



AgEcon SEARCH
RESEARCH IN AGRICULTURAL & APPLIED ECONOMICS

The World's Largest Open Access Agricultural & Applied Economics Digital Library

This document is discoverable and free to researchers across the globe due to the work of AgEcon Search.

Help ensure our sustainability.

Give to AgEcon Search

AgEcon Search
<http://ageconsearch.umn.edu>
aesearch@umn.edu

*Papers downloaded from **AgEcon Search** may be used for non-commercial purposes and personal study only. No other use, including posting to another Internet site, is permitted without permission from the copyright owner (not AgEcon Search), or as allowed under the provisions of Fair Use, U.S. Copyright Act, Title 17 U.S.C.*

**Food Certification Industry Capacity and Ability to Comply with
FSMA Final Rule on Accredited Third-Party Certification**

Julie A. Caswell

**Professor, Department of Resource Economics
University of Massachusetts Amherst
caswell@umass.edu**

Kathryn A. Boys

**Assistant Professor, Department of Agricultural & Applied Economics
North Carolina State University
kaboys@ncsu.edu**

Alyssa A. Danilow

**Master of Science
University of Massachusetts Amherst
adanilow@umass.edu**

Kathryn E. Lynch

**Master of Science
University of Massachusetts Amherst
kathybethlynch@gmail.com**

*Selected Paper prepared for presentation at the 2017 Agricultural & Applied Economics Association
Annual Meeting, Chicago, Illinois, July 30-August 1*

Copyright 2017 by Julie A. Caswell, Kathryn A. Boys, Alyssa A. Danilow, and Kathryn E. Lynch. All rights reserved. Readers may make verbatim copies of this document for non-commercial purposes by any means, provided that this copyright notice appears on all such copies.

Food Certification Industry Capacity and Ability to Comply with FSMA Final Rule on Accredited Third-Party Certification

Producers and retailers who want to assure quality and differentiate their products and their businesses are driving the growth of the third-party certification industry in the food sector. The demand of consumers to have confidence in the attributes of foods they choose to purchase also drives this growth. In addition, the use of third-party certification as part of regulatory schemes is contributing to the overall growth of the industry. To date there is no comprehensive understanding of the structure and capacity of the third-party certification industry to meet this new source of international demand for certification services related to regulatory schemes.

The U.S. Food Safety Modernization Act (FSMA) is an example of the intersection of third-party certification and regulatory schemes. In July 2013, the U.S. Food and Drug Administration released the Final Rule on Accredited Third-Party Certification under this Act. This rule “establishes a voluntary program for the accreditation of third-party certification bodies, also known as auditors, to conduct food safety audits and issue certifications of foreign facilities and the foods for humans and animals they produce” (FDA, 2016). A goal of this rule is to “help ensure the competence and independence of the accreditation bodies and third-party certification bodies participating in the program” (FDA, 2016).

Foreign facilities may seek to be certified to a food safety standard for at least two different reasons. First, importers may require certifications in order for products to be eligible for the FDA’s Voluntary Qualified Importer Program (VQIP), which allows imports to go through a faster review before entry. Second, as the FDA may require certain certifications of facilities to avoid potentially dangerous or contaminated food from reaching U.S. consumers (FDA, 2016), facilities may seek certification so they can export to the United States. There is historical precedent for this type of relationship between government regulations and third-party certification agencies. Comparable models of third-party verification are used to ensure compliance with required greenhouse gas emissions reporting procedures in California, Massachusetts, and Europe (McAllister, 2012).

Fagotto (2010) describes the importance of third-party certification bodies in the new approach to the regulatory environment under FSMA. The FDA does not have an existing team of inspectors to verify the safety of the increasing volume of foreign food products entering the U.S. market, so they instead will rely on non-governmental certification bodies to help ensure FSMA compliance for covered entities. Thus, the distribution and organization of these certification bodies will likely affect whether the FDA can implement FSMA effectively. FSMA also contains requirements intended to minimize potential conflicts of interest: certification bodies and the organizations whose products they certify cannot be a part of the same company (Fagotto, 2010). However, Fagotto warns that the interests of third-party certifiers may not always be aligned with those of the general public, and conflicts of interest could persist without adequate controls and incentives.

Third-party certification can be a viable part of the regulatory processes for assuring compliance with food quality standards not only because it is independent from firms seeking certification (by the design of the industry), but also because the certification industry is far-reaching in both its geographic coverage and the range of agri-food sub-industries it has a history of offering services

to. Additionally, third-party certification can increase food quality by requiring suppliers to be more stringent in their operations. However, the capacity of the industry to make a significant contribution to the safety of foods imported to the United States under FSMA is under debate.

The objective of this study is to assess the overall structure and capacity of the global third-party food certification industry. Building on work by Boys et al., 2015, here we analyze the universe of third-party food standards offered worldwide as of 2016 and the industrial organization of certification bodies that certify to those standards. This analysis considers the number and geographical reach of certification bodies. Linkages between standards and certification bodies (e.g., patterns of standards coverage by certification bodies) are also explored. We use this analysis to assess the certification industry's capacity to provide services that will allow importers and foreign facilities to comply with the FSMA Final Rule on Foreign Supplier Verification Programs (FSVP) for Importers of Food for Humans and Animals.

STRUCTURE OF THE FOOD CERTIFICATION INDUSTRY

Two key components of food certification are considered in this analysis: agri-food system standards and the certification bodies who provide third-party verification (audits) that individual agribusinesses are in compliance with the requirements of a given standard. Figure 1 presents a simplified hierarchy of this system. Standard Setting Bodies set the standards. These bodies can be a government, a non-government organization (NGO), or a private firm. The Standard Setting Body approves accreditation bodies that in turn, authorize certification bodies to conduct audits of companies for compliance with these standards. Accreditation Bodies “can be government agencies, NGOs, industry associations or a combination of the three” (Hatanaka and Busch, 2008). Accreditation Bodies also fulfill a key role in assuring the integrity of the certification process by providing oversight, education, and sometimes training, to certification bodies.

The certification bodies that provide third-party certification are themselves private organizations, commercial firms, non-government organizations (NGOs), and, very occasionally, public organizations (Hatanaka and Busch, 2008). Certification bodies “offer some combination of the following four services: (1) establishing standards; (2) verifying that the standard is implemented; (3) issuing verification, and (4) making periodic audits to ensure continued compliance” (Hatanaka and Busch, 2008). Oftentimes, retailers will provide suppliers with a list of approved third-party certification bodies. They do this partly because “they prefer to use established organizations that are recognized by others in the industry (Barrett et al., 2002) to help protect their own reputation” (Hatanaka et al., 2005).

METHODS AND DATA

Master Standards List

A key contribution of this study is to develop a resource that identifies and details the number and scope (product, process, and geographic coverage) of agri-food standards used internationally. We used an iterative process to identify third-party standards in use in 2016.

[Insert Figure 1 Here.]

Widely adopted food standards are well known. Through consultation with food safety and food standards experts, an initial list of food standards was developed. This list was then complemented by an Internet search using an extensive variety of pre-specified terms, to identify additional food standards. This search process was repeated by two independent researchers in different search engines to help ensure completeness of the standards list. Table 1 shows the information collected about each standard. The list of intrinsic quality attributes proposed by Caswell and Anders (2011) was used to categorize the standards based on the characteristics to which they apply. Finally, while collecting information about individual certification bodies (described below), the roster of standards claimed to be within the consulting or auditing activities of an individual firm were reviewed and any food standards which were not previously identified were added to this inventory. This step was particularly useful in identifying standards that are based and used in non-English speaking regions. From this inventory of standards, those that were duplicates, were missing significant information, or were not applicable to the agri-food industry were removed. Through this process, a total of 425 agri-food standards that were in use internationally in 2016 were identified.

Certification Body Database

The organizations that serve as certification bodies were identified through a multi-step process. First, information was sought regarding firms authorized to certify companies to a particular standard. This data is frequently posted on websites or other publically available documentation. This is particularly true for well-established agri-food system standards such as GLOBALG.A.P., IFS, GMP+, Marine Stewardship Council, British Retail Consortium (BRC), and USDA National Organic Program. Some accreditation bodies also post information about organizations who they have authorized to serve as certification bodies; when available, this information was also used. Finally, internet searches of individual standard names were completed. For both this process and searches conducted to identify food safety standards, translation software embedded in internet search engines and other translation resources were used extensively to help ensure complete and accurate data collection. Through this process, 581 certification bodies were identified internationally as of 2016.

Once the list of certification bodies (CBs) was developed, a stepwise process was used to construct a database of information about each organization. Table 1 lists all the CB attributes collected in the Certification Body Database. As a starting point, business characteristics such as the location of the organization's headquarters, the year it was founded, measures of its size (annual revenue, number of employees), and the primary North American Industry Classification System (NAICS) industries in which the firm operates were collected.

[Insert Table 1 Here.]

Also, and particularly important to this study, a list of the standards which the CB is authorized to certify firms to and the specific countries in which each CB operates were also identified. Details of each organization were obtained from a database of business information (Hoovers^{TM1}). When information from this source was incomplete or not available for a particular company, information was obtained from the CB website, corporate annual reports, or other public sources. Careful

¹ This firm is a Dun & Bradstreet company and serves as an interface for business records available through Dun & Bradstreet's global database.

review of these latter sources was particularly needed to identify the scope of each CB's certification activities and geographic area of operation. Additional details about the construction of these databases are available from the study authors.

RESULTS

Descriptive Overview of the International Capacity of the Food Certification Industry

The Master Standards List includes 425 standards identified as relevant to the agri-food industry. Examining these standards through the lens of Caswell and Anders (2011) aggregation of attribute types (Figure 2) finds that standards related to process attributes such as production or marketing practices were the most common (56.7% of identified standards). Within this group, the most common subcategories of process standards are environmental (110 standards, 45.6%), organic (68 standards, 28.2%), and social justice standards (22 standards, 9.1%). Overall, standards addressing food safety were second in number (34.4% of identified standards), and those certifying the value/compositional integrity of agri-food products were a distant third (4.2% of standards) in their proportion of the standard population. Where relevant, the products of focus of these standards were also considered. While a majority of the standards was not focused on a specific product (65.4%), a notable number of standards were designed around the needs and interests of specific industries. Meat and livestock (5.9% of standards), aquaculture and seafood (4.9%) and forestry (4.5%) industry standards were the most common among industry-focused standards.

The Certification Body Database contains information on 581 organizations that offered certification to these standards in the food and agriculture industries in 2016. Firms who were in operation but who had exited this market prior to 2016 are not included in this database. All of the certification bodies in our sample had websites; corporate information for a majority of these organizations (68.7%) was available through the HooversTM database.

The North American Industry Classification System, or NAICS, “is the standard used by Federal statistical agencies in classifying business establishments for the purpose of collecting, analyzing, and publishing statistical data related to the U.S. business economy” (U.S. Census Bureau, 2016). To the extent they were available, the NAICS Codes for CBs were obtained from the HooversTM database.² Mostly commonly, the primary business activity of CBs in our sample were Testing Laboratories (13.4%).

[Insert Figure 2 Here.]

Food Safety Standards

A total of 425 different standards were identified and are included in the Master Standards List; among these, 146 are food safety standards. Further, in our sample of 581 certification bodies, 358 organizations cover at least one food safety standard. We examined the frequencies of CBs certifying the 10 most commonly certified food safety standards, as well as the 10 most commonly certified food safety standards among CBs that certify one food safety standard. We also isolated certification bodies that certified exactly 1, 2, 3, 4, 10, and 15 food safety standards to assess

² HooversTM had no data available for the primary NAICS Industry for 31.7% of the CBs. This was particularly true of CBs that are headquartered outside of the US.

whether a pattern emerges among certification bodies of various sizes and the food safety standards that they certify.

Results indicate that there exists considerable variance in the number of different standards certified by each certification body. The largest group of CBs specializes in certifying to just one standard (26% of CBs); among these firms, 26 different standards are offered. More commonly, however, firms provide certification services for multiple standards. More than 85% of CBs in our sample certify between 1 and 15 standards, and one firm in our sample claims to be authorized to certify firms for 100 standards. On average, each CB provides auditing services for 7.7 agri-food system standards.

The standards for which certification services are most commonly provided are summarized in Table 2. Not surprisingly, standards which are related to general business management and are not specific to agri-food firms, though they may be adopted by them, are the most frequently offered (ISO 9001, ISO 14000, OHSAS 18001). Organic standards (EC834/07, US NOP), and food safety standards and management systems (ISO 22000, HACCP, GLOBALG.A.P, FSSC 22000) are also among the most frequent certifications offered by CBs.

[Insert Table 2 Here.]

Geographic Coverage of CBs Certifying Agri-Food System Standards

The geographic area(s) in which CBs operate is a particularly important consideration for the capacity of CBs to be able to fulfill their role as described in the Foreign Supplier Verification Program (FSVP). Many of the certification bodies have offices and operate in multiple countries; the 581 certification bodies in our sample have office locations in 182 countries.

[Insert Figure 3 Here.]

A useful approach to evaluating the access to certification services in each market is to consider the number of CBs in operation in each country. A heat map summarizing this information for all standards is presented in Figure 3. As might be anticipated, CBs have the greatest market presence in developed countries and in particular in European, Australian, and North American markets, and a much smaller presence of in developing nations.

[Insert Figure 4 Here.]

Figure 4 presents a heat map that shows how the offices of certification bodies that offer food safety certification are distributed worldwide. Note that the data presented reflects countries where the CBs have offices. To highlight the highest concentrations of these organizations, Table 3 presents a description of the number of certification bodies with food safety certification services and offices in each country for countries with 20 or more certification bodies present. There are 33 countries with more than 20 CBs who offer food safety certification services. Among these, Germany and the US have the most CBs that offer food safety certification services, with 66 and 65 organizations, respectively. The 33 countries with more than 20 certification bodies with food safety certification services include Australia, South Africa, all 3 North American countries, 15 countries in Europe, 7 in Asia, 3 in the Middle East, and 3 in South America. Producers in these

countries may have better access to food safety certification services thus strengthening both the safety of foods produced by these firms and improving the ability of these firms to access the US market.

[Insert Table 3 Here.]

It must be noted, however, that the actual country coverage for certification services, however, is likely to differ from the office coverage. Certification bodies sometimes use one office location as a regional headquarters from which they coordinate certification services offered to a number of neighboring countries. Alternatively, sometimes staff who are based in major market areas may be flown in to provide services in areas where a firm does not have many clients.

These findings have important implications for the relative ease, timeliness, and cost of certification services, and the availability of choice among CBs in these markets. In developed country markets, producers seeking food product certification have easier access to, and choice among, certification services providers. Areas with a larger number of CBs in operation may also have a higher level of price and service competition than exists in markets with fewer competitors. These findings may have important implications for the market access and price competitiveness of food products from developing nations being exported to developed countries. Producers that export food from countries with a low presence of CBs that offer food safety certification services may face more difficulties in achieving certification under FSMA's Rule on Accredited Third-Party Certification.

Special Focus: GFSI Benchmarked Standards

GFSI is an organization that aims to reduce food risks by specifying recognition requirements and enabling collaboration across food safety schemes (GFSI, 2016a). The organization identifies food safety standards that meet requirements as "GFSI benchmarked standards" (Crandall et al., 2012). The GFSI benchmarked schemes include the following standards: PrimusGFS; IFS (PACsecure standard, Food standard, and Logistics standard); Global Aquaculture Alliance Seafood; GLOBALG.A.P. (Integrated Farm Assurance-Crops Scheme and Produce Safety Standard); Global Red Meat Standard; FSSC 22000; SQF; CanadaGAP; and the BRC Global Standard (GFSI, 2016b).

Within our distribution of food safety standards, there is particularly high coverage of Global Food Safety Initiative (GFSI) benchmarked standards. We assessed the number of certification bodies that offer each GFSI benchmarked scheme using our standard-to-certification body match information. The IFS and GLOBALG.A.P. standards are comprised of different schemes, some that are GFSI benchmarked and others that are not. Table 5 shows the number of certification bodies that certify to a GFSI benchmarked standard, and the number of countries in which the certification bodies associated with each standard operate. In addition, because U.S. food producers will have to comply with food safety practices under FSMA, we assess the availability of food safety certification services in the U.S. to offer deeper insight into the food safety schemes U.S. producers have relative access to. This information is also noted in Table 5 as the number of CBs that offer each standard who operate in the U.S. market. The following counts include the certification bodies that offer each of the GFSI benchmarked schemes, and account for overlap between schemes within standards.

[Insert Table 4 Here.]

The GFSI benchmarked standard that is offered most frequently by CBs is GLOBALG.A.P., which is certified by 145 certification bodies that offer services in 174 countries. All 145 of these certification bodies offer the GLOBALG.A.P. Integrated Farm Assurance-Crops Scheme, and three offer the GLOBALG.A.P. Produce Safety Standard as well.

The GFSI benchmarked standard with the second most coverage is FSSC 22000, which is certified by 108 certification bodies that together operate in 175 countries. The British Retail Consortium (BRC) standard is also prominent; it is offered by 104 certification bodies that operate in a combined total of 172 countries. Certification services for GLOBALG.A.P., FSSC 22000, and BRC appear to be available in the most countries; these schemes are among the most commonly implemented food safety standards worldwide.

The GFSI benchmarked standards IFS and SQF have fewer certification bodies that certify to them but their geographic coverage is comparable to GLOBALG.A.P., FSSC 22000, and BRC. PrimusGFS certification is only available through 9 certification bodies, but as three of these CBs have operations in more than 30 countries each, this standard is still broadly available in international markets. Similarly, the Global Aquaculture Alliance, Global Red Meat, and CANADAGAP standards are each offered by four certification bodies or less, but are represented in many countries because some of the associated CBs have offices in many locations. For example, SGS has locations in 140 countries and offers the Global Aquaculture Alliance, Global Red Meat, and CANADAGAP standards. In considering the U.S. market, among these benchmarked standards, the BRC standard (which is offered by 37 CBs), GLOBALG.A.P. and FSSC 22000 (each available through 29 CBs), and SQF (28 CBs) are available through the largest number of CBs.

CONCLUSIONS

Certification systems are complex and involve several actors. Though certification in the food and agriculture sectors has become more common in recent years, there is relatively little research on the certification industry. In this study, we provided a descriptive analysis of the food certification sector by first amassing an inventory of, and then assessing information on, 425 certification standards and 581 certification bodies.

Of the 425 certification standards on our Master Standards List, 241 (56.7%) address production processes, and 146 (34.4%) address food safety. The remaining standards are associated with business management, nutrition, value, and sensory attributes. In addition, 164 standards (38.6%) focus on a specific product or category of products while the remainder are not product specific.

The Certification Body Database information shows that the number of certification bodies in operation increased most dramatically in the 1980's and 1990's. The 581 organizations in our sample have operations in 191 countries combined, indicating that most countries have certification bodies present. The highest concentrations of these organizations by country are in North American, European, and Asian countries.

Describing attributes of certification standards and organizational characteristics of certification bodies helps to establish an understanding of current practices, geographical capacity, and areas of concern in the food certification industry. While not presented herein, this analysis also

considers the geographic distribution of GFSI benchmark and other standards focused explicitly on food safety. The prevalence of certification bodies that offer food certification services in the United States may indicate that food producers have several options for implementing food safety standards under an approach such as FSMA, if they have the resources to undergo certification. The approach used in this study offers a starting point for assessing the geographical capacity of international certification bodies to conduct audits required by the FSVP.

Data collection efforts of this study recorded the names of relevant standards covered by each certification body. We found that information on standard coverage was not always available on both certification standard and certification body websites, or that information was sometimes contradictory across the two sources. Several certification bodies indicate that they certify standards in partnership with other organizations, which raises questions about how the accreditation practice works in these situations and whether partnership certifications are as effective as traditional certifications. Our standard-to-CB match information also showed that the food safety certification schemes with the most coverage by certification bodies include the GLOBALG.A.P IFA Crops, FSSC 22000, and BRC standards.

Findings of this study will be of interest to those engaged in policy setting and assessment, U.S. agribusinesses in industries with international market linkages, and those working with agribusinesses in international settings who wish to gain access to the U.S. market. Future research will further examine these findings to identify potential bottlenecks in international agri-food system certification capacity. In assessing the extent of CB capacity in a given country, ideally, the number of CBs would be evaluated relative to the total number of firms who might need their services; for this purpose then, the total number of firms engaged in the agri-food sector would be needed.³ Further, to assess the extent to which CBs may affect agricultural export capacity in certain countries, the number of agri-food firms currently or potentially engaged in export activities would be needed. While some information of this type is available, this data is not consistently collected.

³ Ideally, and for a more refined analysis, the number of firms engaged in agricultural sub-sectors (i.e., farm production, manufacturing and processing, transportation/logistics, etc.) would be required.

REFERENCES

- Barrett, H. R., A. W. Browne, P.J.C. Harris and K. Cadoret. "Organic certification and the UK market: organic imports from developing countries." *Food policy* 27.4 (2002): 301-318.
- Boys, Kathryn A., Julie A. Caswell, Sandra A. Hoffman, and Samantha Colarusso. "The Business of Safe Food: An Assessment of the Global Food Safety Certification Industry." *2015 AAEA & WAEA Joint Annual Meeting, July 26-28, San Francisco, California*. No. 205870. Agricultural and Applied Economics Association & Western Agricultural Economics Association, 2015.
- Caswell, Julie A., and Sven M. Anders. "Private versus third party versus government labeling." *The Oxford handbook of the economics of food consumption and policy* (2011): 472-498.
- Crandall, Phil, Ellen J. Van Loo, Corliss A. O'Bryan, Andy Mauromoustakos, Frank Yiannas, Natalie Dyenson, and Irina Berdnik. "Companies' opinions and acceptance of global food safety initiative benchmarks after implementation." *Journal of food protection* 75.9 (2012): 1660-1672.
- Fagotto, Elena. "Governing a global food supply: How the 2010 FDA food safety modernization act promises to strengthen import safety in the US." *Erasmus L. Rev.* 3 (2010): 257.
- Global Food Safety Initiative (GFSI). "What is GFSI." (2016 a). Retrieved from <http://www.mygfsi.com/about-us/about-gfsi/what-is-gfsi.html>
- Global Food Safety Initiative (GFSI). "Recognized Schemes." (2016 b). Retrieved from <http://www.mygfsi.com/schemes-certification/recognised-schemes.html>
- Hatanaka, Maki, Carmen Bain, and Lawrence Busch. "Third-party certification in the global agri-food system." *Food policy* 30.3 (2005): 354-369.
- Hatanaka, Maki, and Lawrence Busch. "Third-Party Certification in the Global Agri-food System: An Objective or Socially Mediated Governance Mechanism?" *Sociologia Ruralis* 48.1 (2008): 73-91.
- McAllister, Lesley K. "Third-Party Programs to Assess Regulatory Compliance." *Administrative Conference of the United States*. 2012.
- U.S. Census Bureau. 2016 naics@census.gov, SSSD-. "North American Industry Classification System (NAICS) Main Page." *Special Projects Staff, Service Sector Statistics Division*. United States Census Bureau, 8 Aug. 2016. Web. 15 Aug. 2016.
- "U.S. Food and Drug Administration." *FSMA Final Rule on Accredited Third-Party Certification*. U.S. Food and Drug Administration, 6 May 2016. Web. 10 Aug. 2016. (<http://www.fda.gov/Food/GuidanceRegulation/FSMA/ucm361903.htm>)

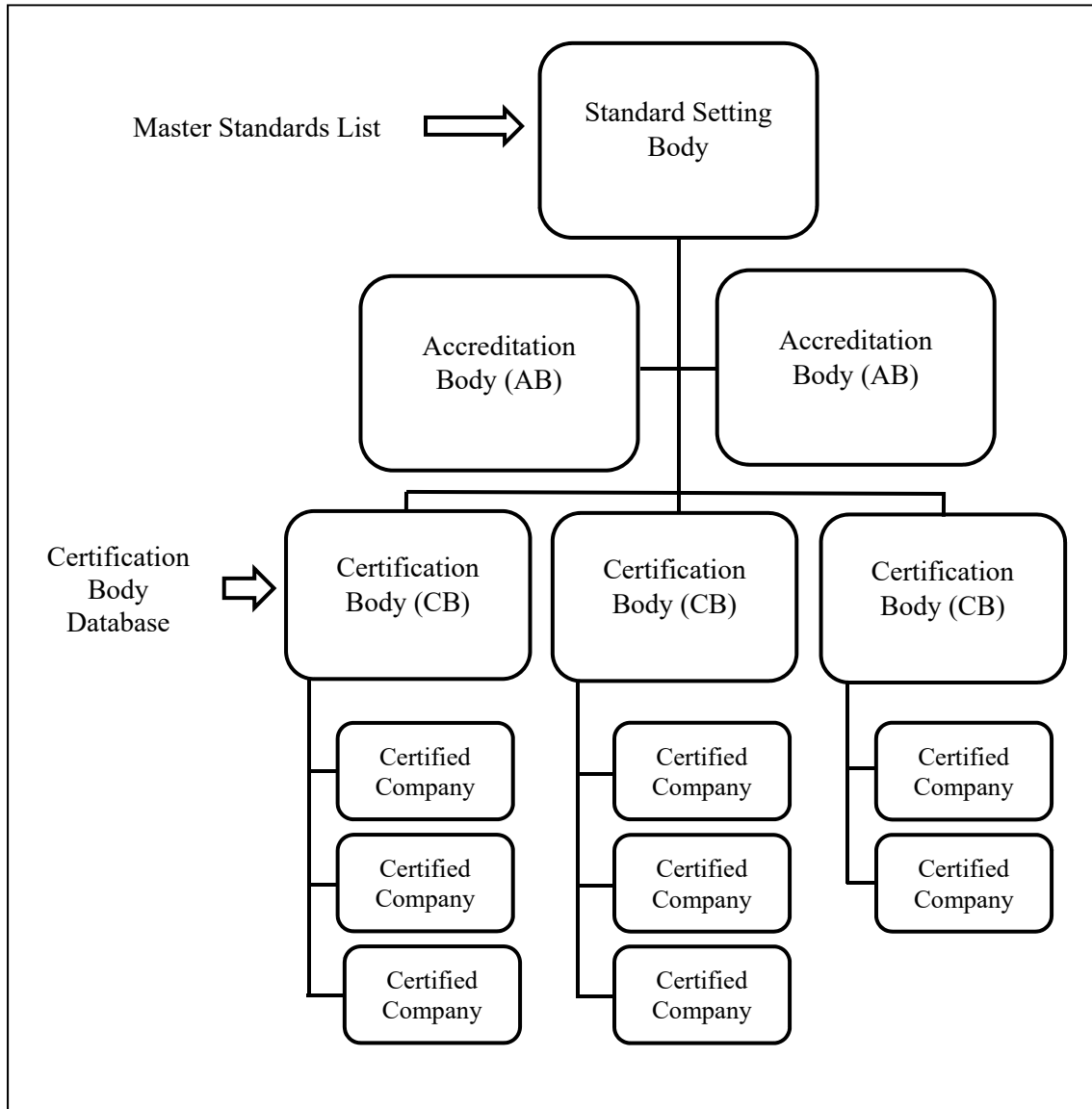


Figure 1: A Simplified Certification System Hierarchy

Standard Attribute	#	%
Business Management Practices	3	0.7
Food Safety	146	34.4
Nutrition	7	1.6
Process	241	56.7
Sensory	3	0.7
Value/Compositional Integrity	18	4.2
Generic	7	1.6
Total	425	100.0

Process Subcategory	#	%
Animal Welfare	12	5.0
Environmental	110	45.6
Fair Trade	5	2.1
Genetically Modified Status	4	1.7
Halal	3	1.2
Kosher	4	1.7
Organic	68	28.2
Social Justice	22	9.1
Traceability	12	5.0
Worker Safety	1	0.4
Total	241	100.0

Source: Attributes adapted from Caswell & Anders, 2011

Figure 2: Number of Standards on Master Standards List by Attribute Category and Subcategory, 2016

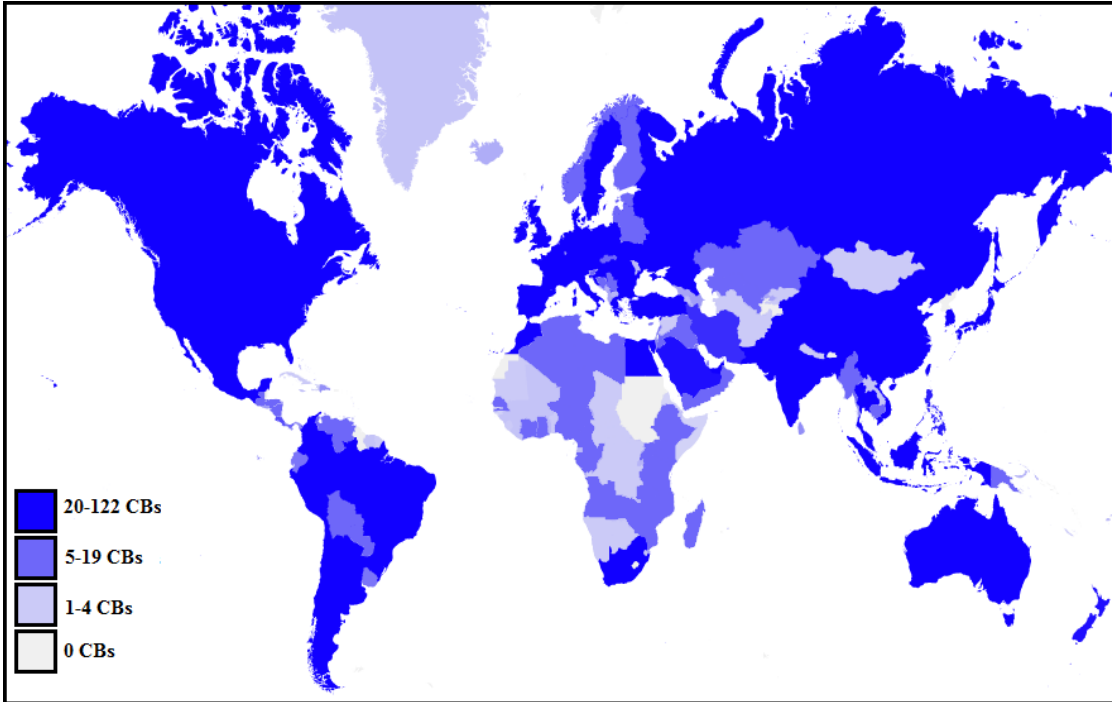


Figure 3: Heat Map for All Certification Bodies in Operation per Country, 2016

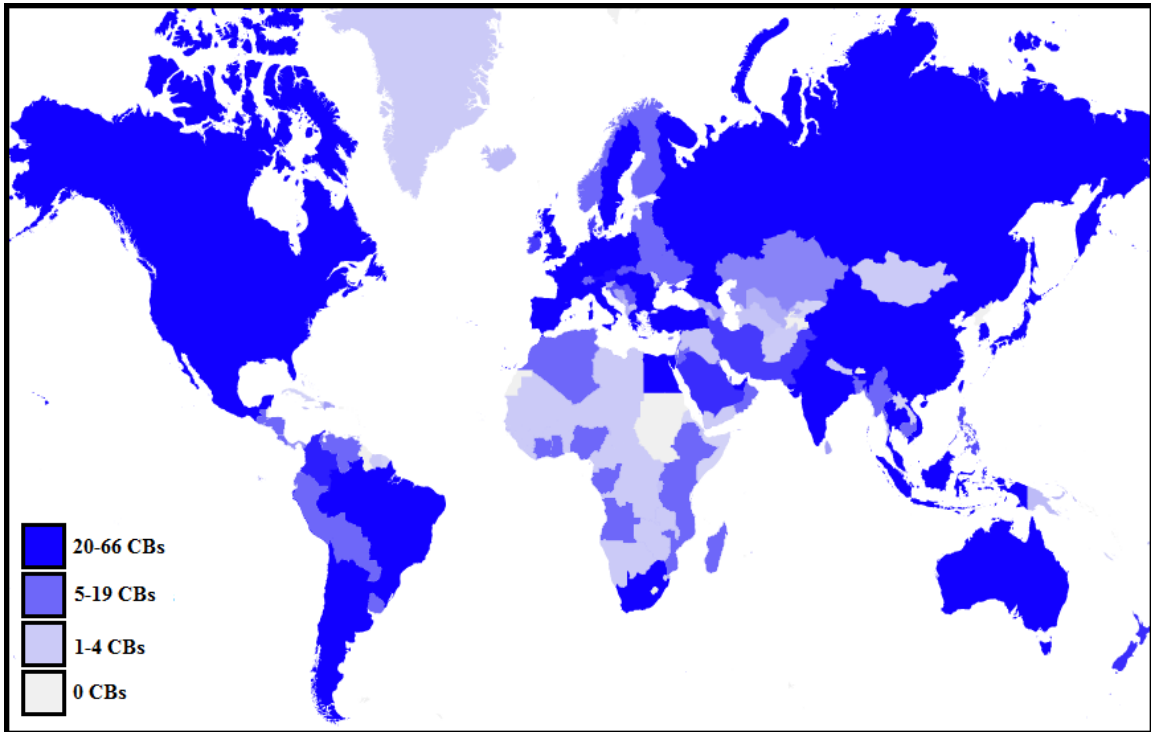


Figure 4: Heat Map for Certification Bodies in Food Safety Operations per Country, 2016

Table 1. Information included in Profiles for Each Standard and Certification Body

Variable Description	Details
<i>Master Standards List</i>	
Standard Name	Full name of standard
Standard Abbreviated Name	Standard Abbreviation or commonly used name
Country where standard is based	
Standard Attribute	Business management practices, food safety, nutrition, process, sensory, value/compositional integrity, generic
Product of focus	
Regulatory Compliance	Whether standard is mandatory to be in compliance with a regulation
Supplier Verification Program	Whether standard is part of the supplier verification program
Website	Web address of standard-setting body
<i>Certification Body Database</i>	
Name of Certification Body	
Certification Body ID	Assigned by researchers
Address of Headquarters	City, State/Province, Country
Year established	
Number of employees	Year observation noted
Public/Private	
If Public: Ticker Name	
Total Sales Revenue	Year observation noted
Net Income	Year observation noted
Net Annual Profit, and year	Year observation noted
Industry - NAICS	As identified by the company; primary, secondary, tertiary industries as identified
Industry - SIC	As identified by the company; primary, secondary, tertiary industries as identified
Other Business Activities	Up to 4 additional business activities recorded. Text description.
Location of Key Branch Offices	City and Country of key branch offices. Where relevant, multiple sites were recorded.
Information source(s)	Source(s) from which CB information was obtained.
Certification(s)	Certification(s) offered by the CB
Geographic market(s)	Country(ies) in which the CB operates

Table 2. Top 10 Standards as Ranked by Number of Certification Bodies that Certify the Standard, 2016

Standard Name	# of CBs certifying standard	% of CBs certifying standard
ISO 9001	198	34%
EC 834/07	176	30%
ISO 14000	175	30%
ISO 22000	162	28%
GLOBALG.A.P. IFA Crops Base (includes IFA 4.0 and 5.0)	148	25%
OHSAS 18001	147	25%
HACCP	134	23%
National Organic Program (NOP)	112	19%
FSSC 22000	108	19%
BRC	104	18%

Table 3: Number of Certification Bodies that Certify Food Safety Standards per Country, for Countries with 20 or More Certification Bodies, 2016

Country	# of CBs Present
Argentina	24
Australia	26
Belgium	27
Brazil	37
Bulgaria	26
Canada	31
Chile	29
China	52
Czech Republic	29
Egypt	24
France	42
Germany	66
Greece	25
Hungary	21
India	47
Indonesia	23
Italy	59
Japan	41
Malaysia	20

Country	# of CBs Present
Mexico	47
Netherlands	26
Poland	36
Portugal	25
Republic of Korea	34
Romania	33
Russia	23
Singapore	23
South Africa	26
Spain	51
Sweden	23
Taiwan	20
Thailand	21
Turkey	59
United Arab Emirates	23
United Kingdom	42
United States	65
Vietnam	22

Table 4: Number of Certification Bodies that Cover GFSI Standards, 2016

GFSI Standard	# of CBs	# of Countries where CBs Present	# CBs in U.S.
GLOBALG.A.P.	145	174	29
FSSC 22000	108	175	29
BRC	104	172	37
IFS (PACsecure standard, Food standard, and Logistics standard)	81	170	23
SQF	35	169	28
PrimusGFS	9	84	7
Global Aquaculture Alliance	4	140	3
Global Red Meat Standard	4	164	3
CANADAGAP	3	140	2