regional standard has been low, and hence PGS is currently by far the main means of verification for the EAOPS, with thousands of farmers involved in various PGS initiatives in the three countries."

5. Factors that determine sustainability and robustness in the institutional arrangements of PGS

In our analysis of the institutional diversity in PGS, we consider each design principle and examine how the PGS' characteristics and operational rules may affect the robustness and sustainability of the commons.

5.1. Principle 1: Boundaries of users and common-pool resources

Similar to many intellectual CPR, the limits between the users and the resources are fuzzy.

First, the limits for users' communities could be defined in terms of the geographical area to which the label applies. In most of our case studies, there is a national sphere of attribution, with the exception of the East African Organic Mark, which can be used in Uganda, Tanzania and Kenya[13]. The number of "direct" users of the label[14] , i.e. certified producers, primarily depends on availability of public authority support to PGS, but also on how long the organization has been operational.

Lastly, the limits of the resource itself depend on the legal context. With the nationalization of organic agriculture labels, a set of designations relating to the label often becomes state property: prefixes and suffixes such as "eco" or "ecological" may, therefore, be regulated by the organic legislation. In Brazil, and India, the national organic legislation allows PGS certified farmers to use the national logo and the "organic agriculture" designations. On contrary, in Europe where TPC is mandatory by the European organic legislation, PGS initiatives cannot use these terms and must refer to private marks, such as Nature et Progrès. Despite the fact that NP developed the first organic specifications in France and Europe in the 1970s, the French fraud department recently claimed that NP was wrongly using certain terms in its commercial communications. A legal battle is currently being waged with several other associations to protect their intellectual property rights over the intellectual common-pool resource. This incident clearly illustrates the ambiguities that exist regarding the limits of the resource. In Peru, while some local authorities recognized PGS, ANPE still struggles for legal recognition for using the public label. In the United States, the public regulation only allow very small farms (with a gross annual income below $5,000) to use the term "organic" without TPC (use of the logo is excluded). In New Zealand, the use of the terms "organic" is

[13] The East African Organic Products Standard (EAOS) is one of the three regional organic standards in the world, alongside the European Union and the Pacific Organic Standard. It is the second standard to have approved PGS schemes, through an inter-governmental body (East African Community and Pacific Organic and Ethical Trade Community, POETCom).

[14] Consumers and distributors could be considered as indirect users.

only regulated by the "Fair Trading Act", which prevents deceptive commercial claims. Vietnam[15], Sri Lanka and Kenya do not yet have effective national regulation on organic agriculture.

5.2. Principle 2: Coherence between the rules and the nature of the resources

We consider this design principle from two points of view: how the rules governing the use of a common resource are adapted to local needs and conditions; and how the distribution of costs and benefits is adapted in relation to the resource.

5.2.1. Rules-in-use of resource and local socio-environmental conditions

Among the PGS key elements (IFOAM, 2007), labels should strive to be specifically adapted to the participants' communities and to their ecological, political and economic contexts. This goal is a response to the recurring problems of consistency with respect to global standards, which are often ineffective because they are poorly adapted to local conditions {Vogl, 2005 #1451;Lemeilleur, 2015 #1426;Vandergeest, 2007 #1826}. The level of enforcement of standards is contingent on the fact that users themselves are involved in developing the standards to ensure that they correspond to the community's values and practices. In our sample, only the NP device actually developed its own standard with 15 product specifications, which were co-built and regularly revised by producers and consumer members (in the technical committee). The Vietnam PGS was initially based on the first national standard. Later, through a participatory process, it developed its own standard, which was included by IFOAM – Organics international in 2013 in its IFOAM. Family of Standards. The East African Organic Product Standard was developed through a participatory process supported by the UNEP-UNCTAD and IFOAM – Organics International to ensure it was adapted to conditions in East Africa. Some PGS use national standards as benchmarks, either because they are recognized under the national organic regulation (Ecovida, PGS India) or because it facilitates the transition from one certification system to another (CNG, ANPE). In the absence of a national standard, OFNZ refers to the most famous private organic standard from New Zealand. Only GM use directly the IFOAM standard.

5.2.2.Rules-in-use of resource and distribution of costs and benefits

PGS seek to keep labelling costs down by reducing the amount of paperwork and associated costs[16]. Costs generally cover the control visit and a certification fee for approved producers. Some systems try to allocate costs according to user benefits, whereby a variable cost is added to fixed costs. For

[15] The new legislation was voted in 2018, but requires an application decree.
[16] This also takes into account the fact that filling out forms is a very tedious task for many producers.

example, in NP, certification costs include a percentage of the producer's turnover (0.3%). The costs of NP certification (less than half of that of TPC systems) allow the group to pay their staff (at the national level) and cover other collective operating expenses (transport for visits, communication, advocacy, etc.). Nonetheless, the cost should also be assessed in terms of time. In NP, certified producers are expected to give a minimum of 2.5 days per year: one day to prepare the documents and host the control visit, one day to participate in a control visit for another producer and half a day for the local committee meeting (COMAC), which issues recommendations for the producer. According to OFNZ and CNG, certification costs are, respectively, 3 and 5 times cheaper than the TPC. In CNG, the amount was regularly reviewed to cover the cost of salaries following the sharp increase in the number of users in a short space of time. In GM, the certification costs vary according to whether the producer is an independent producer, a producer group member with less than 1 acre, a producer group member with more than 1 acre or has an urban home garden with less than 1 acre in the Colombo district. In addition, the total amount varies depending on farm location, since the farmer is responsible for paying the costs of the inspectors' transport and accommodation. In the case of Ecovida, Vietnam PGS, NOFA and CNABio, PGS costs are mainly financed by NGOs, especially for paying salaried staff. In both African cases, small contributions by producers are introduced on a monthly basis in order to better match their financial constraints. In India, the government bears the cost of the networking, controlling and monitoring, as well as data management. It also gives an annual subsidy for 3 years to farmers who join the PGS India programme and adopt organic farming. However, in many cases, producers must allow time for peer-reviewing, training (which may be compulsory), and participation in the PGS.

Therefore, the costs of PGS are reduced because PGS members do a large amount of voluntary work. The voluntary base is often a weak point. A lack of sufficient commitment undermines the sustainability of the system.

5.3. Principle 3: Monitoring principles

5.3.1. Monitoring the distribution of the resource for users: how labels are awarded

A PGS label is awarded according to the principles of participatory certification. In this section, we describe three steps for the certification: membership, peer-review and approval.

1) Membership

This process of entry into certification is almost identical in all PGS: the producer begins by applying for membership, with a description of the farm and farming activities, and generally signs a pledge

to respect the principles and values of the organization. Except for CNG and in one of the two certification options for GM and OFNZ[17], farmers are usually assigned to a local group. CNG and GM initiatives use an online self-assessment before the first visit. In developing countries, enrolment generally starts with collective training programmes supported by NGO to help producers improve their practices (ANPE, Vietnam PGS, NOFA, PGS India, CNABio).

2) Peer-review

PGS agree that farm evaluation should not be conducted by the farmer himself (self-evaluation). However, they consider that peers and their communities are capable of measuring compliance with commitments, especially since peers and communities keep watch on their neighbours' activities on an ongoing basis. The PGS peer-review system reflects this principle. While PGS design differ (Box 2), they share certain characteristics: annual control[18] during a significant production period, with a non-reciprocal inspection cycle (A visits B who visits C who visits A). Control visits to the producer are generally planned in advance so that the latter can prepare the inspection (e.g. plot plan and invoices). Inspectors may be elected (internal inspection committee) or appointed on a voluntary basis with rotation from one year to the next, or randomly selected. Inspectors use forms or guidelines as a reference when conducting the control. Inspectors are officially required to declare any conflicts of interests (close relatives, friends, in-laws), in which case, they cannot take part in specific visits. Unannounced visits are also organized when there is doubt about a farm.

In the case of NP, inspection is carried out by at least two members of the local group, a producer – who oversees the technical aspect of the visit— and a consumer – who ensures the impartiality of the visit (Figure 1, Box 2). If there are no local groups or producer members in the vicinity, employees in the label's national management department may have to conduct the control visit. As farms are often very diversified, detailed inspection can take a long time. Indeed, beyond inspecting invoices for inputs purchase, it involves recording and inspecting on the field all the practices pertaining to each cropping and livestock system, processing and sales activities. Some local groups may decide to investigate some of the farming activities one year and alternate with the evaluation

[17] The second option requires certification by a cluster of at least three members.

[18] In the case of NP, inspection could take place every 2 years for producers, who are also certified by TPC for the public label. Nevertheless, they pay for the NP label every year. More than half of NP producers also use the public label. In both cases of NOFA and ANPE, inspection is twice a year.

of other activities the following year. The NP label states that the whole farm must respect the standard[19].

Box 2: Diversity of peer-review approaches in PGS

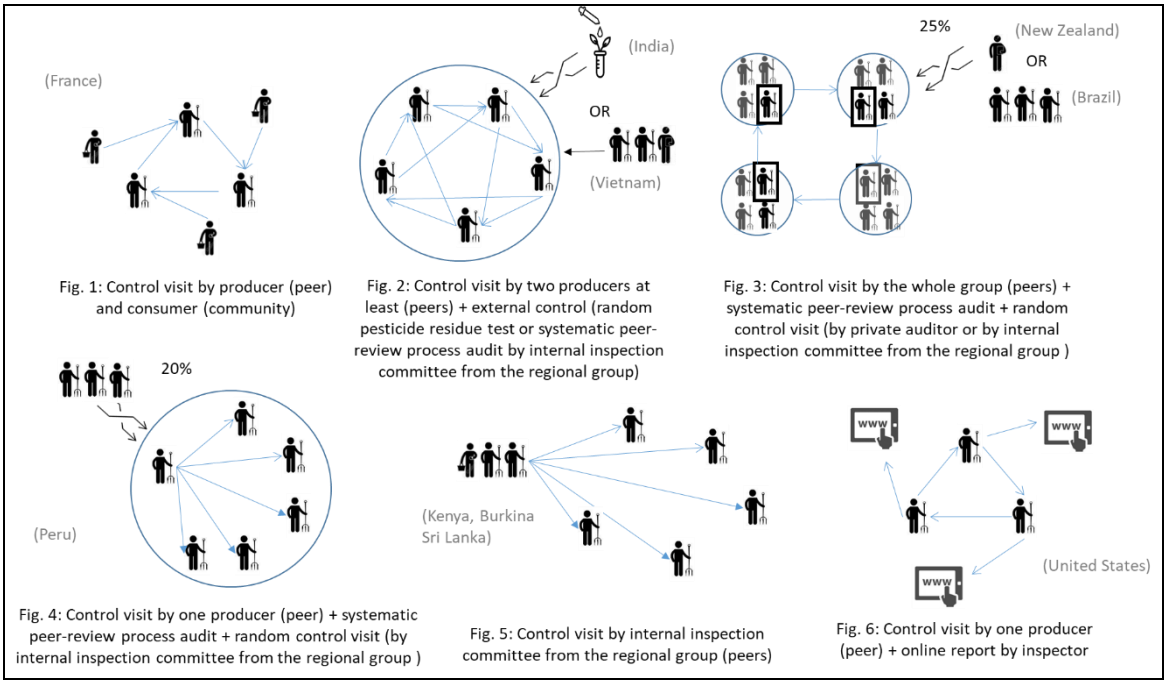


Fig. 1: Control visit by producer (peer) and consumer (community)

Fig. 2: Control visit by two producers at least (peers) + external control (random pesticide residue test or systematic peer-review process audit by internal inspection committee from the regional group)

Fig. 3: Control visit by the whole group (peers) + systematic peer-review process audit + random control visit (by private auditor or by internal inspection committee from the regional group)

Fig. 4: Control visit by one producer (peer) + systematic peer-review process audit + random control visit (by internal inspection committee from the regional group)

Fig. 5: Control visit by internal inspection committee from the regional group (peers)

Fig. 6: Control visit by one producer (peer) + online report by inspector

Ecovida, ANPE, Vietnam PGS, PGS India, pod and group options for OFNZ and GM function with an Internal Control System (ICS)[20] based on peer-review. In ICS of Vietnam PGS and PGS India, each farm that belongs to the group is visited by rotating peer-review, which includes at least two or three other peers from the group, without reciprocity (Figure 2, Box 2). In ICS of Ecovida, OFNZ and GM, each farm is visited by the whole group (Figure 3, Box 2). In ICS of ANPE, Peruvian producers are visited by only one qualified and elected inspector (Figure 4, Box 2). To reduce the risk of group collusion in ICS, there is additional inter-group controls: In the Vietnam PGS, the peer-review process is controlled by three members of the internal inspection committee; in PGS India, random pesticide residue tests are conducted by the regional council; peer-review process and random control visits are conducted on 25% of farms by a private auditor for OFNZ and for GM, on 20% of farms by three elected members of the regional group for ANPE, while in the case of Ecovida, the figure

[19] Conversely, the European public label requires annual inspection for all activities that are to be certified, but allows mixed farming (wherein only the production method of a specific product to be certified complies with the specification).

[20] ICS is also a requirement for group certification in TPC. Nonetheless, group certification concerns farmers who grow the same produce and receive a collective certificate for collective marketing. In this case, ICS is generally carried out by a technician, who is paid by the group and not by peers.

corresponds to the square root of the number of producers in the regional group and are conducted by three members of the internal inspection committee.

In the NOFA, CNABio and the individual option within GM, all farm visits are conducted by an internal inspection committee of at least three members, appointed by the PGS management committee (Figure 5, Box 2).

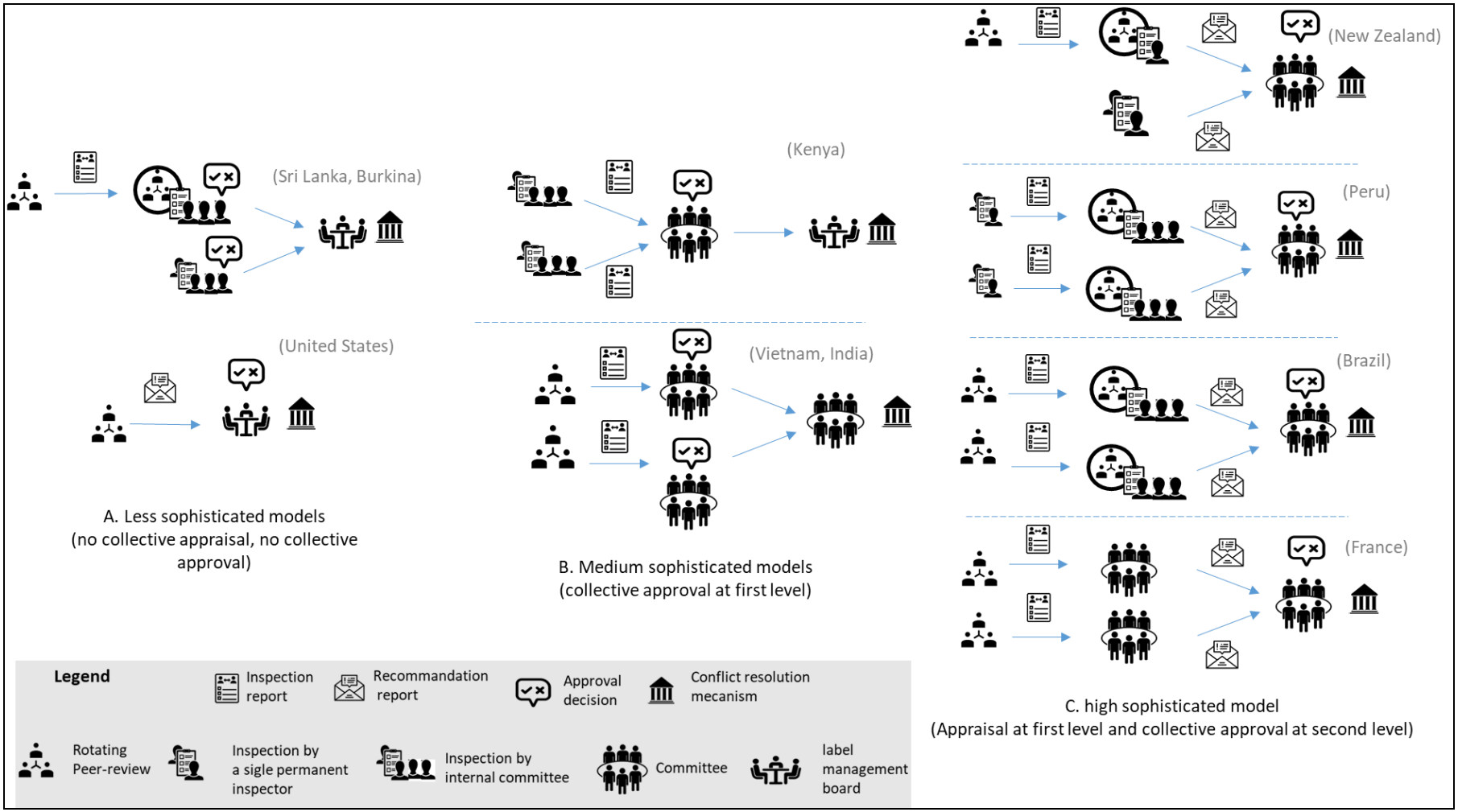
In CNG, a single peer conducts the review. The CNG programme establishes a cycle of inspection without reciprocity, between producers in the same regions. If producers are too far away (which would entail excessive inspection costs), inspection may be carried out by an extension agent or a producer certified by the public label (recognized by the USDA), who does not belong to the PGS. The inspection report and the inspector's name are then posted online[21], which means the inspector's reputation is at risk (Figure 6, Box 2).

The producer interviews revealed that when regular and informal communication occurs within a group, it is easy to see whether a producer genuinely adheres to a label's values. On a moral and practical level, it is harder to deceive someone, who is also striving to achieve a common quality, than to deceive an anonymous auditor, as in the TPC. Nevertheless, it is important not to underestimate the fact that inspection of members by members can generate serious intra-community tensions. This is often expressed by PGS members and is inherent to collective action.

In addition, control visits in many PGS only involve producers. The systematic presence of consumers in NP is remarkable from this point of view. In the Ecovida case, farm visits by communities (consumers, etc.) were also very common, in addition to the peer control visit.

[21] CNG's management programme is essentially managed online: reminder e-mails are regularly sent to members to review new registrations or to conduct inspections. Reminders cease when files are processed and when the summary report for inspections has been received.

Box 3: Diversity of governance in PGS (approval, nested layers, conflict resolution mechanism level)



3) Approval

In less sophisticated PGS models, there is no collective appraisal or approval for certification (Figure A, Box 2). In cases of GM, CNG and CNABio, the decision to approve a farm and to award the label is taken at the label's national management level, following the main inspector's recommendations. While less sophisticated models are easier to apply when producers are distant from each other or in emerging PGS, they are not conducive to knowledge exchanges and participatory democracy.

Many PGS are more elaborate and recommendations for certification do not simply depend on the inspector. Commissions are often formed to decide on the outcome of control visits. Frequently, consumers or other non-producer members are involved at this level (NP, Ecovida, ANPE, Vietnam PGS, NOFA).

In the medium sophisticated model (Figure B, Box 2), the decision for approval is taken at the first collective level (PGS India, NOFA). Knowledge exchanges and participatory democracy are respected, but conflicts of interest may occur if the decision to approve a farm is left to the actors that conduct control visits. The use of conflict resolution mechanisms is also managed at this level.

In the most sophisticated models (Figure C, Box 2), after all control visits have been completed, a recommendation is proposed collectively, during a local commission. The final decision is the responsibility of a second level committee (Ecovida, NP, ANPE). The two-tier organisation avoids conflicts of interest.

5.3.2. Monitoring the state of the resource: resource renewal and maintenance of facilities

The PGS aims to foster a continuous learning process among producers in order to improve production practices, through interactions between producers in the group. When the communities hold the property rights pertaining to the resource, the commons may be enriched by improved practices through direct user participation.

In the NP device, this enrichment results from knowledge exchanges within groups and during control visits, as well as from formal improvements made within the national technical committee in charge of coordinating the revision and consistency of product specifications. Revision can be a lengthy process and may require on-farm trials. When the committee considers that a new specification is ready for approval, the General Assembly votes to validate it.

In the PGS Vietnam, group interactions led to the emergence of a new repository between 2008 and 2013, adapted from the public repository. In the other cases studied, the reference system used is independent of the PGS.

In practice, it could be sometimes difficult to involve all members in training activities or to ensure that all producers interact with each other, especially when the physical distances between them are important. The CNG in the United States, for example, uses an online forum to overcome this.

5.4. Principle 4: Governance activities organized in several nested layers

Generally, PGS initiatives are organized into local groups (except for CNG and GM), which coordinate control visits, manage practical training, administration and local communication. They correspond to a geographical area, which allows for regular interactions. Group sizes vary, for example: from 8 to 67 producers for NP; around 10 families in a village or nearby villages for Ecovida; a neighbourhood with 3 to 8 farmers for OFNZ; at least 6 farmers for ANPE; at least 5 farmers for Vietnam; around 8 farmers for NOFA; at least 3 farmers for PGS India and GM, and 8 to 30 producers for CNABio. Generally, there is no restriction on the size of any individual farm holding. However, in ANPE, PGS includes only family farms. In India, the holding of a single member should not exceed one third of the total land held by the entire group. In PGS Vietnam, local groups gather producers who share the same cropping system and own less than 5 hectares.

We highlight above (box 3) that the decision to approve a producer is sometimes made during the control visit or at the local group level, and in some cases, it is made at a higher organizational level. In all cases, the larger organizations are responsible for inter-group coordination, as well as for creating support documents and tools guidance or advocacy.

Nested governance may involve bodies that are external to the initiatives namely when PGS are recognized legally. For example, in Brazil PGS accreditation is carried out through the OPAC (Organismos Participativos de Avaliação de Conformidade Orgânica) by the Ministry of Agriculture. In India, regional councils are under the umbrella of the National Centre for Organic Farming, which depends on the Ministry of Agriculture.

5.5. Principle 5: Access to collective choices

Proponents of PGS advocate a “horizontal” governance structure (IFOAM, 2007). Access to collective choices also raises the important question of transparency in the decision-making process, a fundamental criterion in the definition of PGS. Transparency requires the provision of basic documentation concerning the label’s objectives and the PGS’ rules and regulations. This

information is accessible to any interested partner, for example via websites or through local groups. In most PGS, annual general assemblies are generally organized and allow members or local group representatives to participate in collective deliberations (NP, Ecovida, OFNZ, NOFA). Active participation is intended to create a sense of responsibility and greater autonomy for everyone involved. PGS India is supposed to be non-hierarchical at local group level, with shared and rotating responsibility. Nonetheless, advanced procedures in terms of participatory democracy do not seem to be a feature at higher governance levels. Lastly, in some cases, the transmission of leadership to members of local groups can be tricky (lack of producer capacity, low NGO inclination to delegate, etc.).

5.6. Principle 6: Conflict resolution mechanisms

Conflict resolution mechanisms are essential to the smooth functioning of PGS. The NP device is quite sophisticated and very democratic. When a producer or consumer disagrees with the local committee (or in the absence of an agreement), the federal committee is consulted. The Federal committee is composed of one representative from each local committee, plus one board member and one employee (facilitator). After consulting each committee representative on the contentious case, the facilitator of the Federal committee synthesise the different opinions and expresses a final opinion. All federal committee members are then consulted once more on the latter. If there is no objection to the proposal, it is validated. In Ecovida, OFNZ, ANPE, NOFA and PGS India, conflict resolution is assigned to a committee at regional group level. In other cases, conflict resolution mechanisms are not necessarily collective and do not involve users' representatives (CNG, Vietnam PGS, GM and CNABio). In all cases, conflict resolution mechanisms are rapid and relatively inexpensive, compared to legal court proceedings.

5.7. Principle 7: Graduated sanctions

PGS key elements (IFOAM, 2007) include confidence. By consequences, contrary to TPC, where the producers are "guilty before proving to be innocent", in PGS, producers are "innocent before proving that they are guilty". With this paradigm shift, when a producer has failed to fully meet standards, peers and communities collectively strive to seek solutions to improve the problem. Thereby, in all of the PGS studied, sanctions are generally applied gradually and depend on the degree of non-compliance: product downgrading, warning, temporary suspension until the next inspection in the case of major non-compliance or repeated minor non-compliance; long-term

suspension or permanent exclusion from the label in the case of obvious fraud[22]. Additional controls are often scheduled for farms considered at risk.

5.8. Principle 8: Minimal recognition of rules by external governmental authorities

The PGS are generally not well known and lack recognition outside their communities. IFOAM – Organics International plays an important role in the international recognition of the diverse PGS. In 2010, it launched a logo for all organizations recognized by the IFOAM as members of the international network (NP, CNG, OFNZ, Vietnam PGS and GM). The FAO has also been proactive in supporting this form of certification in developing countries because it is a suitable alternative for small producers (Loconto et al., 2016)

The large number of PGS-certified producers in some countries, particularly in Latin America, can be explained by the local dynamics related to the PGS' legal status (Fonseca et al., 2008). Thus, like Brazil, a pioneer in recognizing this guarantee system, Bolivia, Mexico, Uruguay, Chile, Paraguay, Ecuador, and Costa Rica accept PGS as a system to guarantee organic farming. Outside Latin America, PGS have also gained official recognition in India and French Polynesia and New Caledonia. Conversely, the lack of public recognition for PGS certification in many countries weakens the position of peer-certified producers: they are not eligible for public aid for organic agriculture and there are excluded by public buyers, such as school canteens, administrations, etc

[22] For example, in NP in 2017, out of 850 farm visits, there were eight product downgrades linked to a lack of guarantee for an input/ingredient used, seven warnings for repeated failure to improve, one temporary suspension for major nonconformity (unauthorized treatment) and two permanent withdrawals: a farm where mixed farming was tolerated already for 5 years; and a farm that failed repeatedly to implement mandatory improvement.

6. Discussion on the comparative analysis and conclusion

Organic farming movements are now much more than a niche market. Their labels are known and recognized by many consumers, producers and citizens. While most labels are in the public domain, i.e. they belong to the state, the ideas and definition of the principles that they uphold are the result of the accumulation of knowledge generated by local and international epistemic communities that strive to improve the environmental dimension in agricultural practices. By this origin, but also because labels are open and used by producers in an interdependent way, i.e. the behaviour of individual producers can influence the quality of the resource, we consider that organic labels are systems of intellectual common pool resources.

The shift from a community ownership system to a public ownership system may generate a number of threats to this resource: new guidelines identify who can benefit from the label and who participates in the resource maintenance and renewal. This change is based on the idea that the state is better able to protect the resource, by delegating a significant part of the monitoring activities and responsibility to a private certification body. The regular fraud identified by state services show that TPC is by no means a panacea {DGCCRF, 2019 #1825}.

To overcome the hegemony of the TPC system, producers have turned to community-based certification systems, such as PGS. In this article, we examine PGS, which are more inclusive than TPC, and strive to show how effective and robust they can be. We suggest that a PGS, as a collective device consisting of a set of rules and rights, and the label it promotes can be considered as a commons: the intellectual common resource is governed by a community in charge of its production and management. Through an ongoing learning process, PGS participants may also contribute to the renewal of the resource, by improving practices in organic agriculture. The conceptual framework proposed by Ostrom and Hess (2007) for intellectual commons provides new perspectives for understanding how shared resources, in this case PGS-managed labels, are managed.

In resource management, active user participation is widely recognized as a determining factor for the successful governance of common-pool resources. Hess and Ostrom (2007) add that “When resources that were previously controlled by local participants have been nationalized, state control has usually proven to be less effective and efficient than control by those directly affected.” Nevertheless, in this paper we have not attempted to measure PGS performance. Instead, we have endeavoured to describe the institutional diversity of PGS and to discuss the effectiveness and robustness of collective initiatives as a commons.

In our comparative analysis of ten PGS initiatives, we show that the common resource is not limited to the reputation and the economic advantage that labels offer to peer-certified producers. Indeed, the common resource also includes knowledge exchange and renewal, which results from interactions between various stakeholders in the PGS. As a whole, these organic movements also contribute to the renewal of the global common resource for organic farming, by providing a channel for producers to express themselves and share their local experience. Without having the monopoly since there are other professional networks around the organic farming, knowledge exchanges between producers are a PGS strong point. In developing countries, PGS constitute a novel form of peasant organization. Lastly, various methods are used to control and award labels. We show that, in addition to the peer-review process, other mechanisms are often used: social inspection mechanisms (e.g. observations by neighbours, farm visits by the community), random control visits by an external committee, random residue tests or the online reputation of inspectors. While the credibility of the guarantee system is essential for the PGS, the analysis has shown that PGS systems could be relatively well designed when it comes to limiting free-riding and fraud (non-reciprocity, rotating, cross-control among groups, etc). Moreover, it is more difficult, both morally and practically, to trick someone who, like the producer, is also striving to achieve product quality, than it is to cheat an anonymous auditor conducting an annual inspection. Participant observations have revealed that producers are often over-zealous regarding compliance. According to Axelrod (1986), “meta-norms” are sometimes implicitly adopted by individuals, who observe that others follow norms in a group, which, in turn, increases the likelihood that norms will be followed. In Ostrom’s view (1990), local monitoring by producers is a very effective strategy for ensuring trust within the community. The proximity between the “offender” and the “monitor” permits the implementation of graduated and adapted sanctions that reinforce bonds of trust and community values. In addition, Cardon and Levrel (2009) highlight that individuals participate more readily in the production of a common-pool resource when they also have the power to monitor and sanction punish other members of the community. The growth and size of the different PGS studied and the fact that the number of PGS in the world is growing suggests that they are effective systems.

The design principles, which usually determine good practice and enhance the success of the commons, seem pertinent for our analysis. They are relatively well respected in the cases we studied. Nonetheless, they also revealed some weaknesses across PGS design. PGS are not exempt from criticism and are also subject to operational crises. We identify a number of recurring flaws that could undermine PGS and threaten the sustainability of collective action. First, while PGS

certification is significantly cheaper than TPC, in return, producers and other stakeholders have to spend time doing group work and many tasks depend on voluntary work. The importance of voluntary work for the smooth functioning of the PGS can be problematic. In addition, all the PGS studied require employees or NGO support. Nonetheless, when a PGS depends entirely on an NGO for technical or financial support, problems may arise in relation to the autonomy of the commons. Second, we highlight cases where decisions are still quite centralized. According to Ostrom and Basurto (2011), it is essential that "actors affected have some voice in proposing rule changes and making decisions about rule changes". However, participative democracy is not a spontaneous governance system and needs time, pedagogy and strong collective rules for successful implementation. Third, the tensions inherent to collective action mean that some producers prefer the merchant system of TPC. Fourth, Ostrom (2010) highlights the importance of face-to-face communication in their research on the success of the commons. Thus, with models which are based essentially on Internet exchanges, maintaining trust may be problematic. The further away producers are from each other, the more difficult it is to discern the reputation of new members. Lastly, perhaps the PGS' main weakness lies in their low level of legal recognition. PGS have existed for years, but are still only legally recognized by a dozen states in the world. Recognition would allow producers to widen their potential range of buyers to include specialized stores or public bodies and to access public aid for organic farming.

To conclude, our results show that PGS may be considered as an alternative, useful and complementary control process for organic labels. PGS avoid the exclusion of a large part of the core community from the organic market and encourage the robust renewal of the common-pool resource. While continuous improvement of management processes is essential for the sustainability of these systems, this perspective is present in almost all PGS studied. However, achieving recognition for these commons will take time. It calls for a shift in the beliefs and economic representations that are disseminated in different national and transnational arenas of standardization.

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