



# **REPORT ON TOTAL COSTS OF THREE ORGANIC CERTIFICATION SYSTEMS IN SIX EUROPEAN COUNTRIES WITH PARTICULAR FOCUS ON ORGANIC SUPPLY CHAINS**

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**This report constitutes the second part of deliverable no. 21. It reports on the total costs of organic certification including administrative costs at different levels, as well as the business costs of farmers and processors.**

**The report is the manuscript for a paper to be submitted to Food Policy as *Stolze, M., Hartmann, M. and H. Moschitz (2012 forthcoming). Certification costs of organic farming – a comprehensive analysis of business and transaction costs.* The report therefore includes a detailed executive summary to be published on the CERTCOST website. The paper itself will be publically available after publication in the journal.**

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## EXECUTIVE SUMMARY

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Even though thousands of operators opt for the organic control systems implying that they assess a positive balance of costs and benefits, hitherto almost no information about the cost of organic control and certification is available. Previous research focussed either on only one actor of the certification system which comprises apart from producers and processors also certification bodies, accreditation bodies, competent authorities supervising the system and the standard owner. Furthermore, previous studies limited certification cost to the certification fee, neglecting that transaction costs are also involved in the activities of certifying and therefore real costs of certification are higher than only the fee paid. A first estimate on organic certification costs estimated the farms' share of certification fees to be in the range of 3% of the farms' total turnover. But again, costs of certification here were limited to the actual fee a farmer is paying without considering transaction costs involved in supervision, certification, and sanctions with respect to organic standards.

The objective of this research (Stolze et al., 2012 forthcoming) is to address these limitations for the field of organic certification. It aims at providing reliable estimates of the magnitude and types of costs that occur in the area of organic certification for the different agents, including business costs and administrative costs. Certification here includes the assessment (inspection) and the approval (certificate) of standards for organic food and farming. The paper furthermore aims at identifying the availability of data about organic certification in Europe and its reliability.

The applied concept of estimating organic certification costs distinguishes between business costs of operators (producers and processors) and the costs of administering the entire certification system. The business cost of certification for organic operators has three important components: The fee that needs to be paid to the control body, the opportunity costs of organic operators include the efforts for informing, requesting derogation, preparing documents, requesting advice and the time needed for the actual control, and public control cost support (provided e.g. in some German *Länder* and in some regions in Italy).

The administration of organic certification causes further costs which are borne by the standard owners (i.e. the European Commission with respect to the EU organic farming regulation (Council Regulation (EC) No 834/2007) or private standard owners like the Soil Association in the UK), by competent authorities supervising the organic certification system in Europe, and by public organic control bodies (e.g. in Denmark). Administrative costs considered in this research are the labour costs related to organic certification.

The challenge of analysing operators' costs of organic certification is that much of the data needed is not readily available in the required quality and degree of detail. Research presented in this section therefore is based on two different data sources:

- Electronic control reports from the year 2008 retrieved from private control bodies and control authorities representing the control system as foreseen in Council Regulation (EC) No 834/2007 (private control bodies in CZ, DE, IT; public control authorities in DK) and from two control bodies representing private organic standards (CH and UK).
- A survey of 526 organic farmers and 131 organic processors from CH, CZ, DE, DK, IT and the UK supplements the electronic control reports for a subset of operators in each country. The survey was used to collect information about the tasks involved in preparing the control and certification, such as the time spent for informing oneself about possible changes in the standards, asking for special derogations or preparing of all the required documents. Furthermore, the survey addressed specific organic supply chains as a basis for estimating the relevance of the total certification costs on the consumer price of seven different organic products: wheat flour (CH, DE, DK, IT, UK), eggs (CH, DE, DK, IT, UK), fresh milk (CH, DK, UK), potatoes (DE, DK), apples (CH, DE), carrots (UK), and olive oil (IT).

To estimate the costs for administering the organic certification system, a survey was conducted including: control and certification bodies, competent authorities, and standard owners (only relevant in Switzerland and the UK). The EU Commission DG Agri, organic unit was approached as both standard owner and competent authority. The questionnaire contained questions about the work load for implementation and further development of the organic standard, management of imports, accreditation, preparation, execution, and processing of controls.

Data from electronic control reports from certification bodies showed deficiencies with respect to following variables: information on the area in conversion or managed conventionally, data on the farm structure (in particular livestock numbers), employees, economic data. In addition, data is not recorded in a uniform way. So for example individual rather than internationally standardised classification systems, such as EUROSTAT classifications are used.

The median<sup>1</sup> of the inspection fee in all study countries amounts to around 500 Euro per farm. The median inspection duration ranged from two hours in Germany to 4.5 hours in the UK. A regression analysis showed that the most relevant factors determining the duration of the control are the type of control, the number of sanctions, farm complexity and farm size. On-farm processing leads to both, longer

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<sup>1</sup> The median is more appropriate than the mean in analysing samples with a high degree of dispersion.

duration of the control and higher inspection costs, resulting in higher certification fees.

The inspection fee is the most relevant monetary expenditure for organic operators. However, the most important perceived workload was the time required for the preparation of the control visit. Organic operators from the Czech Republic invested considerable time in information search about organic certification. This might be a result of a high share of newcomers in the organic business. In those countries (Italy, Germany) where farmers received public control cost support, the subsidies cover almost the entire certification fee.

The median certification fees for organic processors varied considerably from 477 Euro per processor in the Czech Republic up to 1,400 Euro for processors in the UK. The differences in the inspection fees were mainly due to different organic turnover and business size. While the control visit of processors required only slightly more time than the control of the farmers, the processors' workload for preparing the control visit was stated to be considerably higher compared to farmers. The share of business costs of organic certification on the processors' organic turnover is relatively high in Germany and Italy and low in in the Denmark and Switzerland. This is mainly a result of effects of scale.

Cost of administrating the organic farming regulation at the European Commission level (EU Commission staff, costs of EU expert and advisory group and Standing Committee of Organic Farming) amount to 7 Euro per organic operator. The costs that are born by the Member States (e.g. the input given by national ministries to develop European regulations) could not be assessed in the course of this project. The administrative costs of private standard owners varied between 37 Euro per operator (UK case) and 179 Euro (Switzerland case) per operator. However, contrary to the administrative costs estimated for the Swiss private standard, in the UK the administrative costs did not include costs for standard implementation, managing imports, mutual acceptance of other standards or recertification respectively as such data were not available.

The workload of competent authorities for supervising the organic certification system varies between 30 and 325 Euro per operator. The low amount of 5 Euro for the case of Italy is probably due to the fact that only the workload of the national competent authority was included, and not the regional ones.

The total cost of organic certification calculated as the sum of the operators' business cost and the administrative cost suggests at a first look that the systems in Italy and Germany perform cheaper for farms than the systems in Denmark, the Czech Republic, Switzerland and in the UK. However, the differences between countries are due to varying labour costs and different political concepts (federal system versus centralised national system) and not a result of the certification system implemented. In addition in some countries, the tariff structure of control bodies privileges farmers. This results in relatively lower certification fees for farmers and relatively higher certification fees for processors. Thus, with respect to costs we could not identify a less costly certification system.

To assess the monetary relevance of organic certification for the consumer the share of the total certification costs on the consumer price was used as an indicator.

The share of certification costs on the consumer price amount to 0.1% for wheat flour, fresh milk and potatoes in Denmark. The highest shares of at least 1% were found for Germany (wheat flour, eggs, potatoes), Italy (wheat flour), Switzerland (wheat flour, fresh milk) and Denmark (only for eggs). One reason for these differences is again effects of scale.

The analysis showed that certification fees are very relevant for the total costs of certification corresponding to a share of up to 0.4% of the raw income of a farm and up to 1% of the organic turnover of processors. Against the background of an estimated average net margin of around 3% for processors it becomes clear that this difference in certification costs matter. On the other hand, processors can benefit from economics of scale: larger companies have implemented efficient quality management systems which allow organising organic certification efficiently.

Given that the certification fee is a major cost item in the total cost of organic certification, these fees could be reduced by reducing the cost for the control visit and thus the corresponding control fee (e.g. by introducing a risk-based control system) Second, the organic certification system would profit from increasing the quality and availability of information that operators need to easily follow the certification requirements and procedures. As shown above, transaction costs on information search are caused by uncertainty about the certification procedure and control system. Hence, making information about how certification and control function easier accessible would reduce new organic operators' uncertainty about the system in an efficient way. Furthermore, Member States should be encouraged to check whether the distribution of tasks within the organic certification system to different authorities within the Member State leaves room for improvement. Finally, the use of terms and definitions as well as data collection specification with respect to non-compliances, sanctions and structural data should be harmonised at European level.

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**List of abbreviations**

CA .....	Control Authority
CB .....	Control Body
CH .....	Switzerland
CZ.....	Czech Republic
DE .....	Germany
DK .....	Denmark
EU .....	European Union
EUR.....	Euro
FADN.....	Farm Accountancy Data Network
HACCP.....	Hazard Analysis and Critical Control Points
IT .....	Italy
SCOF .....	Standing Committee of Organic Farming
UAA .....	utilisable agricultural area
UK .....	United Kingdom

## 1 INTRODUCTION

Third-party certification should reduce the risk of market failure of quality food caused by uncertainty and information asymmetry (Deaton 2004). To ensure an efficient certification it is therefore relevant to understand how certification functions and which costs are involved for the different agents in the food system. In addition, certification costs are considered to be a major factor for firms to decide about participating in a particular quality scheme, such as organic. Yet, reliable data about the costs of certification are difficult to get, both because not all data are recorded (or even recordable), and because exact quantification and distribution of costs to the different agents is challenging. Organic certification here is no exemption to other food quality systems.

While not neglecting the contribution previous research has made to the analysis of certification systems, until now, it suffers from different limitations.

First, the number and type of agents that are considered in analysis is often too limited. Yet, any third-party certification system comprises of many different actors, such as producers and processors, certification bodies, accreditation bodies, and competent authorities (Hatanaka et al., 2005). For example, Jahn et al. (2004) analyse the costs and audit quality of certification bodies, but do not consider any other player in the certification system.

Second, studies exploring the transaction costs of a particular food quality scheme limit their analysis to the costs connected to complying with that food quality scheme. They do not consider the full costs connected to the actual process of certifying. Costs of certification in these studies are considered in the form of the certification fee, neglecting that transaction costs are also involved in the activities of certifying and therefore real costs of certification are higher than only the fee paid. An example is the study of Ragasa et al. (2011) who interviewed 59 firms in the Philippines to estimate the overall costs for participating in "Hazard Analysis and Critical Control

Points” (HACCP). They include transaction costs only of the compliance measures with the scheme, but not of the certification itself.

Third, with regard to the organic scheme, literature exists on labelling/certification and the underlying institutions in the food sector (e.g. Schulze and Spiller, 2006; Grunert, 2005; Hatanaka et al., 2005; GfRS, 2003; Jahn et al., 2005; Golan et al., 2001). By contrast, detailed scientific analyses regarding certification costs for organic farming are quite scarce. A first estimate for organic certification costs is given by the worldwide survey of certification fees conducted in 2001 (Rundgren, 2001). It estimated the farms’ share of certification fees to be in the range of 3% of the farms’ total turnover. Again, costs of certification are limited in this study to the actual fee a farmer is paying without considering transaction costs involved in supervision, certification, and sanctions with respect to organic standards.

Fourth, all studies dealing with certification costs mention difficulties in getting accurate data; both data availability and data reliability are a major challenge. With regard to costs of compliance with the quality scheme of HACCP, Ragasa et al. (2011) highlight different sources for wrong estimates. Underestimating can be due to incorrect reporting (knowingly or not), crowding-out of other investments, sunk costs that discourage further investment, reduced flexibility. Overestimates are related to not recognised complementarities with conventional production, joint production of by-products or parallel implementation of projects that are connected to compliance activities. Ragasa et al. (2011) also highlight the importance of looking at the country context in which the certification scheme is implemented.

The objective of this paper is to address all these limitations for the field of organic certification, acknowledging that the issue is far too complex to overcome all of them. It aims at providing reliable estimates of the magnitude and types of costs (see also Zorn et al., 2009) that occur in the area of organic certification for the different agents, including business costs, administrative costs and transaction costs. Certification here includes the assessment (inspection) and the approval (certificate) of compliance with standards for organic food and farming. The paper furthermore aims at identifying the availability of data about organic certification in Europe and their reliability. Publicly available data on organic certification are highly aggregated (Jespersen, 2011), giving only a very general overview of the sector and thus do not provide the level of detail required for the project. The records of control reports from accredited European certification bodies represent the most reliable and comprehensive source for data on organic certification. Therefore, the paper relies on data from the records of six control and certification bodies / authorities respectively providing data from Denmark, Germany, Italy, the UK, the Czech Republic, and Switzerland, thus including organic certification systems implemented according to Council Regulation (EC) No 834/2007 (Germany, Italy, Czech Republic, Denmark) and organic private labelling certification systems: ‘Knospe’ (Switzerland), ‘Soil Association’ (UK).

The paper is structured as follows. The method and material section includes a detailed description of how the data was collected. To address the two main goals of data availability and cost estimates the result section is divided into two parts. Chapter 3 discusses the data availability to contribute to transparency in the field of certification costs analysis. The following chapter 4 presents the results of the thorough analysis of organic certification costs at operators’ level, as well as at

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administrative level, and the overall costs of the certification system are assessed. The chapter ends with the analysis of the cost structure of organic certification over all involved bodies. The conclusions chapter 5 reflects the data collection process and analysis in the light of the above mentioned limitations and critically discusses the achievements of this study with regard to cost analysis of organic certification. On this basis, an outlook is given on possible future directions of data on organic certification.

## 2 MATERIAL AND METHODS

### 2.1 Concept of estimating organic certification cost

To assess the costs of organic certification requires not only considering the operator's costs but also the costs of administering the entire certification system. This includes both private and public costs. To assess the relevance of organic certification costs, the total certification costs are related to the consumer of specific organic products. Below, we therefore show the underlying calculation concepts to estimate the certification costs at organic operators (business costs), the costs of administering organic certification standards and the cost of certification for specific organic products.

#### Business costs

The cost of certification for the operator (business costs) has three important components:

- The fee that needs to be paid to the control body.
- The effort (opportunity costs) connected to documentation of practices relevant for the organic standard, preparing the control visit and the control visit itself and possibly a follow-up visit. These costs
- The public control cost support.

The business costs of certification at the operator's level can be calculated as:

$$C_b = (t_p + t_c) \cdot c_l + C_{cf} - S + C_i + C_{os} \quad (1)$$

with

$C_b$  = Total certification costs of a business (farm or processor)

$t_p$  = time for informing, requesting derogation, preparing documents, requesting advice

$t_c$  = time needed for actually control

## CHAPTER 2\_MATERIAL AND METHODS

$C_l$  = labour costs per hour

$C_{cf}$  = certification fee

$S$  = public control fee support

$C_i$  = Annuity of investments related to organic control and certification (interest 4%, 4 years)

$C_{os}$  = costs for outsourcing of particular work related to organic control and certification

### Administrative costs

In addition to the cost borne by the operators the administration of organic certification causes further costs. These administrative costs are borne

- by the standard owners, i.e. the European Commission with respect to the organic farming regulation (Council Regulation (EC) No 834/2007) and the private standard owners like the organic farming associations Bio Suisse in Switzerland or Soil Association in the UK,
- by competent authorities supervising the organic certification system in Europe, and
- by the public organic control bodies in Denmark (Danish Veterinary and Food Administration and Danish Plant Directorate).

Administrative costs of organic certification can thus be calculated as:

$$C_a = (TC_{so} + TC_{su} + TC_{public}) : N_o \quad (2)$$

with

$C_a$  = Total administrative costs of the organic certification system

$TC_{so}$  = transaction costs of the standard owner (EU or private)

$TC_{su}$  = transaction costs of supervising (competent authorities)

$TC_{public}$  = transaction costs of a public control system (only relevant in Denmark)

$N_o$  = Number of organic operators

Finally, the total costs for organic certification on operator ( $C_o$ ) level are calculated as the sum of the total business costs  $C_b$  (equation 1) and the total administrative costs  $C_a$  (equation 2):

$$C_o = C_b + C_a \quad (3)$$

### Certification costs of an organic product

The public and private costs of certification of a product (supply chain) can be estimated using following formula:

$$C_P = (C_{OF} + S) \cdot \%O_P : Y_P + C_{OP} : T_{OP} \cdot P_{OP} \quad (4)$$

with

$C_P$  = Total certification costs of a product  $P$  (public and private costs)

$C_{OF}$  = Total certification cost farm level

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$C_{OP}$  = Total certification cost processor level

$\%O_P$  = estimated share output product  $P$  on farm level

$Y_P$  = estimated total yield product  $P$  on farm level

$T_{OP}$  = organic turnover processor

$P_{OP}$  = sales price product  $P$

### 2.2 Data basis

#### Business costs

The challenge of analysing the costs of certification is that not all the data needed is (publicly) available in the required quality and degree of detail. Furthermore, the data is stored differently in the different data bases of the certification and control bodies. In consequence, the concept of data collection took account of both the variability available data and the data requirements.

In a first step, a list of the data was developed that would be needed as variables for the further analysis in the project. This list was repeatedly amended on the basis of an iterative discussion process with the control bodies from which the data should be collected, and which were involved in the research process. The resulting list contained variables with agreed-on common labels and definitions, and indications from where the data could be retrieved. Two data sets can be distinguished which were compiled for the Czech Republic, Denmark, Germany, Italy, Switzerland and the UK.

Data set 1 includes data that can be retrieved from the electronic control reports and data bases of the certification bodies, and contains information about all the organic operators certified by the respective control body in the project countries (see Table 1). This data set contains structural information (not for the Czech Republic) about all the organic operators certified by the control bodies as well as information about the duration of the control visits and the inspection fee. This data was collected for the years 2007, 2008, 2009 and covers all fully converted organic operators that are registered in one of the six control bodies of the countries mentioned above. Altogether, the data base contains data of approximately 84.000 organic operators (between 27.000 and 29.000 per year). After receiving the data, the data base team applied a procedure for checking the consistency and plausibility of the data.

**Table 1: Overview of the data sources for the different study countries**

Country	Data from control and certification bodies/authorities
Czech Republic	KEZ
Denmark	Plant Directorate and Veterinary Directorate
Germany	IMO
Italy	ICEA
Switzerland	bio.inspecta
UK	Soil Association



Data set 2 contains the information that is not available from the control reports, but nevertheless pivotal to the project assessing the overall business costs of control and certification, in particular in terms of transaction costs. Between April and October 2009, this data were collected through a survey of 526 organic farmers and 131 organic processors in the six study countries. Information was collected about the tasks involved in preparing the control and certification, such as the time spent for informing oneself about possible changes in the standards, asking for special derogations or preparing of all the required documents. Data collection referred to the year 2008.

To calculate the business costs, we matched the 2008 data from data set 1 (electronic reports from the control bodies) with data set 2 (data from the survey of farms and processors), using the identification number of the operator as a link. In this way, both transaction costs and other relevant costs as detailed in equations (1) to (4) could be considered in the analysis of the specific operators. The consistency of information included in data set 1 and data set 2 was tested using the Mann-Whitney U-Test showing with  $p= 0.232$  for the certification fee no significant difference between the two data sets. To calculate the operator's opportunity costs of organic certification, labour costs for farmers were based on GEOPA – COPA (2007) and on Flückiger (2010) and labour costs for processors were based on EUROSTAT (2011). National currencies were converted into Euro using the 2008 annual exchange rate from the European Central Bank<sup>2</sup>.

To allow for an estimation of the total certification costs for specific organic supply chains, the survey included information which could be linked to following supply chains:

- Wheat flour (CH, DE, DK, IT, UK)
- Eggs (CH, DE, DK, IT, UK)
- Fresh milk (CH, DK, UK)
- Potatoes (DE, DK)
- Apples (CH, DE)
- Carrots (UK)
- Olive oil (IT)

For each supply chain, following numbers of interviews were carried out.

30 farms

5 processors

2-3 packers

2-3 importers

As the control reports from the Czech Republic did not include structural farm data, the analysis of the certification cost of supply chains could not be conducted for the Czech Republic.

To allocate the certification costs of farmers to a specific product or branch respectively, we used an economic allocation approach. Thus, the total certification

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<sup>2</sup> Source: European Central Bank, <http://sdw.ecb.europa.eu/browse.do?node=2018794>.

costs of a farm were allocated to a farm branch (wheat, carrot, apple, olive production, laying hens, dairy) according to share the output of the respective branch contributes to the total output of the farm. As output data were not included in data set 1 and 2, the economic allocation was done on the basis of 2008 data of organic farms from the Swiss and the EU Farm Accountancy Data Network (FADN).

**Administrative costs and cost structure**

To estimate the costs for administering the organic certification system at different levels, a survey was conducted among the different bodies working in the certification system: control and certification bodies, competent authorities, and standard owners (only relevant in Switzerland and the UK). The EU Commission DG Agri, organic unit was approached as both standard owner and competent authority. In Germany and Italy, where due to the federal system, there are 16 and 20 competent authorities, the survey was restricted to one (Italy) and five (Germany) competent authorities respectively. In Germany, not all control bodies participated in the survey. Accreditation costs were not considered in the analysis as it is assumed that most of these costs are to be covered by the certification bodies and thus included in the fees of the certification bodies.

The questionnaire contained questions about the work load for the respective body to manage the certification system and related organic regulation: implementation and further development of the organic standard, management of imports, accreditation, preparation, execution, and processing of controls.

The analysis of administrative costs is based on the following number of returned questionnaires (see Table 2)

**Table 2: Overview of the filled-in questionnaires for survey on administrative costs**

Country	Competent authorities	Control bodies	Standards owners
Czech Republic	1	2	-
Denmark	2	2	-
Germany	5	6	-
Italy	1	5	-
United Kingdom	1	7	1
Switzerland	1	2	1
EU	1*		1*
<b>TOTAL</b>	<b>13</b>	<b>33</b>	<b>3</b>

\*The EU (DG Agri, organic unit) was approached both as competent authority and standard owner

To identify the factors that most determine the duration of controls and the level of certification fees, we conducted a multiple regression analysis on the operator level “farmer” with data from data set 1. For this analysis, an almost complete data set was available for Germany, Switzerland and the UK. We calculated two regression models containing one dependent variable each: the duration of control and the level of the certification fee, respectively. As independent variables we identified, through an iterative discussion process, the following: a) the farm type, b) the type of control, c) the number of controls, d) the contract duration, e) the number of sanctions and non-conformities and f) the size of farms.

### Administrative costs and cost structure

For the analysis of the administrative costs and the overall cost structure, the data collected about the different types of work was related to the number of organic operations that are working in the body's area of responsibility, i.e. the number of organic farmers and processors. In this way, a comparable figure was produced in each country for each type of body, showing the work load for managing the certification system in hours per operator. In a further step, the work load was multiplied by country-specific hourly rates to arrive at actual costs, to be included in the calculation of total business costs for organic certification<sup>3</sup>. To understand the cost structure of the control bodies better, the different types of work they need to conduct were compared to each other, and we looked for a correlation between the different work types.

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<sup>3</sup> National currencies were converted into Euro using the 2008 annual exchange rate from European Central Bank; source: European Central Bank, <http://sdw.ecb.europa.eu/browse.do?node=2018794>.

## 3 DATA QUALITY

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As a first part of the presentation of results, this section gives an overview of and the data quality of certification data, focussing on the availability of the data in the different countries studied.

As mentioned in the introduction, data availability is a crucial issue in the analysis of certification costs. The in-depth analysis of certification data from six control bodies, covering 27,000 organic operators over three years allows us to draw some conclusions about the availability of organic certification data. This also increases the transparency for helping to understand the (quality of the) further results of the analysis.

In all countries it is possible to precisely locate the operator, and thus it would be possible to later link it to other geographical information. While there is good information about how long the business has been controlled by the respective certification and control body, not all data bases hold information about the total time the business has been run organically.

As regards information on farms, the basic farm size (utilisable agricultural area) is well documented, although not all data bases hold exact information on the area that is still in conversion or managed conventionally. Not all data bases store data on the farm structure. In particular, the number of livestock kept on a farm is not easily extractable from the control bodies' data bases or it is not stored there at all. In addition, where farm structures are documented, this is not done in a uniform way across the countries. For both crops and livestock, each control body uses individual rather than internationally standardised classification systems, such as EUROSTAT classifications.

With regard to processors, in most data bases information about their products is kept, but this information is not everywhere easily extractable from the data bases. Also the product definitions or names are not uniform across the control bodies.

Economic data on the operators is scarce throughout. The data bases do not contain information on the number of employees (or work units) on farms and in the

processing companies. While in some cases estimates could be used, e.g. the economic size of a farm could be assessed on the basis of the utilised area under organic management; this is not possible for processors. Only two data bases (Italy and UK) hold information on the turnover that processors achieve by processing organic products.

All data bases hold information about the exact date when the annual control of an operator took place, and also record the certification fee paid per year. However, not all control bodies could supply information about additional controls (such as follow-up or unannounced controls).

Risk classification of operators is stored in Italy and Germany (while it is not clear whether or not the basis for risk classification is the same in both countries), but not in the UK and Switzerland, Denmark and the Czech Republic.

Regarding non-conformities and sanctions, most data bases do not store such information in more detail than a relatively rough classification of four to seventeen types of non-conformities or sanctions. A few store this information in such a detail that every single non-conformity of an operator is spelled out, which results in a list of as many free text descriptions as total non-conformities detected.

By contrast, most data bases keep precise information about the inspectors conducting the controls. Except for Denmark, all data bases include data on the number of controls an inspector conducts per year. The working experience of each inspector is recorded in all data bases except for Denmark and UK, while information on how many organic schemes an inspector controls was recorded only in Switzerland, Germany, and Italy.

With regard to data reliability, the procedure of repeated checking with the data providers increased the quality of data in the final data base used for further analysis. Furthermore, the data about certification fee that is included in both data set 1 and 2 was compared statistically. The applied Mann-Whitney-U-Test showed that there is no significant difference between the means of the certification fee in the two data sets (level of significance = 5%). In consequence, the certification fee data in data set 1 proved to be a reliable basis for further analysis.

The following four sections will present and discuss the results from the analysis of this collected control data.

## 4 ANALYSIS OF CERTIFICATION COSTS

After having discussed the data availability in the previous chapter, this section reports the costs of the organic certification system used in Switzerland, the Czech Republic, Germany, Denmark, Italy and in the UK. These costs are presented as business costs at the operator's level, as administrative costs, and as total costs. In the subsequent part of this chapter, closer attention is paid to the structure of certification costs. We present which costs occur for the different agents, i.e. control bodies, competent authorities, and standard owners. As a major cost item occurs at the level of the control bodies we finally take a closer look at the different costs types of the control bodies.

### 4.1 Business costs of certification of organic operators

Organic operators spend a considerable amount of time to satisfy the requirements, especially the documentation requirements laid down in Council Regulation (EC) No 834/2007 or in private organic standards (e.g. Bio Suisse in Switzerland or Soil Association in the UK). Costs which are not directly associated with expenditure (opportunity costs) are caused by working time needed for information search, time spent on control visits and their preparation or time required for requests on derogation (Zorn et al. 2009). Some of these costs can be exclusively assigned to the fact that an operator is following organic standards (e.g. time spent on organic control visits) others (e.g. documentation of incoming goods) would also be carried out on a conventional farm (Zorn et al. 2009). Very limited information exists on those opportunity costs for organic certification. The figures presented in the following (retrieved from data set 2) are based on hours needed for these tasks which were valued at relevant hourly rates. These costs are termed opportunity cost subsequently – as they represent the value of the time that could be used for other purposes.

### Business costs of organic farmers

The analysis showed that for the organic farmers the median<sup>4</sup> of the inspection fee in all study countries amounts to around 500 Euro per farm. Lower fees were identified in the Czech Republic control data whereas in the UK, the median inspection fee amounts to more than 600 Euro (see Table 3). According to the control reports analysed, the median inspection duration was approximately three hours per farm in the Czech Republic and Switzerland. Again, the UK control reports show longer inspection duration (4.5 hours) and for Germany a lower (2.0 hours) duration of inspection was found. In both Italy and Denmark, the inspection duration stated by farmers was four hours.

From the regression analysis, we found that the most relevant factors determining the duration of the control are the type of control, the number of sanctions, farm complexity and farm size. This is in line with the fact that most European control bodies use the farm size as one variable for calculating the inspection costs (Organic Rules and Certification, 2011). On-farm processing leads to both, longer duration of the control and higher inspection costs, resulting in higher certification fees.

The inspection fee is the most relevant monetary expenditure for organic operators. With regard to opportunity costs, the time spent by operators on the actual inspection visit compared to the total time operators spend per year on organic certification tasks was in most cases lower than 20%. The most important perceived workload for farmers and processors was the time required for the preparation of the control visit which took up to 60% of the total workload of farmers connected to certification. In the UK farmers stated to need about 25 hours for the preparation of the inspection visit, compared to 12 hours in Germany and the Czech Republic or 4 hours in Denmark and Italy respectively. Organic operators from the Czech Republic invested quite some time in information search about organic certification (up to 40% of the perceived total workload for organic certification). This might be a result of a high share of newcomers in the organic business. Indeed within the last 10 years, the organic sector in the Czech Republic showed considerable growth rates (European Commission, 2010).

Valued in monetary terms, the costs resulting from the time required for information search, documentation and preparation for the control visit were around 300 Euro per farm (Table 4). In the Czech Republic, despite the additional efforts required for information search, the opportunity costs were lowest due to low hourly wages in agriculture. The highest opportunity costs, were found in Denmark and in the UK. This is explained by the time for the preparation of control visits above the median. In Denmark, the Czech Republic and Switzerland, farmers commission some work associated with the documentation and preparation of control documents either to extension services or to accountant offices.

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<sup>4</sup> The median is more appropriate than the mean in analysing samples with a high degree of dispersion.



**Table 3: Business costs of organic certification for farmers in 2008 (median, in Euro per operator and year)**

	CH	CZ	DE	DK	IT	UK
Opportunity costs	253	133	303	434*	379*	590
+ Certification fee	535	318	495	–**	513	647
+ Annuity of investments	0	221	0	0	0	1
+ Outsourcing	38	160	0	144	0	0
- Subsidies	0	0	495	0	430	0
<b>Total business costs for a farm</b>	<b>826</b>	<b>832</b>	<b>303</b>	<b>578</b>	<b>462</b>	<b>1,238</b>
Total business costs per ha UAA	41	6.8	12.2	5.6	18	10.7

\* duration of control estimated by farmers (operators' survey) as data from inspection records were not available

\*\* not applicable due to public control system free of charge in Denmark

In some German *Länder* and in some Italian regions, farmers received public support for organic control costs. In cases where farmers are offered public control cost support the subsidies cover almost the entire certification fee and thus lead to considerably lower business costs compared those countries which do not subsidise organic control. Without subsidies for organic control costs, the total business costs of organic certification per farm would be quite similar in all countries analysed.

However, the business costs per hectare utilised agricultural area (UAA) vary considerably amounting 5.6 Euro/ha UAA in Denmark to 41 Euro/ha in Switzerland. The country specific differences in the farm structure with 20 ha UAA in Switzerland and more than 100 ha UAA in the Czech Republic, Denmark and in the UK lead to these differences in certification costs per hectare.

### Business costs of organic processors

As far as organic processors are concerned, the median certification fees varied considerably from 477 Euro per processor in the Czech Republic up to 1,400 Euro for processors in the UK (Table 4). The differences in the inspection fees were mainly due to different organic turnover and business size. The analysis of the control reports of control bodies showed that the control visit of processors required only slightly more time than the control of the farmers. However, the processors' workload for preparing the control visit was stated to be considerably higher compared to the farmers. The total business costs of organic processors for organic certification varied between 1,553 Euro (Switzerland) and 2,717 Euro (Germany) per operator. This corresponds to a share of business costs of organic certification on the processors' organic turnover between a relatively high 0.81 – 0.91% in Germany and Italy and a low 0.06 – 0.16% in the Denmark and Switzerland. Looking at the median organic turnover of the enterprises analysed, we can clearly see the effects of scale. In Germany and Italy, the processors are relatively small ones, and the share of certification costs is high. By contrast, for larger processors the share of certification costs tends to be smaller.



**Table 4: Business costs of organic certification for processors 2008 (median, in Euro per operator and year)**

	CH	CZ	DE	DK	IT	UK
Opportunity costs	719	1,439	1,990	2,022*	922*	484
+ Certification fee	834	477	727	–**	900	1,400
+ Investments	0	0	0	0	0	0
+ Outsourcing	0	100	0	0	0	0
<b>Total business costs for a processor</b>	<b>1,553</b>	<b>2,016</b>	<b>2,717</b>	<b>2,022</b>	<b>1,822</b>	<b>1,884</b>
Organic turnover (Median)	948,630	587,115	337,200	3,487,124	200,000	413,755
<b>Business costs of organic certification in % of organic turnover</b>	<b>0.16%</b>	<b>0.34%</b>	<b>0.81%</b>	<b>0.06%</b>	<b>0.91%</b>	<b>0.46%</b>

\* duration of control estimated by processors (operators' survey) as data from inspection records were not available

\*\* not applicable due to public control system free of charge in Denmark

## 4.2 Administrative costs of organic certification

Cost of administrating the organic farming regulation at the European Commission level include labour costs (EU Commission staff as well as expert reimbursement) required for standard development, the EU expert and advisory groups as well as the Standing Committee of Organic Farming (SCOF) meetings of representatives of all Member States. These costs amount to 7 Euro per organic operator (Table 5).

The costs that are born by the Member States at the European level (e.g. the input given by national ministries to develop European regulations) could not be assessed in the course of this project. However, the cost of implementing the European standard at the national level could be assessed and may indeed cover some of the time required to prepare for EU level meetings of Member States (see below).

The administrative costs of private standard owners varied between 37 Euro per operator (UK case) and 179 Euro (Switzerland case) per operator. However, contrary to the administrative costs estimated for the Swiss private standard, in the UK the administrative costs did not include costs for standard implementation, managing imports, mutual acceptance of other standards or recertification respectively as such data were not available.

The workload of competent authorities for supervising the organic certification system varies between 30 and 325 Euro per operator. The low amount of 5 Euro for the case of Italy is probably due to the fact that only the workload of the national competent authority was included, and not the regional ones. For Denmark, it was difficult to divide the public expenditures between the two tasks "supervision" and "control"

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because both tasks take place within the two public authorities responsible for organic control system in Denmark. Thus, the public expenditures of the competent authorities for supervision of the organic control system may have been overestimated, while the public expenditures for the organic control may have been underestimated or vice versa. The total, however, is likely to be a reliable figure.

**Table 5: Estimated administrative costs of organic certification in 2008 (in Euro per operator)**

	CH	CZ	DE	DK	IT	UK
<b>Standard owner</b>						
EU Commission		7	7	7	7	
Private Standard	179					37**
<b>Supervision</b>						
Competent authorities	30*	33	79	325	5*	58
<b>Public control system</b>						
DK				253		
<b>Total</b>	<b>209</b>	<b>40</b>	<b>86</b>	<b>585</b>	<b>12</b>	<b>95</b>

\* only national public expenditures; without public expenditures of regional authorities (Italy: 20 regions, Switzerland: 26 Cantons)

\*\* not including costs for standard implementation, managing imports, mutual acceptance of other standards or recertification respectively as such data were not available

### 4.3 Total cost of organic certification

The total cost of organic certification is calculated as the sum of the operators cost (for farmers and processors) and the administrative cost (Table 6). At a first look it seems that the systems in Italy and Germany perform cheaper for farms than the systems in Denmark, the Czech Republic, Switzerland and in the UK. One might be tempted to attribute these lower costs to the specific system in Italy and Germany: In these countries private CBs are certifying a public standard. However, in some regions or *Länder* respectively, farmers receive public control cost support.

However, these conclusions are premature: The total certification costs of organic processing show that the differences between the countries and the certification systems analysed are quite low. The differences between countries due to varying labour costs or different political concepts (federal system versus centralised national system) seem to be greater than the differences between certification systems. In addition in some countries, the tariff structure of control bodies privileges farmers. This results in relatively lower certification fees for farmers and relatively higher certification fees for processors. Thus, with respect to costs we could not identify a less costly certification system.

**Table 6 Total certification costs per farm and processor 2008 (Median in Euro per operator)**

	CH**	CZ	DE	DK	IT**	UK***
Business costs farms	826	832	303	578	462	1,238
Business costs processors	1,553	2,016	2,717	2,022	1,822	1,884
Administrative costs	209	40	86	585	12	95
<b>Total costs farms</b>	<b>1,035</b>	<b>872</b>	<b>389 (884*)</b>	<b>1,163</b>	<b>474 (904*)</b>	<b>1,333</b>
<b>Total costs processors</b>	<b>1,762</b>	<b>2,054</b>	<b>2,801</b>	<b>2,605</b>	<b>1,832</b>	<b>1,979</b>

\* without public control cost support

\*\* only national public expenditures; without as public expenditures of regional authorities (Italy: 20 regions, Switzerland: 26 Cantons)

\*\*\* not including costs for standard implementation, managing imports, mutual acceptance of other standards or recertification respectively as data were not available

To get insights to which extend the costs of organic certification load the consumer price of organic products, we estimated the share of the total certification costs on the consumer price for different supply chains (Table 7). This required allocating certification costs of farms to the respective branch using an economic allocation approach (see Chapter 2.1 and 2.2). As primary data on the economic output per branch was neither available from the control records nor from the farm survey, this was done estimated using economic data on organic outputs from the Swiss and the EU Farm Accountancy Data Network (FADN). Therefore, the figures presented below represent rough estimates which need to be interpreted cautiously but which provide a first idea how much certification cost load consumer prices. Consumer prices were taken from a price inventory by Janssen and Hamm (2009).

Looking at the different supply chains, the share of the total certification costs on the consumer price is lowest in Denmark (apart from the egg supply chain) and highest in Germany and Switzerland. In Denmark we found both the largest farm sizes and the largest processors in terms of organic turnover. While the operator sizes in Switzerland and those included in the data sets 1 and 2 for Germany (the data base does not include data from all organic farms in Germany), are relatively small. Thus again, organic operators could benefit from economies of scale with respect to organic certification costs. As a consequence, the share of certification costs amount to 0.1% for wheat flour, fresh milk and potatoes in Denmark. The highest shares of at least 1% were found for Germany (wheat flour, eggs, potatoes), Italy (wheat flour), Switzerland (wheat flour, fresh milk) and Denmark (only for eggs). It can be concluded that organic integrity costs about 1% or less of the retail sales price. Acceptability of this value may be judged differently by different operators (retailers versus consumers).

**Table 7: Estimated total certification costs of different supply chains (market channel: supermarket) 2008 (Median)**

	Total certification costs			Consumer price	
	Farm level	Processor level	Total supply chain		share certification costs
	Euro/unit			%	
Wheat flour (1 kg)					
CH	0.012	0.008	0.02	1.93	1.0
DE	0.021	0.009	0.03	1.41	2.1
DK	0.002	0.001	0.003	2.48	0.1
IT	0.01	0.008	0.018	1.12	1.6
UK	0.002	0.005	0.007	1.22	0.5
Fresh milk (full fat; 1 l)					
CH	0.01	0.002	0.012	1.24	0.9
DK	0.001	0.001	0.002	1.35	0.1
UK	0.002	0.004	0.006	1.05	0.5
Eggs (1 egg)					
CH	0.003	0.002	0.005	0.56	0.8
DE	0.004	0.002	0.006	0.35	1.9
DK	0.00001	0.004	0.004	0.45	1.0
IT	0.00001	0.002	0.002	0.36	0.7
UK	0.001	0.001	0.002	0.41	0.5
Potatoes (all; 1 kg)					
DK	0.0003	0.001	0.001	1.69	0.1
DE	0.004	0.009	0.013	1.43	0.9
Apples (all; 1 kg)					
CH	0.023	0.006	0.029	3.97	0.7
DE	0.005	0.018	0.023	2.9	0.8
Carrots UK (1 kg)	0.001	0.007	0.008	2.05	0.4
Olive oil IT (1 l)	0.001	0.065	0.066	9.44	0.7

Sources: own calculation, consumer prices: Janssen and Hamm (2009)

### 4.4 Cost structure of organic certification at different bodies

In addition to analysing the total costs of the organic certification system it is interesting to look at the structure of costs that occur in the different bodies working in the sector. In this section, we therefore take a closer look at the work load of the different agents, i.e. control bodies, competent authorities, and standard owners, as shown in Figure 1. While in section 4.3 data were presented in monetary terms, in this section we use working time as the unit for comparison between the different countries. This allows abstracting from the different levels of hourly rates for paid work, and gives insight in the organisation of the organic certification system and how different countries administer it.

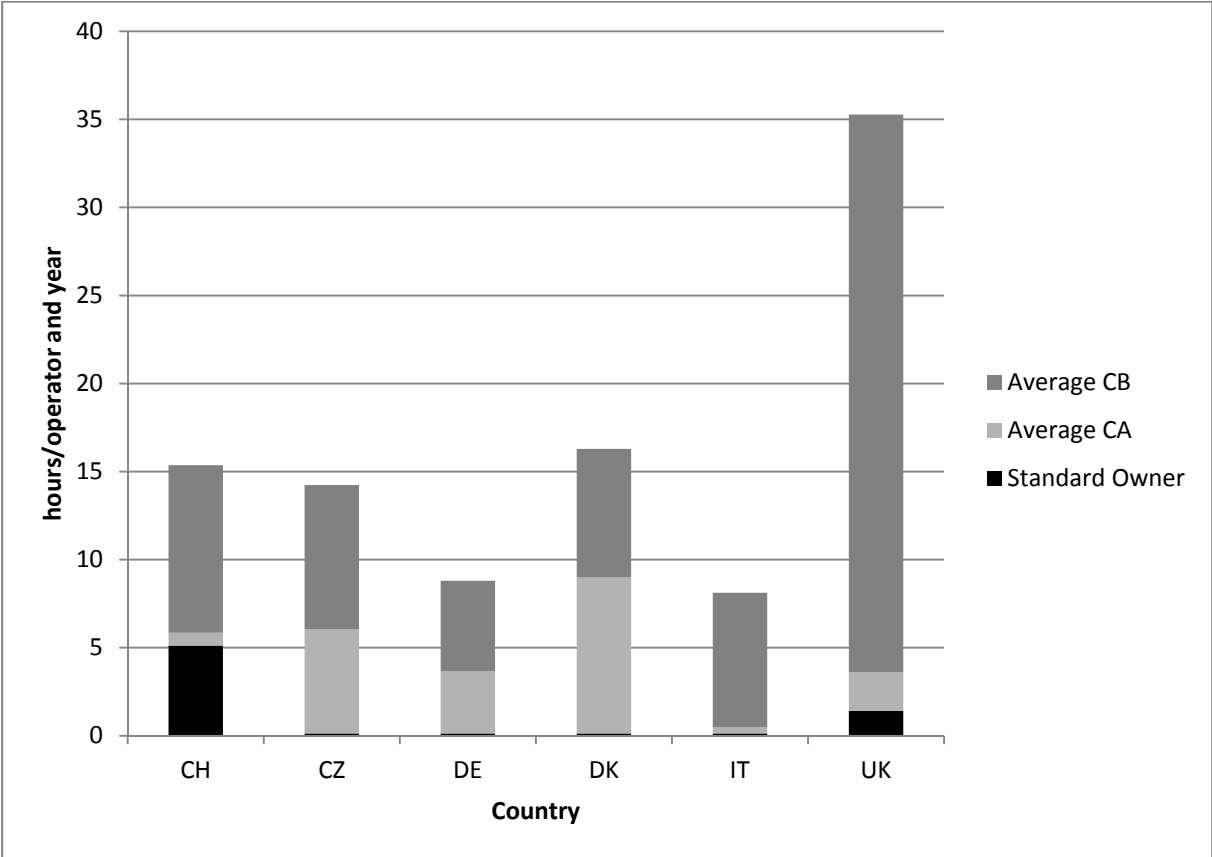


Figure 1: Average total workload per operator related to organic certification - shares of control bodies, competent authorities and Standard Owners

The workload of the standard owner related to organic certification is similar in all countries considered (0.95 h per operator and year). In Switzerland it is remarkably higher (app. 5 h/operator and year), while the low figure for UK, for which we also looked at a private organic scheme can be explained by the fact that activities such as standard implementation and import management were not considered.

The workload of competent authorities for supervising the organic certification system is substantial in the Czech Republic, Denmark and in Germany. In the Czech Republic and Germany, the workload of competent authorities per organic operator was nearly as high as the average workload per operator of control bodies (only about 2 hours less).

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The highest share of workload is taken up by the control bodies<sup>5</sup>. The median of the workload of control bodies for certification amounts approximately 8 hours per operator and year, with an extremely high value for the UK control body.

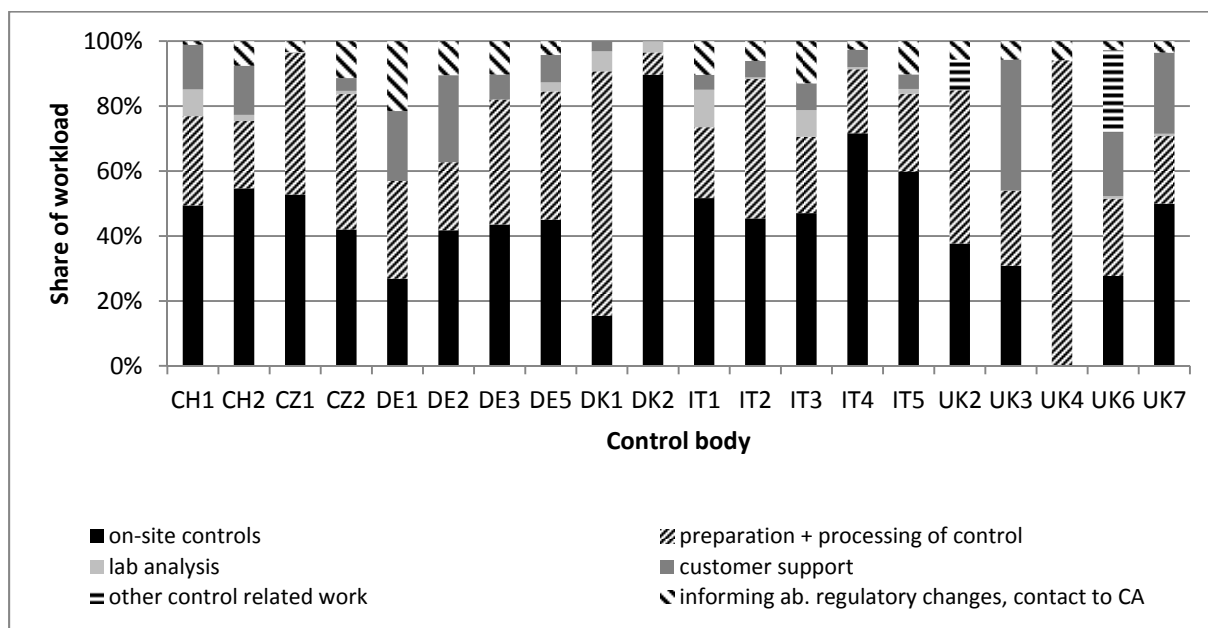
As already shown in

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<sup>5</sup> The exception is Denmark where the public authority is responsible for both control and supervision, and it was difficult for them to separate between the two activities, as mentioned before.

Table 3 and Table 5, the certification fees take up a considerable share of the business costs of operators and processors. Therefore it is interesting to take a closer look at the factors determining these costs. We assume that certification bodies have to cover all their expenses connected to organic certification with the fees collected at their clients. Understanding what work is involved in and around the organisation of the certification process is therefore important for better assessing the overall situation and potentials for increasing efficiency of certification bodies.

The workload of organic control bodies includes not only the effective time used for on-site controls, but also preparation of controls, processing of the control data, lab analysis of samples, customer support during the year, as well as time for staying informed about changes in the organic regulation and keeping contact to the competent authorities. Figure 2 shows that the distribution between the different types of work varies widely between the control bodies.



Note: Values are only shown for the control bodies who responded to the respective questions in the questionnaire

Figure 2: Distribution of different types of work for certification from control bodies

The median share of the time that control bodies dedicated to on-site controls (out of the total time spent on certification) was 44%, whereby the values ranged from 15% (DK1) to 90% (DK2) of the total certification work. Preparatory work and work after the inspection visit in terms of processing records are also an important share of work that control bodies undertake, accounting for a median of 30% of their workload, again with a large span from 7% (DK2) to 94% (UK4). Time for customer support ranges from 0% to 27% (DE2), with the exception of UK3 which indicates to spend 40% of the workload for customer support. The control bodies indicated to spend no time at all or a maximum of 22% of their time for informing themselves about changes in organic regulation and contact with the competent authority. Overall, however, both customer support and information gathering are minor tasks for control bodies, taking up median values of 8% and 6%, respectively of their total workload.

Comparing the share of the total workload spent for preparation and post-visit processing with the time share spent for on-site controls shows a medium to high

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negative correlation between the values (Pearson  $r = -0.626$ ; significant at the 0.01 level). This means that in general, control bodies that spend more time for preparing controls and processing the control data need less time to control on-site.

To sum up, the analysis of the structure of certification costs within the control bodies and the distribution of workload between the different bodies involved has shown that organic certification is organised differently in the different countries studied. While in some countries the state (in form of the competent authority) plays an important role (Czech Republic, Germany, Denmark), in others the private standard owner takes up many of these functions (Switzerland). The varying importance that the different control bodies attach to the different types of work reflects their different management approaches. All the same, the illustration of the different cost structures may indicate different possibilities for control bodies to increase their efficiency.



## 5 CONCLUSIONS

The goal of this paper was to address the different limitations of previous studies on the costs of certification, both in general and in organic schemes. These limitations concern data availability and reliability, the number and type of agents considered, and the scope and detail of cost analysis. The concluding chapter reflects on the contributions the study made to achieve reliable estimates of the magnitude and types of costs that occur in the area of organic certification, and gives an outlook on the potential future use of the results and further research needs.

Developing the data collection concept and implementing it with six control bodies for organic certification in as many countries showed a huge variation in the data availability and accessibility. The records that control and certification bodies hold about their operators are particularly heterogeneous with regard to i) the kind and level of detail of data which is gathered and stored electronically and ii) the format and structure of how the data is recorded. Moreover, it seems that control and certification bodies prefer to develop and use individual data classification systems rather than using international standardised classifications like EUROSTAT classifications. This hampers the comparison of certification data between control bodies and between countries. The reasons for this might be that either control bodies are not aware of international classifications or that such classification is not appropriate to the control bodies' needs.

Overall, we found that data about farm size is well documented, while further information about the farm structure (in particular type and number of livestock kept) is often missing. Similarly, detailed data about organic processing units is scarce and not standardised across the study countries. Further, all control bodies store basic information about the control activities, but, not all store the details about different types of control visits (such as annual or unannounced), types of non-conformities and sanctions.

In sum, our comparative study across six countries identified which type of socioeconomic data about organic certification is available from control bodies, and

which is missing. We could show that differences in the availability of data are due to different management systems for data storage. The variation in data quality between the data sources limited our study as for the comparison between countries we had to orient the analysis on the lowest common data basis. Yet, the data with which we could work still constitutes the largest data base that has ever been used for an analysis of the economics of organic certification, and it produced valuable results.

By analysing in detail the number and types of agents we found that the studied countries organise the organic certification systems differently with regard to engagement of the state and the private bodies. A system with a strong engagement of the state is found in the Czech Republic, Germany, and Denmark whereas in the other countries the private bodies are more involved.

Yet, we did not find any clear differences between the different organic certification systems in regard to overall costs of certification.

To analyse these costs, we covered the whole range from the certification fees to transaction costs and administrative costs at the various levels of farmers and processors, standard owners, competent authorities and the control bodies. We could show that certification fees are very relevant for the total costs of certification. They amount to about 900 Euro to 1000 Euro per farm on average. This corresponds to a share of 0.3% of the raw income of a farm in Switzerland and of 0.4% in Germany, respectively (BLW, 2009; BMELV, 2009). For processors, the total costs of certification lie between 0.06% and 0.91% of the organic turnover. Against the background of an estimated average net margin of around 3% for processors it becomes clear that this difference in certification costs matter. In particular small enterprises or processors with a small share of organic turnover will have an interest in cutting down their costs of certification. On the other hand, processors can benefit from economics of scale: larger companies have implemented quality management systems which allow organising organic certification efficiently.

Regarding the operators' expenditure of time, the actual control time is only one part of the total time required in the context of control and certification. Relevant are also the perceived time requirement for preparation for control and the information search. The latter particular applies for countries which show high growth rates in organic farming and therefore have a high number of newcomers in the organic industry.

From our study we can draw several conclusions on how to increase the efficiency of the organic certification system in the organisation of control and certification, but more importantly in shaping the framework conditions in which control bodies operate. It should be stressed, however, that these suggestions are not independent from each other, but interacting, and therefore it will not be possible to implement just one without considering others. Given the lack of difference between different certification systems, but a high variation between the countries, any actions for increasing the efficiency of the system have to consider the country-specific context. Furthermore, the possibility should be kept to have a system of private certification bodies, public certification authorities and a mixture of both and leave the decision about which system is implemented to the respective member state.

## CHAPTER 5\_CONCLUSIONS

To improve the efficiency of the organic certification system we recommend the following:

First, given that the certification fee is a major cost item in the total cost of organic certification, these fees could be reduced by reducing the cost for the control visit and thus the corresponding control fee. This could be achieved by reducing the number of control visits per operator, e.g. by introducing a risk-based control system where low-risk operators are controlled less often than high-risk operators. Furthermore, control bodies should invest more time in preparing controls and in the post-visit processing of the control data. This also contributes to a lower duration of the on-site control.

Second, the organic certification system would profit from increasing the quality and availability of information that operators need to easily follow the certification requirements and procedures. As shown above, transaction costs on information search are caused by uncertainty about the certification procedure and control system. Hence, making information about how certification and control function easier accessible would reduce new organic operators' uncertainty about the system in an efficient way.

Third, Member States should be encouraged to check whether the distribution of tasks within the organic certification system to different authorities within the Member State leaves room for improvement.

Finally, the use of terms and definitions as well as data collection specification with respect to non-compliances, sanctions and structural data should be harmonised at European level. To carry on and follow up the work that this study has started in comparing the different organic certification systems and the economics behind it would be furthermore helpful if the EU published an annually supervision report that allows a meaningful comparison of the implementation of the organic regulations in all EU Member States.

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