Comparing apples and oranges

The role of private standards in fostering sustainability objectives in the fruit and vegetable sector.

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Abstract

Certification schemes are increasingly adopted as a form of private governance in order to achieve sustainability objectives in the environmental, economic and social sphere. Private standards including certification have emerged in the fruit and vegetables sector as well. However, research into the effectiveness of private standards for fruit and vegetables is limited. This research therefore contributes to the scientific literature by examining the extent to which private international standards for fruit and vegetables can be effective in the fostering of sustainability objectives. Triangulation including systematic literature review, expert consultation and content analysis has been used to explore the conditions for effective governance of sustainable fruit and vegetable production and to examine the extent to which these conditions are met by the selected standards for analysis. The four private standards chosen for analysis are Global G.A.P., Rainforest Alliance, Fair Trade and Fair for Life. First of all, the results show that important conditions for the evaluation of effectiveness are (i) problem structure (ii) stringency (iii) audit quality (iv) access to decision-making process (v) uptake and (vi) capacity building measures. Besides, experts attach great value to the public accessibility of the audit reports and set little store on the prior existence of public regulation. The findings furthermore demonstrate high quality of the audit of the four organisations, stringent standards and inclusion of capacity building measures. Shortcomings can for one thing be found in access to decision-making processes, which are overall rather low due to a large orientation on Northern and business actors. Secondly, uptake of the selected standards is rather low and shows the inclusion of mainly large farms in developed countries. The exclusion of small-scale farmers reveals a main caveat for the organisations, whereas capacity building measures could contribute to the alleviation of this problem. Additional research into this relationship could increase the effectiveness of private standards in the future. For now, the private standards for fruit and vegetables show promising potential for fostering sustainability objectives, whereas research into the direct effects of private standards can provide an ultimate assessment about the effectiveness of private standards.

Key words: Effectiveness - private standards - fruit and vegetables – smallholders – capacity building

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1.Introduction

1.1 Problem description

With the increasing global population, food production has become more and more industrialized and, in many cases, less and less sustainable. Globalized industrial food production has been known to have various negative effects on both nature as well as people. Deforestation, biodiversity loss and land use change are only some examples of the consequences of increasing global food demands (Ritchie & Roser, 2020). Besides environmental consequences, working conditions are often poor and benefits are not equally divided along the supply chain (FAO, 2020). Supermarkets are still the largest profiteers, whilst (small-scale) farmers barely receive minimum wages (Vagneron & Roquigny, 2011). The need for sustainable food production is inevitable and governments have started adopting regulatory approaches. These attempts include national legislations and international environmental agreements (Tröster & Hiete, 2018). Next to public regulations, which are often forms of hard laws, private initiatives in the form of soft laws have emerged as well. For several decades, one of the most common approaches of private initiatives is the use of standards, aiming at fostering sustainability objectives by the use of labelling and certifications. Certification schemes are voluntary in nature, making them reliant on market forces and public scrutiny for the exertion of pressure on the target group (Kalfagianni & Pattberg, 2013a). Apart from the voluntary nature of certification schemes, they are generally privately governed. The schemes or standards are formally independent of governments (Kalfagianni & Pattberg, 2013a; Tröster & Hiete, 2018). In this private sector, there can be several kinds of stakeholders that find each other in the need for sustainability initiatives in a particular sector, like civil society organisations or international corporations. The latter is the case with Global G.A.P. for instance, that was created by European retailers. In the last decades, many other private international initiatives have developed as well in various product sectors, like the Forest Stewardship Council (wood), 4C (coffee), UTZ certified (cacao) and Marine Stewardship Council (fish and aquaculture). Some important standards in the field of agriculture, including fruit and vegetables, are the Rainforest Alliance, Fair Trade and Global G.A.P. Despite the substantive efforts that these and other sustainability standards take to tackle the negative environmental and social effects of agricultural production, studies have not always been able so far to directly link positive impacts to the implementation of the standards and if so, results are considered moderate (Bray & Neilson, 2017). This research will examine the conditions under which international standards can be effective in striving for sustainable development and analyse the extent to which these criteria are met within international standards for

agricultural products including fruit and vegetables. The research question that will be leading this study is as follows:

"To what extent can private international standards for fruit and vegetables be effective in fostering sustainability objectives?"

This research question implies that only the potential of international organisations will be evaluated by the development and analysis of indicators derived from scientific literature. A final evaluation of effectiveness would have to include impact assessments in the field as well. This study however, evaluates effectiveness in an indirect way, by analysing the following conditions of agri-food governance; (i) problem structure (ii) stringency of the standards (iii) quality of the audit (iv) access to decision-making processes of the standards (v) uptake of the standards (vi) contribution to capacity-building measures of the standard. Through this analysis, the goal is to find a conclusion on the realistic potential of certified fruit and vegetables and identify possible shortcomings in the current standard-setting processes for fruit and vegetables.

1.2 Societal relevance

In order to contribute to sustainable and inclusive development, more and more certification schemes have emerged in the last decades for all kinds of products, including fruit and vegetables. Examination of the effectiveness of these sustainability certification schemes for fruit and vegetables is of high societal relevance for several reasons. In the first place, many different actors are involved in the process of sustainability certification (Jawtusch, Oehen & Niggli, 2011). The supply chain of fruit and vegetables is particularly long, covering many different stages and often different locations. Many actors in this supply chain hope to gain from certification and can benefit from an analysis of the actual effectiveness of certain schemes. Some of these actors are producers who are considering obtaining certification, retail managers who decide what products are being purchased and consumers deciding to buy certified products. Certification schemes partly rely on the end consumer's behaviour, but also anticipate on their goodwill to contribute to a more sustainable world. The product label implies the initiatives' contribution to this goal, so a certain level of trust and legitimacy is appropriate. If effectiveness of these initiatives turns out to be rather low, the process of certification is rather meaningless. Therefore, insight into the potential contribution of sustainability initiatives would be advantageous.

Besides, even if customers have a high willingness to pay higher prices for certified products, information about different certification schemes appears to be limited and

ambiguous (Lenderink, 2011; Van Vark, 2016). This comes next to the fact that impacts of certification schemes are not always positive (Bray & Nielson, 2017; Kalfagianni & Pattberg, 2013; Kalfagianni & Fuchs, 2011; van der Ven, Rothacker & Cashore, 2018).

In consideration of the dubious results of sustainable standards and the increasing demand of consumers for clarity, research into the effectiveness of standards for fruit and vegetables is highly relevant.

1.3 Scientific relevance

Scientific literature about the effectiveness of sustainability standards is often focused on other common certified products like coffee (Bray & Nielson, 2017; Dietz et al., 2019; Rueda & Lambin, 2018), palm oil (Morgans et al., 2018; Von Geibler, 2013) and wood (Auld et al., 2008; Gulbrandsen, 2005; Schlyter, Stjernquist & Bäckstrand, 2009; Van der Ven et al., 2018). There is a limited amount of studies into standards for fruit and vegetables. When studies do investigate these standards, they often investigate the impacts of individual standards for a specific target group or in a specific area (Becchetti & Constantino, 2008). This kind of case study analysis, however, is unable to compare different standards. The study of Tröster & Hiete (2018) adds to this argument that only limited scientific literature exists that examine comprehensive patterns in the field of certification schemes (Tröster & Hiete, 2018). This research contributes to the scientific literature by filling the knowledge gap concerning comparative and comprehensive analysis of the effectiveness of standards. It does so by evaluating the effectiveness of several standards simultaneously in an area with limited research, that is fruit and vegetables.

In consideration of former studies into the effectiveness of certification schemes this research is of significant scientific relevance as well. One of the fields in which many studies into the success of certification have been conducted is sustainable forest management (Auld, Gulbrandsen, McDermott, 2008; Ebeling & Yasue, 2009; Gulbrandsen, 2005; Schlyter et al., 2009). Forest certification schemes have existed for several decades, but despite its relatively long life span and large amount of studies, the conclusion often has to be drawn that the direct effects of forest certification are unknown (Visseren-Hamakers & Pattberg, 2013). Unfortunately, the same applies to other first-generation certification products, like coffee or cacao (Bray & Nielson, 2017) to prevent this from happening for this more recent form of certification for fruit and vegetables, research into its potential is of great relevance.

The structure of the paper is as follows. The paper will commence in section 2 by giving a description of the most important concepts in this research that are sustainability standards, effectiveness and its measurement in section 2. It will proceed by providing the key and sub

questions, the strategy used for answering these questions and an introduction of the selected international standards in the agricultural field in section 3. Subsequently, the findings of the study will be presented in two stages. First, a framework drawing on scientific literature and expert consultation concerning conditions for effective governance is proffered, whereupon the analysis of the fulfilment of these conditions for international standards for fruit and vegetables follows. The theoretical implications and suggestions for future research will be discussed in the next section, after which the conclusion will end the paper in section 6.

2. Theoretical framework

In this section, the emergence and concept of certification schemes will be considered. The concept of effectiveness is discussed including findings of former research into the effectiveness of international standards.

2.1 Standards and their certification

Sustainability issues and initiatives to tackle them have existed for over a long time. The actors making efforts to address these problems however have changed. 40 years ago, it was mainly states and intergovernmental organisations trying to resolve sustainability problems. Nowadays, civil society and business actors have entered the governance field in the form of private standards and certification schemes. Private governance is characterised by little or no direct involvement from governments, governmental agencies or intergovernmental organisations (Kalfagianni, 2020). The voluntary nature is often another characteristic of private forms of governance like certification schemes, which distinguishes them from mandatory legal requirements or so called 'hard laws' (Tröster & Hiete, 2018). Some authors state that private actors are preferable over public actors because effectiveness of the governance is increases by the fact that they bring in knowledge and resources that state actors lack (Biermann et al. 2009; Chan and Amling, 2019; Hsu et al. 2016; Jägers & Stripple, 2003). Sometimes, private governance initiatives even emerge after a lack of or inadequate action by states, as happened in the case of the Forest Stewardship Council. This certification scheme was created by environmental protection organizations who perceived the outcome of the Rio the Janeiro Earth Summit as unsatisfactory (Tröster & Hiete, 2018). Increased concerns of society and consumers about social and environmental aspects of the organisations they are buying their products from, have contributed to the development of private governance forms as well. Public scrutiny, market forces and danger of losing credibility with consumers drive private initiatives towards sustainability benefits and are supposed to increase effectiveness over that of public actors (Kalfagianni, 2020; Mori Junior et al., 2016). Three main forms of private initiatives exist, that are corporate social responsibility (CSR), Code of Conducts (CoC) and private standards. This paper deals with the last form of private governance, that is private standards. The International Trade Center has estimated the number of voluntary private standards between 450 and several thousand in 2016 (Henry & Pechevy, 2017). The three most common sectors liable to certification schemes are aquaculture, forestry and agriculture (Tröster & Hiete, 2018). Examples of well-known labels include the MSC label for certified sustainable seafood, the FSC label for wood from well-managed forests and the Fair-Trade label for sustainable coffee or cacao. The agri-food sector is according to Kalfagianni & Fuchs (2011)

indeed one of the domains in which private standards are rapidly increasing. As aforementioned, two sets of private actors are of particular interest in this field, business actors and civil society organizations. These actors are not only influencing the governance of food and agriculture but are as well 'creating' it, as can be seen again in the existence of several private standards which are business or civil-society led (Kalfagianni & Fuchs, 2011). An example of a business-led standard is Global G.A.P., that was introduced by European retailers mainly to improve food safety for producers, retailers and consumers (Kalfagianni, 2020; Liu, 2020). Examples of standards in the non-profit sector include Fair Trade, IFOAM Basic Std and the Rainforest Alliance (Kalfagianni, 2020; Liu, 2020).

In sum, recently, many standards have been brought into life as a result of unsustainable practices in several sectors and aim at resolving a large variety of issues. In the sector of fruit and vegetables, the sustainability objectives covered are diverse in character, including both social as well as environmental and economic aspects. Chapter 3 will go more deeply into the sustainability objectives of private standards for fruit and vegetables.

Common agricultural products that have become the objective of sustainable initiatives are tea, coffee, cotton and cocoa (Liu, 2009). Additionally, sustainable initiatives have emerged for fruit and vegetables. Standards, their certifications and labels have gained importance in order to standardize in certain sectors and also to expose the meaning of these initiatives in a simplified manner to the customers. Standards are defined by the International Organization for Standardization (ISO) as "… documented agreements containing technical specifications or other precise criteria to be used consistently as rules, guidelines or definitions to ensure that materials, products, processes and services are fit for their purpose." (Dankers, 2007. p. 15). Standards' purpose is mainly twofold; standardization and as guidelines. However, standardization is not the main purpose for agricultural products, whereas agricultural standards are mainly introduced in order to improve food quality and safety as well as social and environmental sustainability in the various systems involved in the value chain (Dankers, 2007).

Frequently, certification is a part of the standard, which is considered an important form of communication along the supply chain, mainly between the seller and the buyer. Certification involves the assurance of a devoted third party for a certain product, process or service being in conformity with the standard (Dankers, 2007; ISO, 2020). In other words, put by Barry et al (2012) certification is used as a means to provide a guarantee that a product complies with specific criteria (Mori Junior, Franks & Ali, 2016).

In order to expose the compliance with a standard to the end consumer, certification labels are part of the standards as well. Usually, a standard-setting body controls the use of the

label. The use of a certification label is mainly in order to facilitate end consumer purchase choices (Dankers, 2007).

2.2 Effectiveness of standards

To evaluate effectiveness further onwards in this paper, it has to be clear what is meant by this concept. One of the founders of the concept of regime effectiveness is Underdal (1992), who states that institutional effectiveness is achieved when the problem that motivated the creation of the institution is solved or alleviated. In a later state, this has sometimes been renamed to problem-solving effectiveness which exists next to other forms of effectiveness (Tikina & Innes, 2008; Tröster & Hiete, 2018; Young & Levy, 1999). Effectiveness is then considered a function of goal attainment, behavioural effectiveness, constitutive effectiveness and evaluative effectiveness (Tikina & Innes, 2008). Goal attainment is measured by the examination of companies complying with the standards, whereas behavioural effectiveness refers to actual changes in behaviour in the sector. When assessing behavioural effectiveness, the direct effects of certification are considered. Various studies into the direct effects of certification schemes have been conducted over the last several decades which show divergent findings. In the field of sustainable forest management results have been rather disappointing. The study of Clark & Kozar (2011) shows marginal effects of the Forest Stewardship Council, but especially high uncertainty of direct impacts of other forest certification schemes in the field (Clark & Kozar, 2011). Likewise, Visseren-Hamakers & Pattberg (2013) had to conclude after a substantive literature review into effectiveness studies that the environmental impact of global forest certification is still unknown after several decades of sustainability certification (Visseren-Hamakers & Pattberg; 2013). Van der Ven et al., (2018) have paid specific attention to deforestation in relation to forest certification. Their study showed that despite several initiatives in the field of forest management, deforestation rates remain relatively high (Van der Ven et al., 2018). Bray & Nielson (2017) report diverse results for the coffee sector as well with regard to improvement of livelihood assets. The majority of the reviewed studies found neutral impacts, whilst several studies reported either positive or negative impacts on livelihood assets (Bray & Nielson, 2017). Other studies show positive impacts on rural income and well-being for coffee growers as well as environmental benefits resulting from Rainforest Alliance certification (Mitiku, Mey, Nyssen and Maertens, 2015; Rueda & Lambin, 2013). In the former study, FairTrade and Organic certification did not achieve the desired effect on rural income improvement, mainly because of the low effects on higher producer prices (Mitiku et al., 2015).

As these results may as well imply, in many situations, causally linking the desired or undesired effects to the certification scheme is hardly possible (Gulbrandsen, 2005; Kalfagianni

& Pattberg, 2013a). The assessment of effectiveness through direct effects is useful, yet very difficult. Therefore, many studies have started to use indirect measurement for the analysis of standards' effectiveness. Instead of measuring actual impacts, this method is rather focusing on the conditions for the standards that are set up to ensure sustainable development. Two conditions stand out in literature concerning the success of certification schemes, which are its institutional design (strictness of the standard) and its market proliferation (uptake of the standard) (Gulbrandsen, 2005; Kalfagianni & Fuchs, 2011; Schlyter et al., 2009). To pursue great sustainable changes, strict and comprehensive requirements are desired. The same is true for a scheme's uptake; the more entities cooperate, the greater are the chances for desired impacts on a large scale. Both criteria are considered necessary for a certification scheme to be effective. Unfortunately, research shows that often a trade-off exists between these two important determinants and pursuing them both turns out to be difficult. Easily put, too strict standards result in low cooperation, whilst higher proliferation are often seen in combination with weaker standards. However, in both situations, low impacts might be observed. This trade-off can be explained by two reasons. First of all, low uptake can be explained by high implementation and enforcement costs that are often involved in more stringent standards. These costs are in many cases unbearable for certain producers, especially small-scale farmers. Besides, strict standards are harder to comply with, which decreases producer's motivation to cooperate in the organisation (Dietz & Auffenberg, 2014; Gulbrandsen, 2005; Kalfagianni & Pattberg, 2013a).

Considering the above-mentioned high costs of certification, another important aspect arises in effectiveness literature concerning small-scale farmers. Smallholders or small-scale farmers obtain specific attention within the sustainable development goals (UN, 2015). Inclusion of smallholders withing certification schemes turns out to be rather low, whereas when smallholders do get certified, the benefits for this specific group are often low. The definition of a smallholder is not always straightforward, but several clear characteristics include subsistence farming, family-run labour and limited reliance on hired labour (FairTrade, 2019; Khalil, Conforti, Ergin and Gennari, 2017). Often, a threshold for the number of hectares is included as well, which varies between less than 2 hectares of cropland (Henry & Pechevy, 2017), less than 15 hectares (Hattam & Hollaway, 2005) or equal to or below 30 hectares (Fair Trade, 2019). The results on certification for small-scale farmers are mixed. Some studies report higher net revenues for smallholders that are Global G.A.P. or Fair Trade certified (Gichuki, Gicheha & Kamau, 2020; Ranjan Jena & Grote, 2017) Other studies find contrasting results that show no positive effect on smallholders' wages (Holzapfel & Wollni, 2014; Oya, Schaefer & Skalidou, 2018; Van Rijn, 2020). However, when it comes to the inclusion of smallholders

in certification schemes for fruit and vegetables, many studies agree on the fact that smallholders are underrepresented within these schemes (Handschuch, Wollni & Villalobos, 2013; Henry & Pechevy, 2017; Lambin et al., 2018).

With respect to the indirect measurement of effectiveness of certification schemes, a couple of scientific studies will be given particular attention given the fact that they follow the same method as this research.

The study of Von Geibler (2013) examines the effectiveness of standard setting in the case of palm oil, focusing on the Roundtable for Sustainable Palm Oil (RSPO). The findings of the study show that the participation (i.e. membership) in the standard setting process is well balanced between Northern and Southern actors. In addition, many stakeholders are involved, representing a wide variety of interests in the design process. RSPO's certified palm oil is produced on over 12 million hectares and production capacity equals around nine per cent of total world palm oil production capacity (RSPO, 2011a). The majority of the plantations are located in Indonesia and Malaysia. The requirements of the RSPO certification cover a great variety of performance and management targets concerning many sustainability aspects, raising the level of stringency of the standard. Audit quality is characterized in the study by external verification, but is as well criticized because of a weak code of conduct, rejections of remote sensing technology for the reliable checking of compliance and the fact that not all operations have to be certified in order to receive RSPO certification. Furthermore, in the largest importing country of palm oil, China and India, the demand for sustainable palm oil is low, suggesting that awareness of sustainability issues regarding palm oil is low as well. The RSPO furthermore offers group certification for smallholders. Major problems for smallholders in obtaining RSPO certification were compliance with the standard, providing proof of compliance and additional costs. On top of that, training programmes for small-scale farmers have been developed, especially in the field of High Conservation Value Forests and threatened species (Von Geibler, 2013).

Kalfagianni & Pattberg (2013a) have investigated the effectiveness of certification schemes for fisheries and aquaculture by looking into five conditions for effective governance. These conditions are problem structure, stringency, audit quality, access to decision-making and uptake. The assessment shows different outcomes for the conditions and wonders whether certification for fisheries and aquaculture can provide an effective method for resolving sustainability problems in marine ecosystems. This is due to several reasons. Firstly, the problem structure of fisheries is considered very complex, because of the dynamic location and intangibility of fish within national borders and weak commitments by governments and intergovernmental organizations. Besides, large scientific uncertainty about the causes and

consequences of the problems at hand exists next to limited consumer awareness concerning sustainability issues related to fisheries and aquaculture, especially in regions where fish consumption is particularly high. The stringency of the standards contains an issue with respect to effectiveness as well, mainly caused by undetailed overarching principles and a lack of ambition compared to the sustainability concerns associated with fisheries and aquaculture. The audit quality is satisfactory for the different organisations showing shortcomings with regard to the public accessibility of audit reports and the minimum compliance thresholds which is not 100% for many of the requirements. Concerning the access to decision-making process, discriminations has been observed towards Southern actors and civil society organisations. Uptake for the different analysed certification schemes differs, both in market proliferation as well as in geographic representation. The MSC shows relatively high uptake, which is 12% of world's fisheries, but with an overrepresentation of fisheries from industrialized countries. This is considered problematic given the fact the vast majority of fish producers come from the developing world. Friends of the Sea (FOS) represents 10% of the world's fisheries, with a much wider geographical coverage. The other three standards have a much smaller uptake, divided over several continents.

3. Methodology

This chapter will describe the methodology that is used to find an answer to the research questions. In paragraph 3.1, these questions are presented. Next, the chosen strategies to answer each research question are elaborated upon. The operationalisation of the indicators follows in the results section. Here, the description of the most important concepts is included in paragraph 3.3, where after the process for data collection is discussed. Lastly, the selected standards for analysis will be introduced including a general overview of the features of the standards and differences and similarities between the standards.

3.1 Research questions

The main research question that is used to lead the research is as follows: "To what extent can standards for fruits and vegetables be effective in the fostering of sustainability objectives?"

Sub questions that will contribute to the answering of the main question are the following:

1. What are the conditions under which international standards can effectively contribute to fostering sustainability objectives?
2. Do the selected standards for the analysis meet the conditions for the fostering of sustainability objectives?

3.2 Research strategy

The research strategy that is applied to answer the research question will be discussed in this section. Qualitative analysis has been used that includes triangulation. The specific research methods that have been used are systematic literature review, expert consultation and content analysis. Qualitative research methods have been chosen to take an in-depth look into the effectiveness of different standards, which requires an interpretative approach Moreover, content analysis as a qualitative research method has been chosen since it allows for the evaluation of different standards at the same time, which facilitates the comparison of these standards in terms of effectiveness.

As was mentioned before, an indirect approach has been chosen for the analysis of effectiveness of the selected standards. At first, this approach was chosen given the fact that an ultimate assessment of the effectiveness through measurement of environmental, social and economic improvements on the ground is currently difficult due to the pandemic. However, the use of an indirect approach for the measurement of the effectiveness of standards for fruit and vegetables is useful and preferable for several other reasons. Indirect measurement can disregard the socio-economic factors on the ground that would otherwise hamper a potential causal attribution to the initiative. Furthermore, case studies are difficult to compare, whereas

this method allows for comparison between the standards, disregarding the uniqueness of individual cases.

The research consists of three different steps, required for answering the sub questions. The three different steps are as follows:

- Systematic literature review
- Expert consultation
- Content analysis

and will be elaborated upon hereafter.

Firstly, systematic literature review is conducted to analyse the conditions brought forward in recent studies on the effectiveness of standards for sustainability. As a result of this review, a framework has been developed including several categories with indicators that can be considered useful for the indirect measurement of the effectiveness of standards for fruit and vegetables. This framework will be discussed in chapter 4.1.

Secondly, different experts in the field have been approached and asked to evaluate the constructed framework. Experts from several universities in the Netherlands have been approached. The experts are active in the field of environmental governance, governance and inclusive development and certification and labelling. A list of these experts can be found in Annex A. A survey has been sent to the experts, in which they have been asked to rank the indicators by putting them in three different boxes. The boxes are ranked from ‘not important at all’, ‘neutral’ to ‘absolutely essential’. The survey can be found in Annex B. This second step in the research has contributed to the verification and perfection of the framework. Some adaptations have been made according to the opinion of these experts, after which the framework was finalized for analysis of the selected standards. The results of the expert consultation can be read in chapter 4.2

As a third step, the conditions that are included in the approved framework have been held against the documents of the four selected standards to examine the extent to which the standards meet these conditions. The different indicators for problem structure are assessed from low complexity to high complexity, low scientific uncertainty to high uncertainty and low awareness to high awareness. Given the fact that this category is more an overall condition for the effectiveness of fruit and vegetables standards and not differently per standard, this will not be considered in the overall score for each standard. For the other conditions, different scales have been used for the assessment. Based on the fulfilment of the criteria of the conditions, a score has been attributed by the researcher, after which a total score has been made out.

The following scale is used to evaluate the extent to which standards can be considered stringent: very stringent, stringent, medium stringent and lenient stringent from best to least. If

all criteria for stringency are met, the standard can be considered very stringent. With the satisfaction of four indicators, the standard is stringent. A standard is considered medium stringent when three indicators are met and lenient when only two or less indicators are fulfilled. For the sake of clarification, the indicators of performance, management and quantifiable targets are considered fulfilled if they are included on a large scale and cover a wide variety of aspects.

The same sort of scale is used for the quality of the audit, ranging from very low quality to very high quality. The quality of the audit is considered to be very high when all criteria have been satisfied. Quality of the audit is high in the case of satisfaction of seven or eight criteria, medium in case of six or five criteria and low in the case of fulfilment of only four or three criteria. Lastly, the quality of the audit is considered to be very low if only one or two criteria are satisfied. In all cases, compliance with criterion one (third-party auditing) is necessary.

Access to decision-making is evaluated from very low to very high, depending on the inclusion of various interests and geographic representations. Uptake is as well assessed at a range from very low to very high, depending on the (geographical) coverage. The possibility for group certification, a wide variety of offered trainings and technical assistance leads to a high score on capacity building measures, whereas the lack of the three indicators will lead to a low score. The analysis of the fulfilment of conditions for effectiveness can be found in chapter 4.3. Based on the fulfilment of the criteria of the conditions, a score has been attributed by the researcher, after which a total score has been made out. More specifically, very equals a score of 2. Each upgrade adds 2 points to the score, making very high correspond to a score of 10. An overview of the attributed scores to the selected standards can be found in chapter 4.4

3.3 Description of concepts

In this section, the most important concepts will be described, starting with effectiveness.

As is described in section 2, effectiveness can have several conceptualizations. In this paper, the definition used by Kalfagianni & Pattberg (2013a) will be used considering the fact that the research questions and research strategy are similar. Effectiveness is described as “the level of success of institutional performance towards some objective that motivated its establishment.” (Kalfagianni & Pattberg, 2013, p. 126). In other words, a scheme can be perceived effective if it resolves or alleviates the problem that caused the creation of the scheme (Auld et al., 2008; Gulbrandsen, 2005). As described before, this study rather analyses the potential of private standards to alleviate the problems that motivated their establishment.

In the research questions as well as in the definition of effectiveness described above, sustainability objectives play a large role. In order to be able to assess whether a scheme can be

effective in achieving these sustainability objectives, one must know what these objectives are. In the first place, agricultural production covers many different elements in the economic, environmental and social sphere, and certification schemes often try to focus on specific aspects. The main objective of all the schemes at hand is to achieve sustainable agricultural practices, but this is still very broad. Therefore, first the overall objective of sustainability standards for agricultural products will be described, after which the specific objectives of the selected standards are considered. The objectives of private standards touch upon a variety of sustainable development goals, of which the most important is SDG2 Zero hunger and SDG 12 Responsible Production and Consumption. The former goal is described as follows: 'end hunger. achieve food security and improved nutrition and promote sustainable agriculture.' whilst the latter wants to ensure sustainable consumption and production patterns (UN, 2018). Private standards for fruit and vegetables promote sustainable production but, in the meantime, contribute to sustainable consumption by offering sustainable products for consumers. Other SDGs involved in sustainable agricultural practices include 'Life on Land' by taking care of soil, forests, crops etc., 'Climate action' by reducing emissions and deforestation, 'Reducing inequalities' by providing minimum wages to producers, 'Decent work and economic growth' by improving working conditions, and 'No Poverty' and 'Good health and well-being' by overall better management of people and planet (UN, 2018).

The certification schemes have their own statements about sustainability objectives as well. GlobalG.A.P. focuses on improving food and product safety, reducing environmental impacts, worker and animal welfare and responsible use of water, compound feed and plant propagation materials. The company's purpose is to support farmers in making the connection to markets for the vending of their certified agricultural products by the development and implementation of farm assurance systems (Global G.A.P., 2020). The Rainforest Alliance main sustainability objectives are the protection of forests, improvement of livelihoods of farmer and forest communities, promotion of their human rights and support in climate crisis adaptation and mitigation for these target groups (Rainforest Alliance, 2020). The key objectives of Fair Trade standards as described by the organisation itself are to ensure fair prices, provide Fair Trade Premium, enable pre-financing for producers who require it, facilitate long-term trading partnerships and ensure that the production of Fair Trade certified products is socially, environmentally and economically fair and responsible (Fair Trade, 2020). The objectives of Fair For Life are as follows: guarantee of fair wages and decent working conditions, support long term partnerships, encourage adoption of approaches to social and environmental responsibility, increase availability of fair trade products for consumers as well as consumer awareness (Fair for Life, 2020). The described goals of the four standards gives

an idea about the objectives for sustainability that private standards for fruit and vegetables can strive for.

In the foregoing section is described why the choice for an indirect assessment of effectiveness has been made. Here, the concept of indirect measurement will be discussed more in depth. Effectiveness of certification schemes can be evaluated directly by examining the changes it has accomplished as a result of the implemented measure, that is the adoption of the standard. However, as described in section 3.2, this method has several difficulties. This study evaluates effectiveness indirectly, meaning the conditions for effective governance of fruit and vegetable production are discovered and the satisfaction of these conditions examined. Hence, actual sustainability performance resulting from the implemented certification schemes is not measured, yet is the extent to which these certification schemes are able to contribute to sustainability performances examined. Therefore, effectiveness of certification schemes for fostering the aforementioned sustainability objectives is indirectly evaluated and seen as a function of several indicators. These indicators refer to:

- the complexity of the problems that the organisations attempt to resolve (problem structure)
- the inclusion of comprehensive and adequate targets in the standards that lead to actual sustainable changes (stringency)
- the quality of the requirements and audit procedure (quality of the audit)
- the inclusiveness and accessibility of the decision-making process (access to decision-making process)
- the level of participation (uptake)
- the extent to which the standard encourages capacity building (capacity-building measures)

These categories including their different indicators will be elaborated upon in section 4.1

3.4 Data collection and processing

A systematic literature review has been conducted to investigate the criteria necessary for the evaluation of effectiveness of standards. At first, records were identified through a database search as well as scientific articles via cross referencing. Google Scholar was chosen as a database for the systematic collection of articles from 1999 to 2020. The selection of Google Scholar as a database was based on several arguments. The database allows for the search through several databases at once and offers a comprehensive number of high quality scientific articles from different publishers. Moreover, many Google Scholar articles are easily and freely available for Utrecht University students and the database is easy to use with several convenient

search functions. Using various search words, the title, abstract and keywords of scientific papers in English language were searched. The search terms used include: "effectiveness/success of (private/sustainability) standards (for fruit and vegetables/agricultural products)", "(effective) (environmental) governance of (private) standards", "(indirect/direct) measurement of effectiveness of standards/labels/certification", "certification for agriculture/fruit and vegetables", "framework for measuring effectiveness of (private) standards (for sustainability), "Global G.A.P./Fairtrade/Fair for Life/Rainforest Alliance effectiveness", "sustainability certification (schemes)" "assessment/evaluation of certification schemes". When words are between brackets, this implies the search request has been done with and without this word. Two words divided by a slash imply that the search request has been executed either with one of the two words in different search requests. The great range of search terms implies that many search requests have been performed in Google Scholar. This was necessary due to the fact that different terms are used for the definitions, for example articles about certification schemes can also be described by 'label' or 'standard'. After the various search requests, searching within citing articles and cross-referencing have been adopted. As a result of this first database search, 63 articles from scientific journals and grey literature have been selected for further exploration. The second step includes the screening of the abstracts of these articles in order to narrow down the selected records. For the inclusion of records, the following criteria have been applied. First of all, the articles should have a clear focus on sustainability objectives, since the standards for fruit and vegetables that will be used for analysis are aiming at resolving several sustainability issues. The records should as well discuss indirect measurement methods for evaluation of effectiveness, so that papers only examining direct effects or broader consequences of certification schemes have been excluded.

After the selection based on the former criteria, 17 scientific articles and one video fragment have been chosen for further analysis. These 18 records have been read and analysed in full in order to come to the indicators suitable for measurement of effectiveness.

Besides these literature sources, experts have been involved. Scholars and scientists in the field were found through literature sources and universities throughout the country. The experts have been selected based on their expertise in food/environmental governance, certification and labels, transnational governance or other related subjects. The experts have been sent an anonymous link to the survey via email. The email addresses have been retrieved mainly through websites of the different universities the experts are connected with. The gathered information through the survey has been analysed in Excel.

Information necessary to answer the second sub question and assess whether the conditions of the framework are met by the standards are found on the websites of the selected

standards (i.e. website of Global G.A.P., Rainforest Alliance, Fair Trade and Fair For Life) or that of certification bodies (e.g. Flo-cert or Ecocert). Documents that are used include the different standards itself, that are

- Fair For Life Certification standard for Fair Trade and responsible supply-chain1
- Global G.A.P. Standard for Integrated Farm Assuranc2
- Rainforest Alliance Sustainable Agriculture Standard3
- the Fairtrade Standard for Contract Production4, Small-scale producer organizations5, Hired Labour6, Trader Standard7 and Standard for Fruit8/Vegetables9

Besides, monitoring reports, sustainability reports, year reports, documents for the audit procedures and certification processes have been investigated. On top of that, information on the websites of the organisations, for example the constitution of the Board was analysed. Calculations, for example for uptake, have been made in Excel.

3.5 Standards for analysis

Four different standards for fruit and vegetables are chosen for the comparative analysis of this research. Four - and not more or less- organisations have been selected within the scope of this study given the appointed time and limited manpower (one researcher). The four organisations are Global G.A.P., Rainforest Alliance, Fair Trade and Fair for Life. The organisations all include certification for other products then fruit and vegetables as well in their standard. The selected standards are chosen for several reasons. First of all, standards with an international orientation are selected, so that for example national certification schemes like Demeter or EKO have been excluded for selection. Besides, fruit and vegetables needed to be a substantive proportion of the covered certified products of the organisation. On top of that, standards had to be private and voluntary in nature. The different standards will be discussed in the following paragraphs.

3.5.1 Global G.A.P.

One of the initiatives encouraging Good Agricultural Practices (G.A.P.) is Global G.A.P, which is a global organization setting voluntary standards for certification of agricultural products with the objective to ensure safe and sustainable agriculture worldwide (Global G.A.P., 2020). The standard focuses on different aspects, ranging from environmental aspects to labour conditions as well as food safety and product quality. (Global G.A.P., 2020; CBI, 2018). Global G.A.P. is a pre-farm gate standard, meaning it only covers the first segments of the value chain from the inputs till the non-processed product, i.e. the whole agricultural production process.

Moreover, Global G.A.P. is a private business-to-business standard for the fruit and vegetables sector, which means the standard does not have a label that makes it visible for end consumers. Recently, the organisation has introduced the GGN label for aquaculture and floriculture, but not yet for fruit and vegetables. However, for a majority of European supermarkets it has become a minimum standard. The standard includes certification for three main products, that are livestock, crops and aquaculture. Fruit and vegetables are certified under the Integrated Farm Assurance for crops (CBI, 2018; Kalfagianni & Pattberg, 2013).

3.5.2 Fairtrade

A common international standard for many products, including fruit and vegetables, is Fairtrade. Fair trade is an organisation in the civil society sector that is devoted to improving the lives of the most marginalized people of the global trade system. Since the organisation covers many supply chains, the standard system is rather complex. For fruit and vegetables, two different standards exist, which are the Fairtrade Standard for Fresh Fruit and the Fairtrade Standard for Vegetables. Furthermore, compliance with the Fairtrade Standard for Small Producer organizations, Fairtrade Standard for Hired Labour and Fairtrade Standard for Contract Production is often required (Fairtrade, 2020).

Fairtrade certification is mainly focused on the social factors in the producing developing countries, including working, living and trading conditions in order to achieve a more equal distribution of benefits (Fairtrade, 2020; CBI, 2018).

3.5.3 Fair for Life

Fair for life is an international organisation that covers certification programmes for Fair Trade & responsible supply chains and Corporate Social Responsibility. Fruit and vegetables are being certified in this first programme and include a variety of products. The standard focuses on sustainable agricultural practices, human rights and fair working conditions. Certified products are being sold under the label of Fair Trade. Fair for Life was created to increase chances for serious fair-trade producers to be eligible for certification, where they might have been excluded from Fair trade certification (Fair for Life, 2020).

3.5.4 Rainforest Alliance

The Rainforest Alliance is a non-governmental international organization dedicated to the improvement of environmental and social conditions, mainly in the form of forest protection and farmer livelihood improvement. Their main certified products are avocados and bananas, but many more fruit and vegetables are covered in the standard. In order to get certified, farms must comply with the Rainforest Alliance Sustainable Agriculture Standard. This standard

covers environmental, social and economic aspects of sustainable farming. The standard also involves a label in order for end consumers to see whether the product is certified (Rainforest Alliance, 2020).

Table 1 below provides a general overview of the selected standards for analysis, including their intended target group for certification, initiation date, mission of the organisation, list of certified products, key principles of the standard and possible specialities of the standard. Hence, a first image of the organisations chosen for analysis is presented, including differences and similarities in their overall nature.

All organisations provide certification for both producers (farmers and workers) and traders, buyers and companies. This means several components of the supply chain can opt for certification. A large difference, however, exists with respect to the initiation date of the four organisations. Fair Trade International was created in 1997, but already existed in national context as Max Havelaar since 1988. The Rainforest Alliance also knows a relatively long history in the field of certification schemes, coming into existence already in 1986 with forest certification. Their first agricultural certifications for fruit and vegetables were in 1992 for banana farms in Costa Rica and Hawaii. A couple years later, in 1997 a bunch of European retailers created EurepGAP that later expanded its scope and became Global G.A.P. in 2007. Fair for Life standard was developed in 2006, forming the team of youngest players in the field together with Global G.A.P.

In the mission of the organisations, their differences in foci emerge. Global G.A.P. shows a focus on improving the connection between farmers and markets and the development of farmer assurance systems. Fair Trade also mentions creating the connection between producers and consumers but rather addresses living conditions of (disadvantaged) people involved in the supply chain. The Rainforest Alliance seems to present a broad focus in its mission, referring to both protecting nature as well as improving livelihoods. The mission of Fair for Life refers mainly to the accessibility of fair-trade principles for all kinds of actors.

Then, differences in products eligible for certification can be observed. Aquaculture products are only covered by Global G.A.P. Other products certified by this organisation are livestock and all kinds of crops, like fruit and vegetables or flowers and ornamentals. The Rainforest Alliance and Fair Trade both cover a great range of products in their certification programme. The most important certified products of Fair Trade include bananas, coffee, cane sugar and cacao (Fair Trade, 2019). For the Rainforest Alliance, the largest proportion of certified products can be found in the coffee, tea and fruit and vegetables sector (Rainforest Alliance, 2020).

The key principles covered in the standards also provide some insight into the aspects that are deemed important by the organisations. Global G.A.P. includes three main categories for the standard of fruit and vegetables, that are criteria for All Farm Base, Crops Base and Fruit and Vegetables, each covering 18, five and eight subcategories with compliance criteria respectively. The first category covers mainly basic, overarching and practical criteria like site management, loge use and traceability for example. Criteria for fruit and vegetables are more focused on pre-harvest, harvest and post-harvest procedures, whereas Crops Base criteria covers all the criteria regarding pests and water management. The Rainforest Alliance standard's principles are effective planning and management system, biodiversity conservation, natural resource conservation and improved livelihoods and well-being. These different categories contain between 20 and 47 criteria. Fair Trade's standard system is rather complex, whereas their main principles covered in the standard are quite general. Fair Trade has different standards for small-scale producer organisations, hired labour, contract production and traders. Besides, the different products each have different criteria as well. The themes in each standard are the same; general requirements, trade, production and business and development. The 'general requirements' section refers to certification rules, whereas the 'trade' section contains criteria concerning traceability, use of Fair trademarks and contracts. The criteria for 'production' are numerous and include management of production practices, environmental development and labour conditions. The last principle 'business and development' covers criteria for development potential, non-discrimination and democracy, participation and transparency. Fair for Life has the highest number of overarching principles (8) covering several different aspects, like environmental issues, social conditions and capacity-building.

Two of the organisations, Fair Trade and Fair for Life, have included extra features in their standard. Fair Trade makes use of the Fair-Trade Premium, which is an extra amount of money paid to the producers on top of the selling price. The Fair-Trade Premium is intended to invest in sustainable projects like improvement of farming or health and education in the community. The Fair-Trade Fund generated by Fair for Life is of the same nature as the Fair-trade Premium, meant for collectively agreed-upon projects for sustainable improvements. Besides the Fair-Trade Premium, Fair Trade assures its producers of a fair wage through the Fair-Trade Minimum Price. In order for buyers to become certified, this price must be paid to the producer (Flo-cert, 2020).

Table 1: General overview of selected standards for fruit and vegetables

Organizations	***Global G.A.P.***	***Rainforest Alliance***	***Fair Trade***	***Fair for Life***
Domain *For whom?*	Producer & buyers	Farmers & Companies	Producers & traders	Producers, factories, estates, handlers

Initiation date	2007 (EurepG.A.P. in 1997)	1986	1997 (1988 Max Havelaar)	2006
Mission	➢ Support in connecting farmers to markets ➢ Development and implementation of farm assurance systems	➢ Creating a more sustainable world by using social and market forces to protect nature and improve the lives of farmers and foresters.	➢ Connect disadvantaged producers and consumers ➢ Promote fairer trading conditions ➢ Empower producers to combat poverty, strengthen their position and take more control over their lives.	➢ Provide a framework within which each actor can engage to make fair trade principles a reality in its supply-chain
Certified products	• Fruit and Vegetables • Flowers & Ornamentals • Hop • Plant Propagation Material • Tea • Combinable crops • Livestock • Aquaculture	• Flowers & Plants • Tea • Coffee • Cocoa • Health & Beauty • Home & Kitchen • Rubber	• Flowers • Tea • Coffee • Cocoa • Sugar • Fruit and Vegetables • Cotton • Gold • Sport balls • Herbs/spices • Honey • Rice • Wine • Nuts/oils • Quinoa • Textiles • Carbon • Composites	• Food products • Cosmetic and beauty products • Textiles • Artisanal products • Other products composed of natural ingredients such as detergents and home perfumes
Key principles of the standard for fruit and vegetables	1.All Farm Base 2. Crops Base 3. Fruit & Vegetables	1.Effective planning & Management system 2.Biodiversity conservation 3.Natural resource conservation 4.Improved livelihoods & human well-being	1.General requirements 2.Trade 3.Production 4.Business & Development	1.Fair Trade policy management 2.Social responsibility 3.Environmental responsibility 4.Local impact 5.Fair trade in supply chain management 6.Empowerment and capacity-building 7.Respect for the consumer 8.Management and performance
Specialities			Fair Trade Minimum Price Fair Trade Premium	Fair Trade Fund

4. Results and discussion

In this section, the answers to the research questions will be discussed. Firstly, in paragraph 4.1 the different categories and indicators that have emerged in scientific literature for the indirect measurement of effectiveness of standards will be elaborated upon. Section 4.2 continues by discussing the results of the expert consultation. The evaluation of the framework and possible changes to it are considered. Now that the conditions for effective governance of fruit and vegetable production have been presented, section 4.3 will provide the answer to sub question two. The fulfilment of the conditions by each of the organisations will be discussed after which a concluding evaluation will be provided in section 4.4.

4.1 Indicators for measurement of effectiveness

Several indicators emerge in literature with regard to the indirect measurement of effectiveness of sustainability initiatives in the form of standards. Analysis of these indicators will be discussed by category below.

4.1.1 Problem structure

In order to evaluate the effectiveness of standards in fostering sustainability objectives, it is necessary to be clear about what these sustainability objectives are. The category problem structure refers to this nature of problems that the organizations try to address. For this category, the scientific uncertainty regarding the problem at hand as well as consumer awareness and prior existence of public regulation are considered in addition to the problem nature.

To start with the nature of problems; some problems are more complex than others, for example when regulation is more ambiguous, or the product location is not static like with fish (Kalfagianni & Pattberg, 2013a). Likewise, the first guidelines of Tzilivakis, Green, Warner, McGeevor & Lewis (2012) for the development of effective, robust, credible and practical environmental labelling schemes state that the objectives and purpose of the scheme need to be clear and transparent and the impact categories that are covered by the scheme or label need to be clearly expounded (Tzilivakis et al, 2012).

Dietz & Auffenberg (2014) refer to this category as ‘scope’, by which they mean the comprehensiveness of the standard. The authors are measuring this by examining the quantity of sustainability problems that are being tackled by a standard (Dietz & Auffenberg, 2014). However, it is suggested that only an examination of the quantity of involved problems does not necessarily give a clear image of the objectives of the standard. It is indeed important to evaluate the comprehensiveness of the standard, since standards only aiming at reducing emissions can be very effective, but in the meantime do not tackle any social problems. Therefore, both the amount of sustainability problems organisations try to address in

combination with their nature are considered here, since they both influence the complexity of mitigating these problems. Though, the amount of sustainability problems is not so much counted just as is looked into the comprehensiveness of the covered issues. This means that the variety of sustainability problems in the social, economic or environmental sphere, involved in agricultural practices, will be analysed. Another aspect that can increase complexity for resolving sustainability problems is the level of scientific uncertainty concerning the causes and consequences of the problems at hand (Kalfagianni & Pattberg, 2013a). These authors find in their research that uncertainty regarding almost every aspect of fish production is uncertain. This includes for example population estimates and whether these are decreasing or increasing. High level of uncertainty complicates action to resolve these issues (Kalfagianni & Pattberg, 2013a). Next to the nature of problems and scientific uncertainty concerning these problems, it is important to examine the level of consumer awareness. Various studies demonstrate the positive influence of societal awareness on the effectiveness of private governance. A high level of consumer awareness can create social pressures and changing consumer behaviour that ultimately can show positive impacts in the field (Baron, 2011; Kalfagianni & Pattberg, 2013a). Effectiveness could as well be reinforced by the prior existence of public regulation, by creating positive synergies between public and private governance (Kalfagianni & Pattberg, 2013a; Mayer & Gereffi, 2010). Table 2 below gives an overview of the category's indicators including their scientific sources.

Table 2: Scientific sources and operationalisation for problem structure

Category	*Indicator*	Operationalisation	Source
Problem structure	*Nature of problems*	Complexity of problems the organization tries to address	Dietz & Auffenberg (2014); Kalfagianni & Pattberg (2013a); Tzilivakis et al., (2012); Underdal (2001)
	Consumer awareness	The level of societal awareness regarding sustainability concerns	Kalfagianni & Pattberg (2013a)
	Scientific uncertainty	The level of uncertainty regarding sustainability concerns	Kalfagianni & Pattberg (2013a)
	Prior existence of public regulation	The prior existence of public international regulation	Kalfagianni & Pattberg (2013a)

4.1.2 Stringency

Many different authors emphasize the importance of stringency in the evaluation of effectiveness of standards (Auld et al., 2008; Dietz & Auffenberg, 2014; Dietz, Grabs & Chong,

2019; Gulbrandsen, 2005; Kalfagianni & Fuchs, 2011; Kalfagianni & Pattberg, 2013a; Schlyter et al., 2009; Tröster & Hiete, 2018). Strict requirements and prescriptions in a standard are necessary to ensure that standards act towards sustainable development and envision greater changes with regard to sustainable development. Dietz & Auffenberg (2014) describe this as the degree to which a standard is able to factually limit unsustainable agricultural practices, whilst Gulbrandsen (2005) refers to it as an ambitiousness measure. Different authors may emphasize different aspects of the stringency variable. However, all of them point to the need for script prescriptions in order to achieve high environmental and social performances. For instance, a criterion saying, 'the use of GMOs is under no circumstance allowed' is considered stricter than a requirement stating 'GMOs can be allowed under the safety recommendations of local legislation'. The different aspects that stringency entails are covered in the evaluation of effectiveness as well and will be discussed below.

Standards are first of all required to set up performance targets in order to compare the achieved results to the desired objectives of the scheme and provide a clear idea of what they want to accomplish. Examples can include the monitoring of stocks, reducing deforestation or emissions etc. A lack of these clear and measurable targets can result in unstructured practices from the organisations adopting the standard and decrease effectiveness of the scheme. Clear identification of performance targets therefore forms an important base for the assessment of effectiveness (Blackman & Rivera 2011; Gulbrandsen, 2005; Kalfagianni & Pattberg, 2013a; Mori Junior et al., 2016 Tzilivakis et al., 2012;).

Besides measuring actual performances of the schemes, the standard should also stimulate the adoption of sustainable management practices. Therefore, the standard should include management targets as well. Sustainable management plans can for example press for the use of pesticide that minimizes soil fertility loss. The encouragement of the standard to develop sustainable management plans forces participants to become self-reliant, improve their management practices and focus on the long-term, consequently improving the effectiveness of the standard (Kalfagianni & Pattberg, 2013a; Kalfagianni & Pattberg, 2013b; Mori Junior et al., 2016).

Next to performance and management targets, standards should include quantifiable targets as well. Quantifiable targets follow naturally from the inclusion of performance targets and increase effectiveness by providing benchmarks for the desired impacts. An important example in the field of agriculture is a maximum use of agrichemicals.

The criteria covered in the standard should also be considered detailed enough in order to ensure the comprehensiveness and preciseness of the principles. It is important that all relevant factors of a given sector are taken into account in the standard. Requirements that are

too broad and general can overlook important differences with regard to products or local context for example (Kalfagianni & Pattberg, 2013a; Tröster & Hiete, 2018). Therefore, a standard is considered detailed when the overarching principles are each founded on a minimum of three indicators (Kalfagianni & Pattberg, 2013a).

Lastly, the standards are deemed to be ambitious, meaning that they should envision greater change than initiatives that tackle the same issues (Kalfagianni & Pattberg, 2013a; Tzilivakis et al., 2012). Kalfagianni & Pattberg (2013a) add to this measure that the standard should aim at going beyond public regulation, when it exists. If standards go beyond basic requirements for sustainability of other standards or of international public regulation, greater improvements in sustainability objectives are more likely to be made.

Table 3: Scientific sources and operationalization for stringency

Category	*Indicator*	Operationalization	Source
Stringency			Auld et al., (2008); Dietz & Auffenberg (2014); Dietz et al., (2019); Gulbrandsen (2005); Kalfagianni & Fuchs (2011); Kalfagianni & Pattberg (2013a); Schlyter et al. (2009); Tröster & Hiete (2018)
	Performance targets	Inclusion of targets that measure actual performance	Blackman & Rivera (2011); Gulbrandsen (2005); Mori Junior et al. (2016); Kalfagianni & Pattberg (2013a); Tzilivakis et al., 2012)
	Management targets	Requirement of the development of sustainable management plans,	Kalfagianni & Pattberg (2013a); Kalfagianni & Pattberg (2013b); Mori Junior et al. (2016)
	Quantifiable targets	Inclusion of targets that are quantifiable	Kalfagianni & Pattberg (2013a)
	Detail	Development of at least 3 indicators specifying each of the overarching principles and criteria	Kalfagianni & Pattberg (2013a); Tröster & Hiete (2018)
	Ambition	The extent to which the standard goes beyond existing regulation and envisions greater environmental change relative to other standards.	Kalfagianni & Pattberg (2013a); Tzilivakis et al., 2012);

4.1.3 Quality of the audit

The quality of the audit has been mentioned by different authors as well in the evaluation of effectiveness of sustainability standards (Gulbrandsen, 2005; Kalfagianni & Pattberg, 2013a; Tröster & Hiete, 2018). The indicators for this category will be discussed in this section, whereas their scientific justification can be found in table 3 below.

Many authors specifically refer to third-party auditing (Dietz & Auffenberg, 2014; Gulbrandsen, 2005; Kalfagianni & Pattberg, 2013a; Mori Junior et al., 2016; Tröster & Hiete, 2018). It is considered important that the compliance of the organisation is assessed by an independent, external auditing firm instead of by the organisation itself. This increases objectivity and allows for prevention of conflict of interests (Dietz & Auffenberg, 2014; Gulbrandsen, 2005; Kalfagianni & Pattberg, 2013a; Mori Junior et al.,2016; Tröster & Hiete, 2018). When the independent auditing firm is in its turn accredited by an independent body, this will increase the quality of the audit even more. An important independent organisation that affords accreditation to auditing firms is the International Organisation for Standardisation (ISO). If certification bodies (auditing firms) are accredited in turn by the ISO or another third party this is considered to improve effectiveness given the fact that the auditing firm is considered eligible for the execution of audits and guarantee is given that audit will happen according to certain benchmarks.

With regard to the audit quality, many authors refer to the level of transparency as well (Gulbrandsen, 2005; Kalfagianni & Pattberg, 2013a; Mori Junior et al., 2016; Tröster & Hiete, 2018). A lack of transparency can undermine the credibility of a standard and therefore directly affect its performances by a decrease in uptake and consumer purchases. More transparency indirectly increases effectiveness in the way that standards can be checked more openly and therefore the adopting entities feel more urged to achieve better performances (Gulbrandsen, 2005; Kalfagianni & Pattberg, 2013a; Mori Junior et al., 2016). Transparency can refer to clear and transparent objectives as well as to openness with regard to the impact of the standards or results of the audits. Here, the latter is taken into account. Mori Junior et al., (2014) emphasize the importance of transparency of assurance processes. They state that certification statements should be publicly available and understandable to the majority of stakeholders. Therefore, the public accessibility of these reports will be analysed.

The requirements for compliance are another important aspect. Standards can make a difference between voluntary and obligatory requirements and the percentage of requirements that have to be met. However, to increase effectiveness, standards can better refrain from making this distinction and introduce a minimum compliance threshold for all or at least the

most important, requirements. A minimum compliance threshold forces organisations that want to be certified to fully comply with the criteria (Kalfagianni & Pattberg, 2013a).

The consequences of non-compliance form a different component for the evaluation of effectiveness, since severe sanctions in case of non-compliance work as an incentive for good performance of the organisations. Severe sanctions are considered suspension or exclusion of membership (Gulbrandsen, 2005; Kalfagianni & Pattberg, 2013a).

Another incentive for good performance emerges when audits are unannounced for the organisations. Dietz & Auffenberg (2014) and Keuringsdienst van Waarde (2020) have demonstrated the positive impact on effectiveness of unannounced audits. The Keuringsdienst van Waarde has examined working conditions in tomato and orange production in Italy for Global G.A.P. certified producers. Despite the certification, working and living conditions of the farmers and especially the pickers were rather miserable. During the interviews they found out that only in case of the annual announced audits the managers tidy up the farm etc. This shows the added value of unannounced audits on increasing effectiveness, if only just to create fear of losing certification.

On top of that, audits need to be conducted on a regular basis in order to control compliance of the organisations and to ensure continuous improvement. Therefore, audit frequency is one important indicator derived from scientific literature.

In order to promote long-term sustainability objectives and encourage the achievement of these objectives in small(er) steps, requirements with a focus on continuous improvement are important (Tröster & Hiete, 2018; Tzilivakis et al., 2012; Veleva & Ellenbecker, 2001). Tröster & Hiete (2018) have found that research into this indicator has been limited so far, emphasizing the need for inclusion of this component into this analysis. This mechanism can prevent stagnation of improvement and increases the organisations' ability to respond and adapt, therefore increasing its sustainable position (Tzilivakis et al., 2012). Besides, a standard covering continuous improvement requirements may attract more smaller organisations that would otherwise not be able to meet the criteria at once. Therefore, a positive correlation with uptake might be seen as well (Tröster & Hiete, 2018; Tzilivakis et al., 2012; Veleva & Ellenbecker, 2001).

Some standards adopt a chain of custody mechanism, meaning that they ensure the traceability of certified products throughout the whole supply chain. A chain of custody ensures that all the different sectors included in the value chain can be checked for compliance of the standard. By the fact that the integrity of the products is guaranteed and customers are reassured, the effectiveness is improved in two ways (Confederation of European Paper Industries, 2000; Tröster & Hiete, 2018).

Table 4: Scientific sources and operationalization for quality of the audit

Category	*Indicator*	Operationalisation	Source
Quality of audit			Gulbrandsen (2005); Kalfagianni & Pattberg (2013a); Tröster & Hiete (2018); Wettestad (2008)
	Third-party auditing	Compliance with the standard requirements are evaluated by an independent auditing firm	Dietz & Auffenberg (2014); Gulbrandsen (2005); Kalfagianni & Pattberg (2013a); Mori Junior et al. (2016); Tröster & Hiete (2018)
	Accreditation by third party	The auditing firm is accredited by an independent body,	Gulbrandsen (2005); Kalfagianni & Pattberg (2013a); Tröster & Hiete (2018)
	Public accessibility of reports	Whether or not the audit results are publicly available;	Gulbrandsen (2005); Kalfagianni & Pattberg (2013a); Mori Junior et al. (2016); Tröster & Hiete (2018)
	Minimum compliance threshold	The standard requires 100% compliance with its rules	Kalfagianni & Pattberg (2013a);
	Severe sanctions	Inclusion of severe sanctions in case of non-compliance	Gulbrandsen (2005); Kalfagianni & Pattberg (2013a)
	Unannounced audits	The standard includes unannounced audit in addition to announced audits	Dietz & Auffenberg (2014; Keuringsdienst van Waarde (2020)
	Audit frequency	Audits are conducted on a regular basis	Gulbrandsen (2005); Tröster & Hiete (2018)
	Continuous improvement	Inclusion of continuous improvement requirements;	Tröster & Hiete (2018); Tzilivakis et al. (2012); Veleva & Ellenbecker (2001)
	Chain of custody	The standard ensures chain of custody	Confederation of European Paper Industries (2000); Tröster & Hiete (2018)

4.1.4 Access to decision-making

Sustainable development is deemed to be inclusive as well (UN, 2018). Inclusiveness should be incorporated in sustainability objectives in multiple ways, of which one refers to procedural

features (McDermott, 2013). In that sense, access to decision-making is considered an important aspect, influencing the effectiveness of standards. Access to decision-making can influence the effectiveness of standards in two ways. Firstly, the impacts of standards can be more positive when the interest of all stakeholders have been taken into account in the development and implementation of the standard, mainly because it increases supply chain support and decreases conflict. Besides, stakeholders, like producers and traders are more likely and willing to participate in the standard when decision-making power is high. In line with this argument comes that professional purchasers as well as customers are more likely to buy certified products when the decision-making process was deemed broad and inclusive, mainly because of reinforced credibility and legitimacy of the standard (Gulbrandsen, 2005). The WWF (2013) has found better ecological and social performance of certification schemes with active participation from different stakeholders' representatives. A broad range of interests should be covered in the board membership to ensure concerns from different stakeholder groups will be taken into account. In general, three broad actor groups can have access to the decision-making venues and procedures of international standards, which are state actors, business actors and civil society actors. According to several authors, an effective and inclusive board should therefore cover different aspects concerning (i) content, including economic, ecological and social interests, as well as (ii) stakeholder groups, including state actors, business actor and civil society actors and (iii) nationalities, providing a good balance between Northern and Southern stakeholders (Dingwerth, 2008; FAO, 2000; Gulbrandsen, 2005; Kalfagianni & Pattberg, 2013a; Kant & Brubacher, 2008; Mori Junior et al., 2016; Veleva & Ellenbecker, 2001; Wettestad, 2001). Table 4 shows the indicators included in access to decision-making and their scientific justification. In this research, the first two aspects (i) and (ii) are measured by the indicator board membership, whereas the third aspect (iii) is measured by geographic representation. Geographic representation contains the nationality of the board members.

Table 5: Scientific sources and operationalisation for access to decision-making process

Category	*Indicator*	Operationalisation	Source
Access to decision-making process			Dingwerth (2008); FAO (2000) Gulbrandsen (2005); Kalfagianni & Pattberg (2013a); Kant & Brubacher (2008); Mori Junior et al. (2016); Tröster and Hiete (2018) Veleva & Ellenbecker (2001); Wettestad (2001)
	Board membership	Diversity in the type and number of	Dingwerth (2008); Kalfagianni & Pattberg (2013a)

		actors involved in the board	
	Geographic representation	The region of origin of the actors involved in the board	Dingwerth (2008); Kalfagianni & Pattberg (2013a)

4.1.5 Uptake

Very briefly put, a certification scheme can only become effective once producers or traders adopt the standard. Even when a standard is strict, comprehensive, inclusive and adequate, a relevant market share is required in order to achieve any substantive impacts with regard to sustainability. Therefore, uptake, sometimes called market proliferation, is another important factor in the evaluation of effectiveness of standards, put forward by many different authors (Dietz & Auffenberg, 2014; Gulbrandsen, 2005; Kalfagianni & Fuchs, 2011; Kalfagianni & Pattberg, 2013a; Tikina & Innes, 2008). Although looking into the entities currently adopting the scheme is obviously very important for the evaluation of effectiveness, examining the entities that are 'opting out' of the certification schemes, could be very useful as well. Given the fact that most sustainability standards possess a voluntary character, the least sustainable entities are given the opportunity not to participate in the scheme. However, in practice this is very difficult, so the focus will be on the number of producers that are actually taking part in the certification schemes. In order to examine uptake, literature suggests looking into membership size, type, and their geographic coverage (Confederation of European Paper industries, 2000; Kalfagianni & Pattberg, 2013a; Kalfagianni & Pattberg, 2013b). The size is measured by the number of farms that operate within the standard as well as their coverage measured in hectares and production measured in metric tonnes. Geographic coverage is examined by the analysis of the location of the participating farms or farmer organisations.

Table 6: Scientific sources and operationalisation for uptake

Category	*Indicator*	Operationalisation	Source
Uptake			Dietz & Auffenberg (2014); Gulbrandsen (2005); Kalfagianni & Fuchs (2011); Kalfagianni & Pattberg (2013a); Schlyter et al. (2009); Tikina & Innes (2008);
	Membership size & type	The amount and type of actors or	Kalfagianni & Pattberg (2013a); Kalfagianni & Pattberg (2013b);

		entities adopting the standard	
	Geographic coverage	The geographic areas actors or entities adopting the standard are active in	Confederation of European Paper industries (2000); Kalfagianni & Pattberg (2013a); Kalfagianni & Pattberg (2013b)

4.1.6 Capacity building measures

Capacity-building measures increase effectiveness of fostering sustainability objectives in the sense that it improves stakeholder's self-reliance and efficiency and decreases obstacles like financial difficulties or limited technical information. Capacity-building measures can include several factors, but the most important ones resulted from literature concerning sustainability standards are group certifications, training and technical knowledge for best practices (Gulbrandsen, 2005; Mori Junior et al., 2016; Tröster & Hiete, 2018).

Group certification has been introduced mainly to allow smallholder farmers to opt for certification as well, because individual certification often brings along many administrative and implementation costs. Group certification has been found to enhance adaptation which might in turn lead to an improvement of environmental problems (Tröster & Hiete, 2018). Gulbrandsen (2005) endorses this by the results of his research stating that the chance of losing trading channels increases the participation in collective membership. Uptake may increase because refusing to participate in a collective membership might result in the loss of trading channels for producers, meaning they are somewhat 'obliged' to opt in when they want to maintain their market access (Gulbrandsen, 2005). Trainings and technical knowledge can ensure community development and better practices with regard to social and environmental development.

Table 7: Scientific sources and operationalisation for capacity building measures

Category	*Indicator*	Operationalisation	Source
Capacity building measures	*a) group certifications* *b) trainings* *c) technical information*	(a) option for group certification (b) the amount & type the standard offers for its workers and inspectors (c) technical information concerning best practices	Gulbrandsen (2005); Henry & Pechevy (2017); Mori Junior et al. (2016); Tröster & Hiete (2018)

4.2 Expert consultation

Expert consultation has been conducted to evaluate the framework once more and to receive extra input for the constructed framework. 21 experts have been approached, of which seven have filled out the sent survey. The results of this consultation will be discussed in this section. The two figures below will give insight in the opinion of the experts about the indicators resulting from literature.

Figure 1 shows the broad division of the responses of the experts in the different categories, whereas figure 2 will clarify which indicators have been evaluated into which category. It can be observed that one indicator has overall been considered to be not important at all. Ten indicators have been evaluated as 'relevant' to the measurement of effectiveness of standards for fruit and vegetables. Seven indicators are assessed to be absolutely essential for the evaluation of effectiveness of standards. Fortunately, only one indicator is evaluated to be of low importance for the indirect measurement of the effectiveness of standards for fruit and vegetables, suggesting the other indicators are considered useful and suitable for the indirect measurement of the effectiveness of standards for fruit and vegetables.

Figure 2 presents a scale where the different indicators are put according to the opinion of the experts. The figure shows that the indicator evaluated as least important corresponds with 'the existence of prior public regulation'. The indicator at the end of the scale, 'public accessibility of reports', has been assessed of high importance. All of the experts have considered this indicator as absolutely essential. In between are the rest of the indicators, of which the vast majority (13 out of 18 indicators) is deemed at least relevant. Overall, the framework can be considered a good fit for the indirect measurement of the effectiveness of standards for fruit and vegetables. However, considering the low score that is received by the indicator 'prior existence of public regulation, it has been decided to exclude this indicator for further analysis.

Figure 1: Overview of the responses of the experts

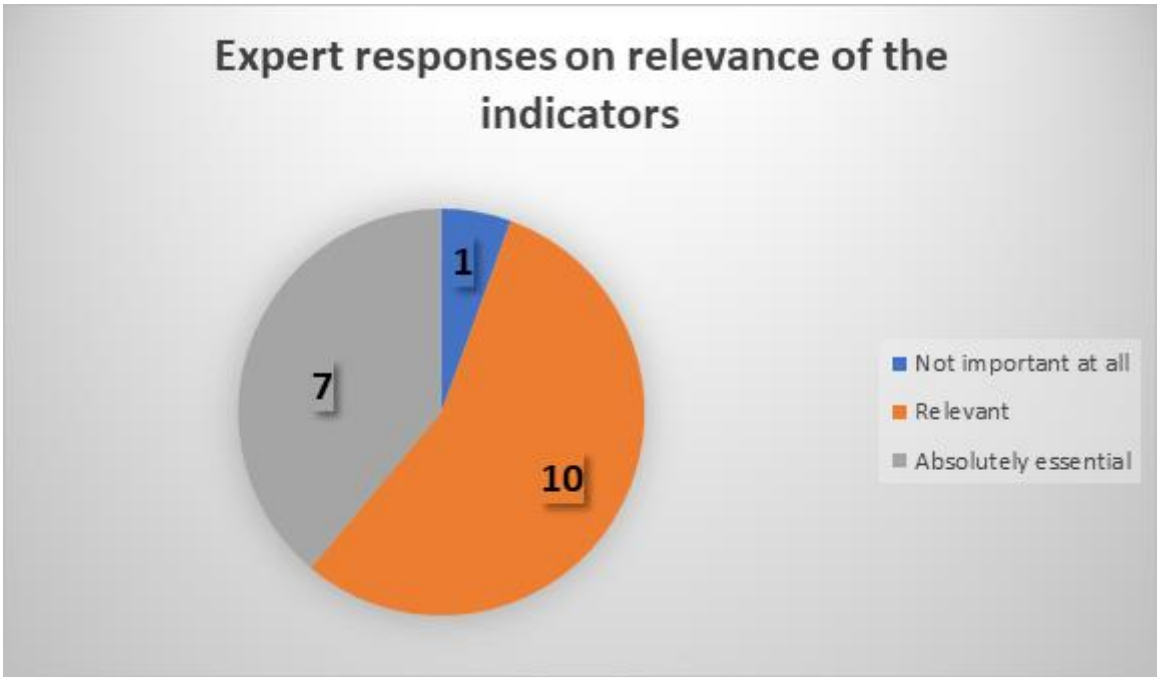
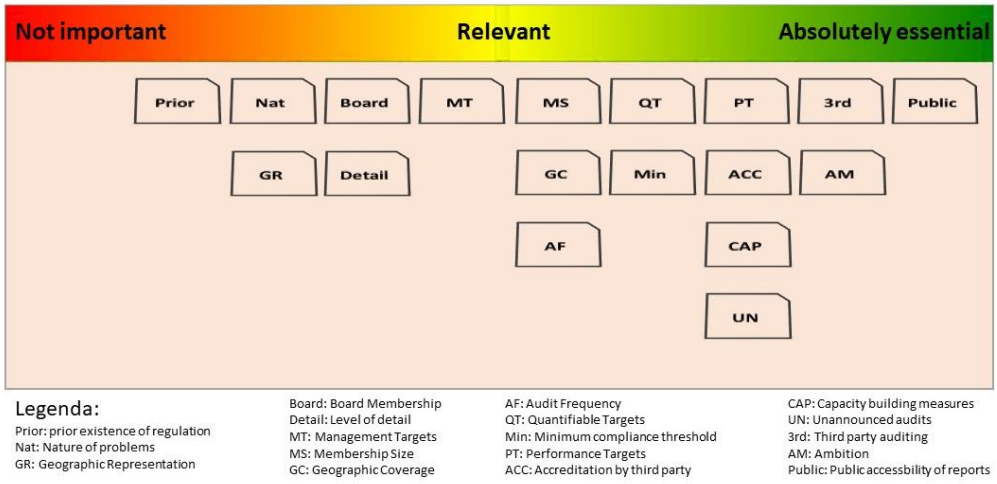


Figure 2: Scale of indicators ranked by the experts



4.3 Comparison of effectiveness of standards for fruit and vegetables

After the expert consultation, the indicators that are liable to analysis of the selected standards are summarized in table 8.

Table 8: Indicators for analysis

Problem structure	***Stringency***	***Quality of the audit***	***Access to decision-making process***	***Uptake***	***Capacity building measures***
Nature of problems Scientific uncertainty	Performance targets Management targets	Third party auditing Accreditation by a third party	Board membership Geographic representation	Membership size & type Geographic coverage	Group certification Trainings

Consumer awareness	Quantifiable targets Level of detail Ambition	Public accessibility of reports Minimum compliance threshold Severe sanctions Unannounced audits Audit frequency Continuous improvement Chain of custody			Technical knowledge

In this section, the findings for every indicator will be discussed by category. For each category, the results are summarized in a table at the end of the paragraph.

4.3.1 Problem structure

To begin with, the problem regarding sustainable agricultural practices is difficult to address due to its complex and systemic nature. The question at hand can be considered systemic because of the large number of elements and interconnections that strive for a common goal (Pryshlakivsky & Searcy, 2013). First of all, many different elements are related to sustainable agricultural production of fruit and vegetables, including farmers, processors, plantation owners, retailers, NGO's, governments, consumers etc. These parties are interconnected through private and public regulation, market dynamics and mutual communication. Secondly, the problem covers many different areas in the environmental, social and economic field. Sustainable agricultural practices must for example include soil conservation, good working conditions and minimum wages.

Scientific uncertainty regarding environmental causes and consequences of agricultural production of fruit and vegetables is rather low, which facilitates the tackling of the problem at hand. Within the scientific literature regarding sustainable agricultural practices, consensus exists about the major problems. The use of agricultural chemicals, soil degradation and water scarcity are issues especially related to agricultural production (Pingali, 2001). With regard to social consequences, poor working conditions, little rural development and low wages have been recorded (FAO, 2020). However, these issues are not exclusive. As already discussed in the former section about the nature of the considered problems, many different questions are addressed in fruit and vegetables production. Furthermore, clear information about the production and harvested area of every crop is available through the FAO. Human behaviour forms the main difficulty concerning agricultural production, especially when it comes to deforestation. Here, large uncertainties exist due to illegal logging in many developing countries. An important example includes avocado farming in Mexico (Hansen, 2017).

Generally speaking, the level of consumer awareness is relatively high throughout the world. Many studies show an increasing demand and willingness to pay for price premiums in several countries (Jensen, 2011; Wang, 2019). Demand and willingness to pay are especially high in the developed world. Several studies show indeed that higher incomes increase willingness to pay price premiums for organic fresh fruits (Wang, 2019). Fruit and vegetable consumption is as well highest in the Global North compared to other world regions, which refers to another problem of food security in developing countries (FAO, 2020; Hall et al., 2009). However, higher awareness in regions with higher consumption increases chances of certification schemes to achieve positive impacts. Although an increasing demand for organic fruits is an advantageous development, it also causes higher imports from other regions, where increasing demands are slowly emerging. Other problems that occur with regard to consumer awareness have to do with the availability of certified products and a low degree of understanding. Janssen & Hamm (2012) have found that willingness to pay for different organic certification logos in six European countries was indeed higher. However, this higher willingness to pay was not based on objective information, implying the need for better information provision. The study of Annunziata, Mariani & Vecchio (2019) support the previous finding with results from their study into the effectiveness of sustainability labels in Italy. The results of the study demonstrate low visibility of sustainability labels perceived by respondents and a low degree of understanding of the different labels. Fair trade mentions a 'label fatigue' of consumers from the complexity of comparing all the certification claims (Fair Trade, 2020).

Positively, consumer awareness is high with regard to the sustainability problems involved in agricultural production, as well as consumer demand for certified products and willingness to pay for price premiums. This is true especially in the regions where fruit and vegetables consumption is high, raising hopes for the effectiveness of standards in this sector. Though, many consumers struggle to understand the meaning of the different certification schemes. More and clear provision of information for consumers are probably worth considering to increase the effectiveness of private standards for fruit and vegetables.

Table 9: Comparison of problem structure of standards for fruit and vegetables

Domain	*Indicator*	Score
Problem structure		
	Nature of problems	Complex
	Uncertainty	Low
	Consumer awareness	High

4.3.2 Stringency of the standards

Generally speaking, the standards score quite well on the stringency scale, all being at least medium stringent. The four standards include performance targets and many management targets, assuming that sustainable outcomes and practices are encouraged through the requirements of the standards. Quantifiable targets are included as well, however on a much smaller scale. The four organisations are considered detailed in their overarching principles, whereas ambitiousness is considered rather high with the exception of Global G.A.P.

When evaluating the stringency of the standards in more detail, at first, the performance targets of the initiatives are considered. All organisations include performance targets in their standard, however the extent in which they do differs. Rainforest Alliance and Fair for Life have a high focus on monitoring and measuring actual performance within their standards. Examples include monitoring of energy records or sustainable collection rates. Rainforest Alliance has developed its own environmental and social impact assessment as well. The inclusion of performance targets in the standards of Rainforest Alliance and Fair for Life will increase its chances to actually achieve these targets. Although Global G.A.P. and Fair Trade include performance targets to a smaller extent, many of the important issues are covered. The targets for example include pest monitoring and energy and water usage. A bigger issue arising in the standards of Global G.A.P. and Fair Trade refers to the formulation of the requirements. The requirements or targets remain rather broad and susceptible for one's own interpretation. For instance, when complying with the Fair-Trade standard, producers will have to 'choose measures for the enhancement of biodiversity', but no specific rules are included. The lack of quantifiable targets increases this problem.

Where Global G.A.P. and Fair Trade are somewhat lagging behind with regard to their performance targets, this is not the case when it comes to their management targets. All organisations steer towards the adoption of sustainable management plans for waste, soil, energy, wildlife and biodiversity in their standards. One important difference can be noticed here, which is the lack of an Integrated Pest Management implementation within the standard of Fair Trade. Producers are required to have an advisor of IPM in place in addition to at least one alternative for pesticides, but contrary to the other organisations the implementation of an Integrated Pest Management systems is not required. Environmental impacts for soil and air among other things are therefore expected to be better for the other three organisations. Besides, higher market proliferation may as well be a consequence given the strong requirements for pests when exporting to the EU (CBI, 2018).

Another shortcoming, that applies to all the standards, refers to the allowance of local legislation to rule over that of the standard. At Fairtrade and Fair for Life, the incineration of (hazardous waste), for instance, is allowed when local legislation permits to do so and in accordance with all safety recommendations. The standard of Rainforest Alliance also includes some examples of applicable law being superior to the standards' rules, in case of the withdrawal of surface or groundwater and water quality parameters for treated sewage. Similarly, Global G.A.P. shows a serious shortcoming with regard to the use of GMOs, where permission varies on the basis of applicable law in the country of production.

The third criterion for stringency, inclusion of quantifiable targets, reveals the biggest limitation with regard to the stringency of the standards. All four standards show a low number of quantifiable targets. This is a little understandable considering the levels of difference in plantation size or crop production for example, which might hamper the inclusion of standardized quantifiable goals in the standards. Though, these kinds of targets are very much required in order to achieve certain goals and quantifiable targets can as well be presented in the form of percentages for instance. Therefore, the exclusion of quantifiable targets limits the stringency of the standards and the standards in this analysis could seriously increase their effectiveness by including this kind of targets.

Moreover, the level of detail is somewhat hard to assess, because of the different set-ups of the standards. Global G.A.P. has three different categories of criteria for fruit and vegetables, that are All Farm Base, Crops Base and Fruit & Vegetables. In turn, these three categories cover different subjects, with each subject including different compliance criteria. The three main categories treat 17, five and eight subjects for All Farm Base, Crops Base and Fruit and Vegetables respectively. The different subjects covered each have an amount of compliance criteria (i.e. indicators) varying from one to fifty. Technically speaking, according to the definition used by Kalfagianni & Pattberg (2013a), the standard can therefore not be considered detailed given the fact that some subjects contain only one indicator. Fair For Life maintains a similar system, including eight principles that are as follows: Fair Trade policy management, social responsibility, environmental responsibility, local impact, Fair trade in supply-chain management, product quality, empowerment & capacity building, respect for the consumer and managing certification and performance. These eight principles include in their turn different subjects, that each cover a certain number of indicators ranging from one till 28. Here again, technically seen, each subject does not cover three indicators. However, the overarching principles do include more than three subjects. Hence, the inclusion of different subcategories under one overarching principle might decrease the number of indicators covered, but one might say it even increases the level of detail. To clarify, Fair Trade and

Rainforest Alliance provide four overarching principles, that is effective planning & management system, biodiversity conservation, natural resource conservation and improved livelihoods & well-being for Rainforest Alliance and general requirements, trade, production and business & development for Fair Trade. These categories cover between seven and 81 indicators, which would technically comply with the required level of detail. However, many more indicators are covered under one principle or category. This would suggest that touching upon more principles in the standard through adding subcategories would decrease the level of detail for these principles, which is not considered a fair evaluation. Therefore, all organisations are assessed to possess an adequate level of detail.

Lastly, ambition of the different standards is considered. Global G.A.P. understands sustainability mainly in the sense of its name, that is good agricultural practices. Little attention is paid to the social dimension, for example no criteria exists about discrimination or child lab or. These social aspects are covered in the Global G.A.P. Risk Assessment on social practices (GRASP), which is a voluntary add-on product for Global G.A.P members. This means members can choose not to pay attention to worker's health, safety and welfare by not adding this product to their membership, which is obviously decreasing effectiveness of the standard concerning social impacts. The other three organisations include social practices in their normal standards and require compliance to the criteria, which is why they are considered more ambitious. Fair Trade's main focus is on the improvement of social conditions in agricultural production. Fair for Life and Rainforest Alliance have a more balanced division of environmental and social principles, where Fair for Life focuses slightly more on the social dimension and Rainforest Alliance more on natural resource and biodiversity conservation. These two organisations can be considered more ambitious while they envision a broader set of changes, which is encountered again in their wider variety of performance and management targets.

Differences exist as well considering international agreements. There is no Code of Conduct for the production of fruit and vegetables that standards can be held against. However, several other agreements have to be taken into account. Fair Trade's standard may be considered in conflict with the IPPC, since they do not require the implementation of an IPM system. Furthermore, none of the organisations can be considered ambitious with regard to organic farming. Neither of them requires organic certification. However, organic production is greatly encouraged within Fair for Life and Fair Trade, where for the latter rewards by higher Fairtrade minimum prices for organically grown products are even involved. Rainforest Alliance states to go beyond organic farming in several sectors, including wildlife conservation and worker welfare. Yet, when they do so, one might wonder why they don't opt for organic

certification as well. For Global G.A.P., organic farming does not seem to be an essential requirement.

Besides, ambitiousness is reinforced for Fair Trade and Rainforest Alliance through their membership of the ISEAL Alliance and accordingly their compliance with their Codes of Good Practice.

In conclusion, Global G.A.P. performs least on the scale on the stringency, fluctuating between lenient and medium stringent, mainly due to low ambition compared to the problem at hand and limited quantifiable targets. Next in line comes Fair Trade, considered to have a medium strict standard. Fair for Life is assessed between medium stringent and stringent and Rainforest Alliance is considered 'stringent' with the fulfilment of four out of five criteria.

Table 10: Comparison of stringency of standards for fruit and vegetables

Organizations		***Global G.A.P.***	***Rainforest Alliance***	***Fair Trade***	***Fair for Life***
Domain	Indicator				
Stringency	Performance targets	Energy use records Monitoring systems for pest and diseases Monitoring and documentation of water usage Risk assessment for food defence Food fraud mitigation plan	Environmental and social impact assessment (ESIA) Demonstration of water reduction OHS plan and reviews by OHS committee Pest monitoring activities Child labour prevention and monitoring plan Farm baseline assessment Demonstration of energy use reduction Rainforest Alliance List of Prohibited Pesticides Spray drift reduction	Carbon footprint reduction Monitoring pests Hazardous materials list	Impact assessment Health & Safety risk analysis Energy consumption monitoring Stock inventory records of agrochemicals Monitoring system for sustainable collection rates Minimise and monitor air pollution impacts Species resource assessment

			High Conservation Value Areas		
	Management targets	Integrated Pest Management Waste and pollution action plan (minor) Energy efficiency plan Water management plan Soil management Wildlife management and conservation plan (minor)	Integrated Pest Management Waste, wastewater management Energy efficiency plan Water conservation plan Soil conservation and management Wildlife management	Waste management plan Efficient energy use Efficient use of water Soil management Protection and enhancing biodiversity Development plan for migrants and seasonal workers Fairtrade development plan Internal Management System Integrated weed management Management of environmental impacts	Integrated Pest Management techniques Integrated Waste Management Energy management Water conservation practices Soil fertility management Ecosystem management, biodiversity and wildlife Eco-friendly packaging policy
	Quantifiable targets	Sales records Conversion ratio	Safe drinking water parameters Canopy cover and species diversity parameters Minimum wage	Fairtrade minimum price Maximum land size	Reduction plan for synthetic agrochemicals Overview of water usage
	Level of detail	√	√	√	√
	Ambition	-	+	+/-	+/-

4.3.3 Quality of the audit

The audits of the four organisations are all conducted by a third-party. Fair Trade certification is always granted by Flo-Cert, a global certifier especially for Fair Trade products. Members from Rainforest Alliance, Global G.A.P., and Fair for Life can choose from a list of certification bodies that are all accredited by a third party in the case of Global G.A.P and Rainforest Alliance. Whether or not the certification body of Fair for Life is accredited is unknown. Conformance with the requirements of the standards is checked by these certification bodies. If a producer organisation is assessed to be conforming with all relevant requirements, the obtained certificate is valid for a period of three years in the case of Rainforest Alliance, Fair Trade and Fair for Life. These three organisations all make use of a three-year certification cycle in which two surveillance audits are followed after the initial audit. A renewal audit is necessary at the end of the cycle to be qualified for a new certificate. Global G.A.P. provides certificates with a shorter validity of one year, where after a renewal audit follows. So, all the organisations have audits on a yearly basis, but the type of audit varies. Hence, Global G.A.P. forces its members to prove their full compliance every year in order to receive a new certificate, whereas the members of the other organisations are only confronted with a less strict surveillance audit. The three other organisations could consider introducing more stringent surveillance audits, imposing their members to show full compliance more regularly and presumably achieve higher impacts.

With respect to the public availability of the results of these audits, the organisations are quite concordant. None of them provides full access to audit reports for the public. The Rainforest Alliance does make public summaries accessible on their website and Fair for Life includes audit scores for each certified operator in their database. However, the lack of full access to all audit reports is problematic due to serious decrease in credibility and in turn effectiveness, but even more considering the assessment of this particular indicator by the experts. As was mentioned before, ‘public accessibility of audit reports’ is considered to be of high importance according to all experts. Section 4.7 will discuss this issue in more detail.

Certificates are awarded for all four organisations only in case of full compliance with all critical requirements. However, when we take a closer look into the minimum compliance threshold, the amount of these essential requirements varies considerably. Global G.A.P standard for instance covers 93 Major Musts that require 100% compliance out of 224 total criteria, where Fair for Life only covers 21 so-called KO criteria over almost 300 criteria in total. This implies a certain level of flexibility in the implementation of the other 280 criteria,

possibly undermining effectiveness, especially if the criteria deal with high valued sustainability issues.

Rainforest Alliance includes five zero tolerance criteria that constrain the receipt of the certificate with immediate effect in case of non-compliance. These criteria concern High Conservation Areas, forced labour, mistreatment of workers, discrimination and child labour. Furthermore, the standard contains 37 critical criteria for which full compliance is necessary and 82 criteria for continuous improvement that have to be achieved after a certain period of time, which is mostly 100% after six years. Fair Trade covers a quite large proportion of core requirements, for example 110 out of 132 criteria in the most important standard of Fair Trade for small-scale producer organisations. The core requirements have assigned a number, corresponding to the year in which the requirement is checked for compliance. Although the majority of requirements are expected to be complied with in the first year or certification (71/132), some level of flexibility is as well observed here. The remaining development requirements refer to the continuous improvement requirements of the organisation for which the scoring system is defined by the certification body. The minimum average threshold is not provided by Flo-cert, the certification body of Fair Trade.

Two of the four organisations include bonus criteria or recommendations as well, that are Global G.A.P. and Fair for Life. Global G.A.P.'s standard only includes a small percentage of recommendations (7%). Fair for Life, though, even contains more criteria on voluntary basis (33) than criteria that require full compliance (21). The strictness of the compliance methods comes into play with limited critical requirements or relatively many bonus criteria. If organisations are not obliged to fully comply with all the relevant criteria, compliance becomes adjustable, undermining in turn effectiveness. Therefore, the organisations at hand might do well by forcing up their level of criteria that require 100% compliance. This is especially the case for Fair for Life, including only a small percentage of so-called KO-criteria.

In all cases, approval of certification is at risk when critical requirements are not complied with and severe sanctions follow from non-compliance with essential criteria. The certificate of Fair for Life is jeopardized in case of non-conformity to the KO-criteria. For the vast majority of the criteria, MUST criteria, correction measures are expected when they are not met. In case of non-conformance, Global G.A.P. starts off with a warning that may be followed by a product suspension if not resolved within 28 days. Cancellation may result when no effective corrective action has been taken in order to resolve the problem that has led to suspension or in cases of fraud or lack of trust. Within the standard of Fair Trade, a quite similar system is observed. At first, corrective action measures are expected, which can lead to a suspension of the certificate up to six months. Cancellation of certification may follow or in

case of severe non-conformities or if correction of non-conformities will take time. Sometimes, financial penalties are used as well. As was mentioned before, Rainforest Alliance takes strong measures in case of non-compliance to the zero-tolerance criteria; denial or immediate cancellation of the certificate may follow. In other cases of non-compliance, the organisations will firstly turn to a suspension of a maximum of 120 days, or a cancellation of the certificate when the suspension is not lifted within this time period. Other reasons for cancellation include non-compliance to the verification audit rules or a second rejection for an unannounced audit.

This brings us to the next point, the inclusion of unannounced audits. It can be noticed that certification, surveillance and renewal audits are barely to never unannounced, which is a sound conclusion given the fact that arranging these kinds of audits would be rather difficult without any announcement. However, this allows for 'cheating' in advance of the audit. Unannounced audits are in most cases only executed when severe non-compliance is suspected or complaints have been received. Flo-cert, the certification body of Fair Trade, claims to conduct unannounced audits at any time in case of indications of additional risk. The implementation of unannounced audits is positive, but this kind of audit could be implemented on a more regular basis to force producer organisations to comply with all the requirements throughout the year and not only during the announced audits once a year.

Something that already came to the fore in discussing the compliance thresholds for requirements, was whether or not standards include requirements for continuous improvement. With the exception of Global G.A.P., all the organisations focus on continuous improvement in their standards and have adjusted their requirements to this longer-term view. This means the achievement of sustainable goals with regard to agricultural practices for fruit and vegetable production is considered more feasible for these organisations than for Global G.A.P.

With respect to chain of custody, Global G.A.P and Fair for Life offer chain of custody assurance for the entire supply chain, whereas Rainforest Alliance has a specific chain of custody standard for companies purchasing certified products. Fair Trade does not provide a Chain of Custody, but has its own system called Mass Balance. In this system, the mixing of Fairtrade and non-Fairtrade products during the manufacturing process is allowed as long as the actual sales quantity on Fair Trade terms are monitored and audited along the whole supply chain. Although this seriously decreases traceability and consequently efficacy, Fair Trade states that this is considered a workable solution considering the poor living situation of many small-scale farmers that are in urgent need of better terms of trade.

Overall, the four organisations score very well on the scale of quality for the audits, but also show room for improvement on several criteria. Global G.A.P., Rainforest Alliance and Fair Trade are all considered to have good quality of the audit, complying to seven of the nine

criteria for this category. Fair for Life is assessed between medium and good quality. However, this is mainly due to the fact that several criteria are unknown, that are accreditation of the auditing firm and the presence of unannounced audits. The main caveat for all organisations lies within their transparency; none of the organisations provides public accessibility for audit reports, which decreases credibility and in turn effectiveness.

Table 11: Comparison of quality of the audit of standards for fruit and vegetables

Organizations		***Global G.A.P.***	***Rainforest Alliance***	***Fair Trade***	***Fair for Life***
Domain Quality of the audit	Indicator				
	Third-party auditing	√	√	√	√
	Accreditation by third party	√	√	√	Not known
	Public accessibility of reports	—	Partially (public summaries)	—	Partially (scores of the audits)
	Minimum compliance threshold	100% for Major Musts (93/224) 95% for Minor Musts (116/224)	100% for Zero Tolerance (5/124) and Critical criteria (37/119)	100% for Core requirements	100% for critical (KO) requirements (21/297)
	Severe sanctions	√	√	√	√
	Unannounced audits	√	√	√	Not known
	Audit frequency	Annually	Annually	Annually	Annually
	Continuous improvement	-	√	√	√
	Chain of custody	√ (for producers and retailers)	+/- (for companies only)	Bananas only	√

4.3.4 Access to decision-making

As was described before, the main actors in top-decision making bodies often consist of three different parties, which are civil society actors, business actors and state actors (Kalfagianni & Pattberg, 2013a). In evaluating the constitution of the decision-making parties in the four organisations of analysis, it immediately stands out that state actors are absent. This, however, makes sense because the organisations for analysis are private standards. The presence of state actors though could increase effectiveness by providing direct access to public governance institutions, which can create positive synergies between public and private actors with regard to sustainable development.

The partition of the other two groups of actors - NGO's and business and industry members - is in three of the four cases fairly balanced. Global G.A.P is considered the

organization providing the lowest level of access. The General Board and the Fruit and Vegetables Technical Committee (the committee responsible for technical decision-making for the fruit and vegetable sector) of Global G.A.P. both have a fairly simple division, including an equal number of retail members and members from the supply side, making up 14 total board members and 18 members of the fruit and vegetables committee. Although fairly simple does not per se imply less good, it can be considered to be the case here. Civil society and state actors are both lacking in the highest decision-making bodies, resulting in the representation of almost only business interests.

Rainforest alliance has the most diverse and largest board and is considered to provide the highest level of access to decision-making processes. Although state actors are absent as well in the board of RA, consultants, NGO's, academics and business actors are all included. Both business and civil society actors are fairly equally represented in the decision-making orders. State actors are indirectly represented through consultants that also include governments as clients.

The Fair-Trade International Board is assigned by the General Assembly and always includes four producer representatives, four national Fair-Trade organisation representatives and three independent members. Therefore, different interests are supposed to be represented in the decision-making process. Business actors and civil society actors from different NGOs are included in the board, as well as suppliers, a consultant and a retail representative. Again, state actors are lacking in the board.

Fair for Life shows the same pattern as the other three standards, by not including any state actors in the top decision-making bodies. The food industry furthermore seems overrepresented whilst NGO's and retail members are to a lesser degree delegated. Consultants and members from the science community are not present at all. Interestingly, Fair for Life is the only initiative including a consumer stakeholder group in their scheme committee, increasing access to the decision-making process. Unfortunately, though, no application for this position has been done.

In sum, Global G.A.P. and Fair for life demonstrate a lower level of access with respect to the representation of various stakeholders, whereas Fairtrade and Rainforest Alliance show a wider variety of promoted interests from several stakeholders. The inclusion of state actors in all the boards could however increase access levels and in turn effectiveness of private standards even more due to possible creation of advantageous collaborations.

With regard to geographic representation, it can be observed again that Global G.A.P offers the lowest level of access to decision-making processes. The vast majority of board members origin from the developed world (12 out of 14 members). No representatives from

developing countries in Asia or Africa are included in the board of Global G.A.P. The two remaining board members come from Peru and Costa Rica.

Although the Rainforest Alliance scored pretty well with regard to the diversity of disciplines in the board, geographic representation experiences a less balanced division. Here again, a clear majority can be found to origin from the industrialized countries (12 out of 17 members), whilst the other members are from BRIC countries. One member from Colombia should then represent the developing world.

Fair Trade and Fair for Life both show a more diverse geographic representation, including African, Asian, Central American and South American board members. However, both still include slightly more than half of the members that origin from industrialized countries, mainly from Europe.

Concludingly, it can be said that the voice of the Global South is scarcely represented in the board of the four organisations, weakening the level of influence for decisions concerning resources and livelihoods. This is strange, because these organisations are often brought into life for the improvement of resources and livelihoods in these specific areas and hence undermines effectiveness of these standards.

Table 12: Comparison of access to decision-making process of standards for fruit and vegetables

Organizations		***Global G.A.P.***	***Rainforest Alliance***	***Fair Trade***	***Fair for Life***
Domain Access to decision-making process	Indicator				
	Board membership	Supplier (7) Retail (7)	Supplier (3) NGO (7) Consultant (4) Business (3) Science (1)	Busines (2) NGO (3) Supplier (4) Retail (1) Consultant (1)	Supplier (6) Buyers/processors (6) NGO (2) Retail (SA Coop) (1)
	Geographic representation	EU (10) S. America (2) New Zealand (1) Japan (1)	N. America (8) S. America (3) India (2) EU (4)	EU (4) N. America (2) Africa (2) C. America (2) Asia (1)	France (5) Africa (2) Asia (2) S. America (1) C. America (1) UK (1) NL (1) Samoa (1) N. America (1)

4.3.5 Uptake

A first observation concerning uptake levels of the four organisations reveals a big difference in market proliferation. Two organisations immediately stand out with over a thousand members worldwide, 1195 and 1109 for Rainforest Alliance and Fair Trade respectively.

Global G.A.P. and Fair for Life have a much smaller number of members, 245 and 77 respectively. However, the number of farms does not mean that much, since the size of the farms can differ. Therefore, it has been tried to get an overview of the coverage of the different standards. In order to get a comprehensive view an investigation into the total hectares that are covered by the different organisations and production measured in metric tonnes has been executed. Unfortunately, no data was available for Fair for Life, so the following analysis concerning total coverage both measured in production and harvested area will not cover this standard.

Global G.A.P. for example, has 246 members but covers over 5.2 million hectares of land where certified products are harvested (Global G.A.P., 2017). Although, the coverage of Global G.A.P. measured in size is relatively large, covering 3% of all cultivated land for fruit and vegetables in 2018 (FAOStat, 2020), its uptake in terms of type of members is not so well perceived. To say, the average number of hectares for Global G.A.P. certified farms is 21000. This suggests that the amount of small-scale farmers is very low within the membership of Global G.A.P and that the certified operators consist of a privileged group of large plantations in the North - something that will be discussed hereafter.

The Rainforest Alliance has a total amount of 1033253 hectares area for fruit and vegetables, which is around 1% of the total harvested area in the world for fruit and vegetables in 2018 (Rainforest Alliance, 2020; FAOStat, 2020), suggesting that uptake is moderate. Roughly, the same number emerges when the percentage of total production is calculated. The Rainforest Alliance had a total production of 16.486.593 metric tonnes of certified fruit and vegetables in 2018, which is 0.8% of the total production of fruit and vegetables covered in their scheme. With regard to the type of entities that are adopting certification, it may also be assumed here that the number of smallholders represented in the membership of Rainforest Alliance is rather low. The average number of workers is 385, which does not correspond with subsistence, family-run labour as is described in the definition of the FAO. Moreover, on average the farms that are included in the certification scheme of Rainforest Alliance cover 851 hectares, which is again far too big to be defined as a small-scale farm. On top of that, the amount of group certification, that is intended to include more smallholders in the scheme, is rather low. Around two hundred groups are part of the Rainforest Alliance certification, corresponding to seventeen percent of the total members.

Fair Trade certified products were being cultivated at 74134 hectares worldwide in 2018, which is only a very small percentage of the total world hectares for fruit and vegetable production (0.05%) (FAOStat, 2020). The same is true when we look at its total production. Again, Fair Trade covers 0.05% of the world's total production of fruit and vegetables measured

in tonnes. For that matter, it is not too odd since the main products of Fair Trade are coffee, tea and cocoa. Bananas are also one of their main products and a slightly higher percentage is observed here; 0.9% of total worldwide banana production are certified from Fair Trade in 2018 (Fairtrade, 2020; FAOStat, 2020). For Fair Trade, no data specific for fruit and vegetables producer types are available, besides the fact that 421 members are producers and 665 are traders. However, information is available that can give an idea about the inclusion of smallholders within Fair Trade. For example, the average amount of hectares covered by Fair Trade producers lies at 67, which is for comparison far lower than that of GlobalG.A.P. and Rainforest Alliance and might assume that a larger amount of small-scale farms is included to come to this average. The number of workers per producer organization is as well lower, with an average of 100 farmers and workers. Producer organizations are groups of producers unified for certification. An average of 100 workers diffused over several farms suggest that small-scale farmers are indeed included in this producer organisations. However, the amount of producer organisations is still relatively low. The total amount of Fair-Trade producer organisations for all their products is 1599, of which more than ten percent (198) operates in banana production.

In general, uptake is rather low in fruit and vegetable farms, with Rainforest Alliance and Global G.A.P together certifying 4% of world's fruit and vegetables measured in hectares (Global G.A.P., 2019; Rainforest Alliance, 2020; FAOStat, 2020), which is a serious shortcoming for the effectiveness of these standards. Besides, the inclusion of small-scale farmers proposes a second problem with respect to the standard's uptake. This will be discussed more profoundly in section 4.5.

Secondly, a large difference in geographic representation of world regions can be observed, especially between Global G.A.P and Rainforest Alliance. The former having around three quarters of their members in Europe, whilst the latter only has six members in the European continent. The Global South is very well represented within Rainforest Alliance's membership, with ninety percent of its members located in the developing world. Considering the fact that the majority of fruit and vegetables is produced in developing countries, and the most marginalized groups are located here, representation of the global South in standard.

At Fair Trade, the geographic representation is fifty-fifty from the Global South and North. Fair for Life is performing better, with two thirds of its members being located in the Southern countries. Considering the fact that the majority of fruit and vegetables is produced in developing countries, and the most marginalized groups are located here, representation of the global South in the standard's uptake is considered very important. Here, however, an important remark must be made concerning the uptake of Fair Trade. As table 13 shows, the majority of

members of Fair Trade are located in Europe, whereas the target group of the organisations is disadvantaged workers in developing countries, casting doubt on the effectiveness of this standard with regard to this specific goal.

The relatively high uptake of Global G.A.P. and the fact that this is mainly concentrated in Europe can be explained by the specific requirements of the European buyers. In many cases, European buyers require GlobalG.A.P. certification for imported products. This requirement is especially essential for fresh products like fruit and vegetables (CBI, 2018). As a result, many European producers may decide to invest in GlobalG.A.P. certification given the great perceived benefits, increasing the standards' uptake. However, an important downside is involved as well. Producers who cannot opt for certification of GlobalG.A.P. might lose their access to the European market, which is an important market for fruit and vegetables as was seen in paragraph 4.1.3

Table 13: Comparison of uptake of standards for fruit and vegetables

Organizations		***Global G.A.P.***	***Rainforest Alliance***	***Fair Trade***	***Fair for Life***
Domain Uptake	Indicator				
	Membership size & type	188 Producer & supplier members 58 retail & food service members	1195 total 213 groups 42 multi-sites 940 individual farms	1106 total 421 producers 665 traders 20 unknown	77 producers (certified operators)
	Geographic coverage	Europe (180) Asia (17) S. America (17) N. America (12) Africa (14) Oceania (4)	S. America (704) C. America (221) N. America (101) Asia (63) Africa (51) EU (6)	EU (332) S. America (260) Asia (159) Africa (155) N. America (115) Oceania (50) C. America (30)	Africa (20) Europe (17) S. America (16) Asia (15) N. America (5) C. America (4)

4.3.6 Capacity-building measures

Overall, all four organisations perform pretty well on capacity-building measures, providing group certification, several trainings and technical knowledge. The four standards all offer options for group certification, which facilitates the implementation of certification for small-scale agricultural producers for whom individual certification is naturally hard because of the high implementation costs. However, as described in the former section, the inclusion of small-scale farmers still seems to be rather low. Moreover, group certification has been shown to have its negative side effects as well. Some studies reveal that the quality of the audit and requirements seriously diminishes in case of group certification. With the introduction of group

certification, costs are lower for individual producers, but it seems to be at the expense of the audit process, that is often greatly simplified. In some cases, the audit procedure is changed from on the ground audit to a documented audit, which might significantly aggravate performance of the producer organization. Furthermore, the percentage of farms that will be checked decreases in proportion to the size of the producer group. Likewise, the International Labour Organisation (ILO) has demonstrated that not all sites have to be visited for validation of the certification. Sometimes, the external control system is even replaced by an internal one (Dietz & Auffenberg, 2014; Henry & Pechevy, 2017).

As can be observed in table 14, all organizations provide training on health & safety and first aid. The latter means that the presence of well-trained staff for first aid during working hours is required. Besides, the four organisations provide training on Integrated Pest Management and the safe handling of hazardous materials including pesticides. Other specific trainings differ per standard. Global G.A.P. furthermore offers training on water management practices and hygiene, whereas the Rainforest Alliance and Fair Trade provide additional trainings on many more aspects, as can be observed in table 14. Fair for Life includes training with regard to waste and economic management and high-risk work in their standard. Moreover, with the exception of Global G.A.P., the standards include a criterion regarding no discrimination in training. However, some positive discrimination might be observed within the standards with regard to less advantaged group members. The Rainforest Alliance group administrator should make particular efforts to provide training to this specific group. Fair for Life and the Rainforest Alliance are to a large extent concerned with capacity building. The standard of Fair for Life covers one principle that is called empowerment and capacity building, including all kinds of criteria related to this subject. A subcategory concerning education and awareness about Fair trade is included as well as bonus criteria for extra support services and environmental, social or cultural projects.

Technical knowledge on the use of fertilizers, IPM and soil conservation is provided by Global G.A.P. and Fair for Life. Rainforest Alliance and Fair-Trade offer support mainly in other forms. The farm management provides support activities based on the identified needs of group members, such as environmental education or support for local schools. Furthermore, in the case of unavailability of basic education or public health services, the group administrator of the farm develops and implements a plan for the provision of these two basic needs. The ILO mentions indeed a lack of technical knowledge for best practices through network opportunities or conferences for the Rainforest Alliance and Fair Trade, which could be of high additional importance next to the provision of free trainings for all farmers they already offer (Henry & Pechevy, 2017).

Table 14: Comparison of capacity-building measures of standards for fruit and vegetables

Organizations		***Global G.A.P.***	***Rainforest Alliance***	***Fair Trade***	***Fair for Life***
Domain Capacity building measures, like a) group certifications b) trainings c) technical information	Indicator				
	a)	√	√	√	√ (organized producer group)
	b)	Health and safety training	Health and safety training	Health and safety training	Health and safety training
		Training on IPM	Training on IPM	Training on IPM	Training on IPM
		Training on first aid	Training on first aid	Training on first aid	Training on first aid
		Training on the handling of PPP's	Training on pesticide use	Training on safe handling of hazardous materials	Training on safe handling pesticides
		Training on water management practices		Training on sustainable water use	
			Training on waste separation	Training on wastewater and health risks	Training on waste management
			Training on PPE	Training on hazardous work	Specific training high-risk work (including use of PPE's)
		Training on hygiene	Training on disposing pesticide residues	Training on prevention of soil erosion	Economic management training
			Training on the implementation of the standard and good work performance	Training on worker's rights	
			Training on avoiding rodents	Training trade union/elected worker representatives	
				Evacuation training for staff	
				Training on fertilizer use	
	c)	Technical knowledge on the use of fertilizers	Plan for trainings and support activities for group members	Trader's Supporting producers and workers' priorities	Technical and practical knowledge on IPM

		Technical knowledge on IPM Technical knowledge on PPP Technical support on irrigation techniques			Technical and practical knowledge on soil conservation Commercial and technical support from buyer to producer organisation Support to smallholder/marginalized groups Technical information on market provided by Brand Holder

4.4 Summary of results

Now that the results for each organisation are discussed by category, an overall idea of the effectiveness of the standards will be provided in this section. The strengths and points of improvement will be considered first, after which figure 3 presents a visual representation of the scores of the four organisations on the different categories.

The figure demonstrates that generally speaking, private standards for fruit and vegetables can contribute to the fostering of sustainability objectives considering their overall sufficient scores. The Rainforest Alliance and Fair Trade are considered to have the greatest potential, whereas Global G.A.P. and Fair for Life are somewhat lagging behind.

As can be observed from the figure, Global G.A.P.'s main shortcoming lies within its access to the decision-making process. Both the board membership and geographical coverage are highly Europe-oriented. The same is true for its geographical coverage of the participating producers, which significantly decreases its score on uptake. Stringency score is moderate as well, which is caused by low ambitiousness, mainly focusing on environmental aspects, a lack of quantifiable targets and limited performance targets. The standard, however, has high quality audit procedures and pays the right attention to capacity-building measures.

The Rainforest Alliance standard for agriculture received the best score, mainly due to high quality of the audit and a stringent standard that covers a wide variety of management and performance targets. It is considered ambitious with regard to other standards and international regulation and covers detailed overarching principles. Improvements could be established by the incorporation of quantifiable targets and the inclusion of organic farming as required in the standard. Its main shortcomings can be found in the access to the decision-making process and

uptake levels. In the Rainforest Alliance board different interests are represented but membership is primarily performed by Northern actors. Given the fact that some of the certified products under the Rainforest Alliance are in the fruit and vegetables sector, uptake is conceived to be low. Furthermore, smallholders seem to be excluded to a large extent from certification. However, a large number of operators are from the developing world.

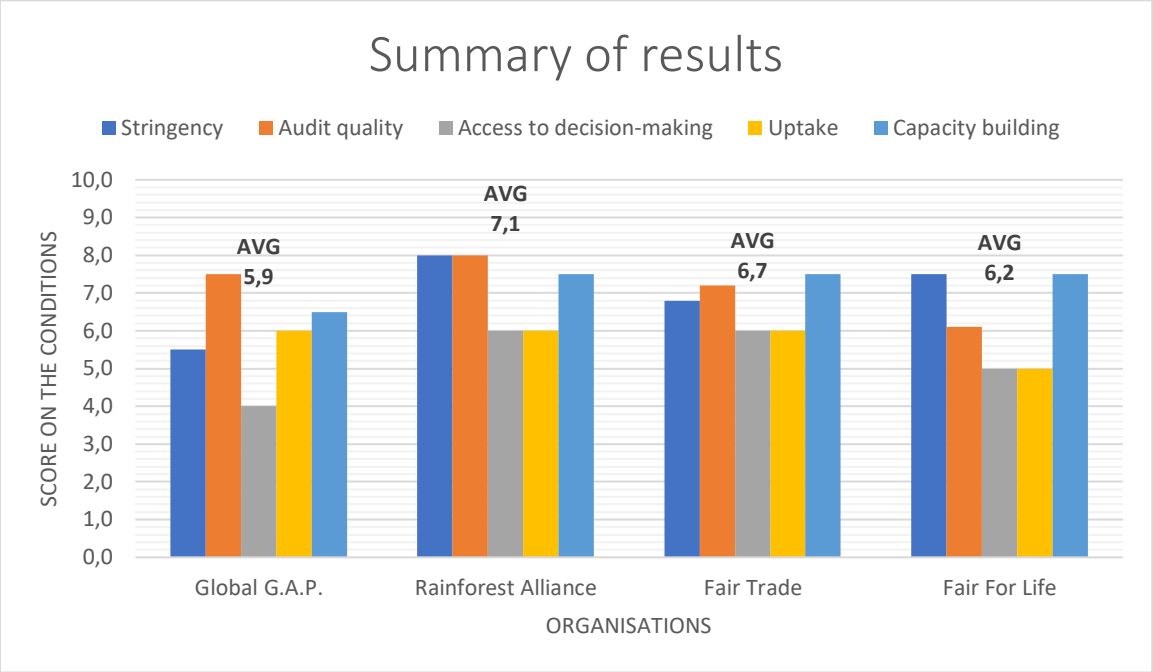
Fair Trade performs second best overall. Quality of the audit and capacity-building measures are high within the standard, whereas access to decision-making again scores lowest. This is mainly due to the lack of some parties in the board membership, like scientists, consultants and state actors and the still quite limited representation of Southern countries in the board. Uptake of the standard is very well divided over the different continents but is rather low.

Fair for Life scores particularly well on capacity building measures and stringency of the standard. Empowerment of the community through trainings, technical knowledge and other forms of support are highly encouraged in the standards and a wide variety of performance and management goals is included in the standard. The standard shows a lower score on audit quality, although this is mainly due to unknown aspects. Fair for Life's main shortcoming refers to its uptake, which is quite low, with only 77 certified operators in fruit and vegetables worldwide. Unfortunately, the size and type of these operators could not be retrieved. Access to decision-making falls short again due to overrepresentation of Northern members and lagging represented interests.

It may have become clear that the greatest weakness of the four organisations can be found in access to the decision-making process. This process is still mainly ruled by European and other Northern actors. Besides, state actors are absent in every board, in addition to consultants, scientists or NGO's in the case of Fair for Life, Fair trade and Global G.A.P respectively.

The audit is in all cases conceived to be of high quality, with a serious unanimous shortcoming lying in the public accessibility of reports. Besides, capacity building measures are generally well presented in the four selected standards. The standards are as well considered to be stringent, whereas Global G.A.P. is somewhat lagging behind due to a main focus on environmental aspects. Some of these questions are discussed in the next sections.

Figure 3: Summary of results for the four selected standards



4.5 Theoretical implications

When looking at the findings of this study overall and comparing them to existing literature, three questions deserve specific attention. First of all, corresponding to prior literature, an inverse relationship between stringency and uptake can be observed (Dietz & Auffenberg, 2014; Gulbrandsen, 2005; Kalfagianni & Pattberg, 2013). Following this line of argument, the exclusion of small-scale farmers stands out, especially within Global G.A.P. and Rainforest Alliance. The findings of this study partly concur with earlier studies on this subject for these two organisations but show slightly better results for Fair Trade. On top of that, uptake is particularly low, all together not even accounting for 5% of total world fruit and vegetables production.

Several studies have demonstrated the existence of a trade-off between stringency and uptake of a standard (Dietz & Auffenberg, 2014; Gulbrandsen, 2005; Kalfagianni & Pattberg, 2013a). After the analysis of the selected standards, it might be concluded that a similar pattern is occurring here, appearing in both directions. Three out of four organisations perform quite well on the stringency of their standard but show very little uptake worldwide. Relatively speaking, GlobalG.A.P. shows a different pattern. This organisation was conceived to have the lowest stringency of the four standards, while having the largest uptake. However, uptake of GlobalG.A.P. compared to global fruit and vegetables production is still quite low, that is 3% of total world production. Some authors claim that stricter compliance methods may as well result in lower uptake (Kalfagianni & Pattberg, 2013a), which would be more in order here.

The quality of the audit is particularly high in all cases, which could result in lower participation given the fact that compliance is harder to achieve.

Next to a trade-off between uptake and stringency, the results of this study might suggest that access to decision-making and uptake could be positively related to achieve higher impacts. To clarify, access to decision-making increases credibility and trust in the scheme, which might result in higher uptake of the participating actors. For the four organisations of this study access to decision-making processes is very low for representatives of the developing world, possibly resulting in lower uptake in these regions as well. Global G.A.P. endorses this allegation, with highly Europe oriented decision-making bodies and participating members.

The second point of discussion refers to the inclusion of small-scale farmers. Prior studies have demonstrated the difficulties for smallholders to arrange certification. Regrettably, this analysis must agree with former studies on the fact that certification for small-scale farmers in several organisations still seems to be difficult, which might have severe consequences. The allegation has been made that smallholders are for the greater part excluded from Global G.A.P. and Rainforest Alliance certification. Fair Trade seems to perform better and for Fair for Life no assumptions can be made due to the lack of information.

The limited number of smallholders included in the schemes has several reasons. According to literature, implementation, certification and monitoring costs still appear to be quite high and might be unaffordable for smallholders (Auld et al., 2008; Handschuch, Wollni & Villalobos, 2013; Henry & Pechevy, 2017; Lambin et al., 2018). Information about the costs involved for certification can confirm this claim. The membership fee for Global G.A.P. individual membership is 1550 euro per year and a maximum of 2600 euro per organization's sub-scope. Group membership's fee is 2550 euro per year with 3600 euro per sub-scope (GlobalG.A.P., 2020). The certification fees to Global G.A.P. range from 25 to 130 euro, whereas the certification body verification and certification fee to the certification body depend on several aspects like product, country, volume etc. (Henry & Pechevy, 2017). Fair Trade fees depend on the number of workers, members and production sites and include special rates for very small producers. The annual fees for the certification body (Flo-cert) are estimated between 2000 to 3000 euro for small producer organisations and 3000 to 4000 euro for larger plantations (ILO, 2018). The Rainforest Alliance does not provide information on the actual costs for certification but describes the different components necessary to get certified. Producers have to pay their certification body for the audit services. Given the fact that all certification bodies working for the Rainforest Alliance are ISO/IEC 17065 accredited and certification bodies have to pay for this accreditation, these fees are assumed to be quite high. These costs vary depending on farm size and farm location. Producers have to pay for the

implementation of the criteria of the standard. The ILO has found that certification fees make up 24 per cent of the income of the Rainforest Alliance, which as well underlines the idea of rather high certification costs (Henry & Pechevy, 2017). The organisation offers technical, but no financial support to farmers to meet the Sustainable Agriculture Standard. These high annual costs are likely unbearable for small farmers, which might result in losses of market access and increasing inequalities (Action Aid, 2005).

Although the relatively high costs of certification of Fair Trade, their larger extent of smallholder's representation can be explained by several reasons as well. As described in section 3.5 Fair Trade offers two specialities to participating farmers: the Fair Trade Minimum price and the Fair-Trade Premium. This can attract small-scale farmers to opt for Fair Trade certification knowing they will receive a premium price for their products, which is not the case with Global G.A.P. and Rainforest Alliance for example. Besides, the Fair-Trade Fund is intended to support farmers in sustainable projects but provides farmers with working capital and long-term credit for certification renewal or operation management as well (Fair Trade, 2020; Henry & Pechevy, 2017). This Fund assists smallholders in the road to certification in terms of financial support, whereas the Rainforest Alliance only provides technical aid as was stated before. Fair for Life offers the same kind of fund for their members, which would suggest a larger proportion of small-scale farmers inclusion.

Another finding that should be discussed is the fact that uptake is considerably low. The four standards analysed in this paper belong to the most important schemes worldwide and uptake would have been expected to be higher. A suggested reason for the low uptake of the organisation can be found in consumer behaviour. As described before in section 4.3.1, consumer demand and willingness to pay for organic or certified products are both significantly increasing in the last couple of years. However, when the market share of organic food products is considered, the results would suggest differently. The market share remains rather low (Thompson, 2000; World food Centre, 2018) around 3% of the total retail share, revealing a discrepancy between the willingness and actual behaviour of consumers. If no substantive demand side for certified products, uptake will remain low. These findings would argue for more encouragement towards consumer to buy certified products, but as well for future research into the determinants of consumer behaviour. This is considered useful given the fact that consumer demand and willingness to pay of consumer are increasing but raising market shares for organic or certified products fail to appear.

4.6 Limitations of the research

One of the limitations of the research refers to the fact that comparison of these standards is somewhat difficult because they cover not only fruit and vegetables, but other products as well. Data gathering for only fruit and vegetables was sometimes hard. This is particularly the case for the analysis of uptake, since it is not clear which fruit and vegetables exactly are produced by three out of four organisations (for the Rainforest Alliance this information was available). The percentage of market uptake is calculated as a percentage of the total production of all fruit and vegetables. This number could have been more accurate if specifically, the production of fruit and vegetables covered in the certification could be used. However, an overall image of the market uptake is provided and this should give an adequate idea about the uptake of the schemes. Even if the calculations are not hundred percent accurate, the real numbers are likely not very different. In sum, the uptake of the certification schemes would probably remain low even if more accurate calculations would have been possible.

Another limitation refers to the sample size and homogeneity of the sample that is approached for the expert consultation. After approaching 21 experts, seven respondents have filled out the survey in which they were asked to assess the selected indicators for the indirect measurement of the effectiveness of standards for fruit and vegetables. Moreover, the sample can be considered rather homogeneous with regard to the respondents' profession. All the experts were linked to a University in the Netherlands or Germany, either as a professor or Ph.D. candidate. Although input from more experts or input from other institutions or organisations would certainly have been interesting, the choice has been made to focus on scientists in the field of environmental governance or food certification. Besides, no significant changes have been made to the results based on the expert consultation. For one indicator, it has been decided to exclude it from further analysis. Furthermore, despite the small sample, the opinions about the appropriateness of the framework were rather similar, considering the majority of the indicators to be suitable for analysis of effectiveness. To clarify, if the expert consultation from the small sample would have brought forward very divergent findings, a larger sample would have been necessary to take representative conclusions. Given the fact that the sample now had matching opinions, it can be assumed that this would represent a large sample as well.

The third limitation considers the data sources used for answering the second sub questions. The majority of the data that is used for analysis stems from the database or websites of the organisations themselves, which might decrease credibility and/or objectivity. The same is true for the fact that this data has been analysed by the researcher, which makes it susceptible to interpretation. Though, considering the latter statement, qualitative research is always

somewhat susceptible to interpretation, so is the case with content analysis. Data interpretation is often inevitable and is considered a strength of qualitative research methods because data should be interpreted in its own context. However, and this argument applies to the former point of critique as well, the methodological validity should be high enough to prevent wrong interpretation. The intern validity is considered high because of the use of data triangulation from both systematic literature and verification from expert consultation. Therefore, the drawn conclusion can be considered correct as a result of the chosen research method, which is the measurement of the selected indicators.

4.7 Future research and recommendations

This section will discuss some of the findings in this study that call for future research or recommendations. The first concerns the unanimous lack of transparency of the standards, demonstrated by an inaccessibility of audit reports for the public. This criterion deserves particular attention considering the fact that many authors have emphasized the importance of transparency (Gulbrandsen, 2005; Henry & Pechevy, 2017; Kalfagianni & Pattberg, 2013a; Mori Junior et al., 2016; Tröster & Hiete, 2018), but even more because this indicator has been assessed by all of the experts to be absolutely essential in the indirect measurement of the effectiveness of standards for fruit and vegetables. Therefore, improvements in transparency, demonstrated by the public accessibility of audit reports are highly needed in the field of certification schemes. Transparency is particularly important for private standards considering their reliance on consumer behaviour, which is in turn highly reliant on credibility of the standard. The lack of transparency for all the analysed standards might seriously decrease their credibility for producers as well, decreasing uptake and consequently effectiveness. Henry & Pechevy (2017) state that full access to reports on violations and reports on plans for corrective action next to detailed audit reports should be made available to the public. Stakeholders are then given the opportunity to match the conclusions of the certification body with the real circumstance, allowing some kind of post-certification verification. Various authors see this as a condition for reinforcing the potential of private standards (Henry & Pechevy, 2017).

The second matter refers to the importance of capacity building measures. Figure 4 shows the temporal distribution of the articles that are included in the comprehensive review on success of certification schemes. The figure shows that certification schemes have received more attention in the last decade in scientific literature. Through the systematic literature review that the researcher has conducted, it has been noticed that the conditions that are deemed advantageous for effective governance have changed over time. In the early state effectiveness was rather evaluated based on institutional designs (stringency) of the standards (Auld et al.,

2008; Blackman & Rivera, 2011; Dietz & Auffenberg, 2014; Dietz et al., 2019; Gulbrandsen 2005; Kalfagianni & Fuchs, 2011; Kalfagianni & Pattberg, 2013a; Schlyter et al. 2009; Tröster & Hiete, 2018) and uptake rates (Confederation of European Paper industries, 2000; Gulbrandsen, 2005; Schlyter et al.,2009; Tikina & Innes, 2008; Tröster & Hiete, 2018). Although these indicators still take an important position in the recent scientific literature, the focus has been shifting more towards the importance of capacity building measures. However, capacity-building measures as an important indicator for the evaluation of effectiveness of certification schemes has only yet been acknowledged by a small number of scientific sources (Gulbrandsen, 2005; Mori Junior et al., 2016; Tröster & Hiete, 2018). Though, several other studies in addition to the surveyed experts emphasize the importance of this category. According to figure 2 in section 4.2, the majority of the experts assessed capacity building measures of essential relevance, explaining its high score on the scale. Besides, several experts took effort to notice the category in their comments. One respondent mentions that: "They all seem to focus on universally applicable standards but there is an increasing demand for standards that are flexible and contribute to capacity building", confirming the finding of the researcher that this type of measures indeed receive greater attention. Another expert remarked that: "Capacity building measures are important, but a very broad concept at the same time. Training is quite crucial, especially for smallholders", which underlines the importance of training as a capacity building measure that might encourage the inclusion of smallholders. Here, the need for capacity building measures and the inclusion of smallholders come together, considering the fact that many small-scale farmers might not have the right information about either the implementation of necessary requirements or about the standards themselves. Smallholders often do not possess information about the correct implementation of the standard, for example on the use of fertilizers. Otherwise, they might be unaware of the existence, benefits or use of a certification scheme (Auld et al., 2008; DeFries et al., 2017; McDermott, 2013). One of the experts mentions that although differences about certification might exist on paper, they often blur in practice. This means that farmers sometimes could even be unaware of which scheme they take part. The training provided by exporters, as well as the requirements, are similar for farmers participating in different schemes. Although the fact that training is provided is a positive aspect, increased clarity might certainly be convenient for farmers.

The study of DeFries et al., (2017) shows that a lack of (access to) information for smallholders can result in further marginalization of these groups (DeFries et al., 2017). Lambin et al (2018) concur with the former argument and state that private sector programmes and governments try to temper the marginalization of small-scale farmers by providing better access to information, technologies and financial assets (Lambin et al., 2018). Training and technical

knowledge are also deemed an important factor for small-scale fruit and vegetables farmers in Thailand (Kersting & Wollni, 2012). In sub-Saharan Africa, technical and financial assistance has been found to be an important discriminating factor for receiving Global G.A.P. certification as well (Henson, Masakure & Cranfield, 2011). All of the aforementioned results might argue in favour of scale-ups and improvements in training and technical knowledge for farmers participating and not participating in the scheme.

However, the relatively low inclusion of smallholders despite the fact that capacity building measures of the selected standards are pretty well assessed, might ask for future research into the implementation and effects of capacity building measures, especially for smallholders. It seems to be true, however, that better capacity building measures of Fair Trade, including a wide variety of training, are related with a higher proportion of small-scale farmers. Fair for Life has a higher focus on empowerment and capacity-building as well, but information about smallholder inclusion is unavailable. Future research might clarify the positive relationship between capacity building measures and smallholder inclusion for Fair Trade and Fair for Life.

All in all, a recommendation following from the results of this study is to provide a broad range of training and technical knowledge for all participants in the scheme. These trainings optimally concern several aspects that might include sustainable water use, waste separation, worker's rights, pesticide handling. For Global G.A.P. and Fair for Life it is as well important to inform and educate members about the standards and its requirements. Fair Trade and Rainforest Alliance have both included a criterion covering the training on information provision for workers on the standard. If members have more information about the competencies they are required to carry out in their work, effectiveness of the standard will increase as well.

Figure 4: Temporal distribution of records for comprehensive literature review of Tröster & Hiete (2018)

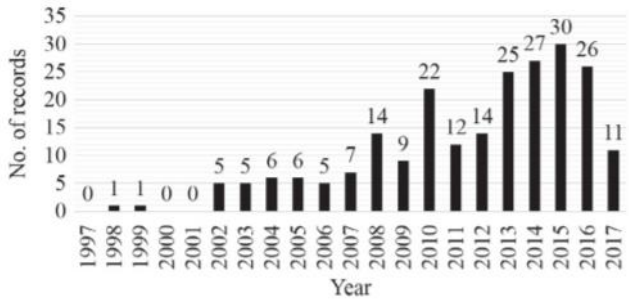


Fig. 2. Temporal distribution of the 226 analyzed records.

Another recommendation is based on the low levels of access to decision-making in the selected standards, presenting the main caveat for all the organisations. Increasing access to decision-making processes has several advantages, starting with increased legitimacy. More inclusive decision-making procedures can as well have positive effects on the uptake of the standard (Kalfagianni & Pattberg, 2013a). Higher levels of access to decision-making procedures for Southern countries lead presumably to higher acceptance of transnationals rules. That, in combination with an increased sense of being heard and being taken seriously will most likely increase uptake in these regions as well.

Several recommendations for a more balanced division in decision-making bodies are provided here. Global G.A.P. could seriously consider changing the setup of their board and technical committees, which only include suppliers and retailers. The inclusion of civil society members, state actors, scientists or consultants improves the promotion of interests, from only that of business and industries to a wider variety of interests. In the meantime, a wider variety in geographical representation is required, which is also the case for the board of the Rainforest Alliance. Southern countries' representatives are severely underrepresented in the board of these two organisations, a pattern that has been observed by several scholars before (McDermott, 2013; Schleifer, 2016; DeFries et al., 2017). This precludes Southern actors to promote their own arrangements and to create the capacity to lay down rules for production (DeFries et al., 2017).

It must be noticed however, that board functions obviously include complex tasks that might not be fulfilled by everyone. Language barriers or lack of competencies potentially play a role but are no excuses for nearly the mere inclusion of Northern board members. Solutions can be found in connecting board members to a particular region or a contact person from a particular sector or developing country.

Lastly, the indirect measurement of effectiveness should ideally be considered a first step of research into effectiveness of standards. For a final assessment of the effectiveness of the selected standards, this research should be complemented by the direct measurement of effectiveness. Now that the potential of the standards for fostering sustainability objectives has been examined, the factual extent to which to contribute to resolving sustainability issues can be investigated. Thus, future research could focus on measuring social, environmental and economic impacts in the field to see if behavioural changes have occurred due to the implementation of these standards.

5. Conclusion

This study was performed to answer the following research question 'To what extent can private international standards for fruit and vegetables be effective in the fostering of sustainability objectives?'. For this purpose, systematic literature review and expert consultation have been conducted and contributed to the exploration of conditions for effective private governance. The study has furthermore examined whether the derived conditions are fulfilled in practice by conducting a content analysis into the documents of four different private international standards for fruit and vegetables. The standards have been checked on stringency, quality of the audits, level of access to decision-making processes and uptake. As a more general subject, the problem structure of the sustainability concerns related to agricultural production has been analysed.

Overall, the study shows that private international standards for fruit and vegetables can certainly be effective in fostering sustainability objectives but encounter some serious problems. All standards have issues with the access to the decision-making processes - these are highly oriented on Northern and industry actors, causing doubt about the inclusiveness of private standards. Furthermore, considering the fact that sustainable agricultural production covers a wide variety of social, environmental and economic aspects, this is also expected in the comprehensiveness of the standard. Due to low ambition, limited quantifiable targets and a mere focus on either social or environmental aspects, the standards of Global G.A.P and Fair trade cannot be expected to adequately address all the concerns at hand. However, the largest problem for all the selected standards refers to uptake, that is overall rather low. Here, concerns about the reliance on market forces for the effective governance of fruit and vegetable production are raised. Results about increasing consumer demand and willingness to pay raises may account for bigger market shares, but greater encouragements for consumers are required.

In sum, Fairtrade and Rainforest Alliance are on the right track of becoming good alternatives for public forms of governance. For Fair for Life and Global G.A.P. the road to becoming effective in fostering sustainability objectives appears to be somewhat longer, they will need to overcome several obstacles. The private international standards for fruit and vegetables show good potential to foster sustainability objectives, however future research into the direct effects of private standards has to research the ultimate effectiveness.

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Annex A

List of experts for consultation

Name	University	Function	Expertise
Agni Kalfagianni	Utrecht University	Associate Professor of Transnational Sustainability Governance	Food governance
Frank Biermann	Utrecht University	Research Professor of Global Sustainability Governance	
Ingrid Visseren-Hamakers	Wageningen University	Assistant professor at FNP	
Philip Pattberg	VU University Amsterdam	Associate professor of transnational environmental policy and governance at IVM	
Sander Chan	Utrecht University	Political scientist Assistant professor	Transnational climate action Global environmental politics
Carel Dieperink	Utrecht University	Senior lecturer and senior researcher	
Giuseppe Feola	Utrecht University	Associate professor of social change for sustainability	
Doris Fuchs	University of Munster	Professor	-Sustainable Consumption + Sustainable Development -Global Environmental Governance: Energy, Climate, Environment, Agrifood, Finance
prof.dr. R (Ruerd) Ruben	Wageningen University	Professor and coordinator of the research programs on food security, value chains and impact assessment	-prospects for smallholder participation in tropical food value chains -the effectiveness of rural cooperative organizations - the impact of fair-trade certification in value chains
Dr. M.J. (Marjanneke) Vijge	Utrecht University	Assistant Professor of Sustainability Governance in the Developing World	
Dr. Walter Vermeulen	Utrecht University	Associate Professor at Copernicus Institute for	

		Sustainable Development	
prof. dr. SR (Simon) Bush	Utrecht University	Professor and Chair of Environmental Policy	
prof.dr.ir. PJM (Peter) Oosterveer	Wageningen University	Personal Professor	Global public and private governance of food towards sustainability, including labeling and certification of food
prof.dr.ir. G (Gert) Spaargaren	Wageningen University	Associate Professor	
mw. J.J. (Jane) Aggrey MSc	University of Amsterdam	Professor at Governance and Inclusive Development	
dhr. A.K. (Anderson) Ahwireng	University of Amsterdam	Professor at Governance and Inclusive Development	
Ceren Pekdemir	Maastricht University	professor at the International Centre for Integrated assessment and Sustainable development (ICIS)	- Governance for sustainable development - Transnational regulation
A.E. Zeijl-Rozema	Maastricht University	Assistant professor Sustainable Development Programme Director - Sustainability, Science, Policy and Society	- Integrated assessment - Sustainability indicators - Governance
S. Roettger-Wirtz	Maastricht University	Assistant professor of EU law	- EU and Global Governance - Soft laws and standards
Ms. C.A.M. (Augusta) Anandi	University of Amsterdam	Phd candidate of Amsterdam Institute for Social Science Research (AISSR)	-multi-level governance approach - research on REDD+, -oil palm RSPO certification
Ms. M. (Martha) Ataa-Asantewaa MSC	University of Amsterdam	Phd candidate of Amsterdam Institute for Social Science Research (AISSR)	value chain engagements for smallholders

Annex B

Survey for experts

Expert Consultation - Effectiveness of standards

Start of Block: Block 1

T1 Dear Sir/Madam,

Thank you very much for taking the time to fill in this survey.

This survey is a second step of the research for my master thesis into the effectiveness of different standards for fruit and vegetables. Based on systematic literature review using scientific sources regarding certification schemes I have developed a framework with different categories and indicators. Your expertise and opinion contribute to the verification of the framework. After confirmation and/or elimination of the indicators, I can continue my research by filling out the framework and analysing the effectiveness of the chosen standards. This research can then contribute to improving the conditions for effective sustainability standards for fruits and vegetables.

Before you continue, please take care of the following statements.

I have read and understood the study information, as enunciated in the invitation mail for this research. I consent voluntarily to be a participant in this study and understand that I can refuse to answer questions and I can withdraw from the study at any time, without having to give a reason.

I understand that participation in this research is anonymous and on no account, data will be shared with third parties. Personal data will only be shared with the supervisor of the researcher.

If you agree with the above-mentioned statements and participation in this research, please click to continue on the yellow button right below.

Page Break

T2 The questionnaire consists of one ranking question and two open questions to allow for remarks or suggestions.

You will be asked to rank the different indicators based on importance.

The list of indicators with their description can be found below. It is possible to see this list again once you are answering the question.

It is important to note that in the scope of my research only indirect measurements of effectiveness are considered. Direct effects like social, economic and environmental impacts are not considered here due to the fact that I could not travel to the locations during the Corona crisis.

Nature of problems: complexity of problems the organization tries to address, e.g. fisheries are considered complex, because fish is mobile and difficult to contain within national borders

Prior existence of public regulation*:* the prior existence of public international regulation, e.g. UN agreements or FAO Code of conducts

Performance Targets: inclusion of targets that measure actual performance, e.g. environmental impacts

Management Targets: requirement of the development of sustainable management plans, e.g. use of agricultural practices that minimize habitat loss

Quantifiable Targets: inclusion of targets that are quantifiable, e.g. biomass limits thresholds

Level of detail: a standard is considered detailed when it develops at least 3 indicators specifying each of the overarching principles and criteria

Ambition: the extent to which the standard goes beyond existing regulation and envisions greater environmental change relative to other standards

Third-party auditing: compliance with the standard requirements are evaluated by an independent auditing firm and not by the organization itself

Accreditation by third-party: the auditing firm is accredited by an independent body, such as the International Organization for Standardization (ISO)

Audit frequency: the number of audits per year

(Un)announced audits: whether or not audits are announced

Public accessibility of audit reports: whether or not the audit results are publicly available

Minimum compliance threshold: whether or not the standard requires 100% compliance with its rules, e.g. no distinction between mandatory or voluntary rules

Severe sanctions: whether or not the standard includes severe sanctions in case of non-compliance. Severe sanctions are considered revocation of license and exclusion of membership

Board membership: diversity in the type and number of actors involved in the board of the organisation

Geographic representation: the region of origin of these actors involved in the board of the organisation

Membership size & type: the amount and type of actors or entities (e.g. a farm) adopting the standard

Geographic coverage: the geographic areas actors or entities adopting the standard are active in

Capacity building measures: the extent to which the standard contributes to capacity building. Measures include group certifications, technical information for best practices as well as trainings for inspectors and for the adopting entities

Q1 Please drag the indicators into the matching boxes according to your opinion

Not important at all	Neutral	Absolutely essential

Q2 Do you have any comments or critics on the developed indicators?

_____

_____

_____

_____

_____

Q3 Do you have any suggestions for other relevant indicators that should be included in the framework?

_____

_____

_____

_____

_____

End of Block: Block 1

Start of Block: Default Question Block

T3 Thank you very much for your participation in this survey.

It is greatly appreciated.

If you have any other questions/remarks or if you are interested in the results of the research, you can contact me at p.vanbasten@students.uu.nl

End of Block: Default Question Block