30 years after the Single European Act:
the Single Market under a magnifying glass

To what extent have the objectives of the European Single Market been met, taking the example of the European residential ventilation industry?

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Executive Summary

"By 1993, the European Single Market becomes a reality" ("Historical overview," 2014). This is stated by the European Commission in its historical overview on the internal market. The question has arisen whether today, 30 years after the signing of the European Single Act, the European Single Market actually has been brought into practice. The author has answered this question by the means of a case study, taking the European residential ventilation industry as an example. Residential ventilation is currently making its first steps towards European unification of legislation. Energy-efficiency is one of the EU's main priorities, as well as indoor air quality; due to a constant improvement of building insulation, ventilation needs to be installed everywhere in order to maintain a good indoor air quality and the topic concerns everyone. The research question answered in this thesis is:

To what extent have the objectives of the European Single Market been met, taking the example of the European residential ventilation industry?

First, in the literature review, three areas have been covered. To begin with, the development of the internal market from 1945 to today has been mapped by outlining the most influential treaties, the Public Procurement Directive, the Mutual Recognition Regulation, and Single Market Acts I and II. Thereafter, the views on the Single Market's success have been explored by reviewing both academic sources and EU impact assessments and reports. Lastly, a framework of the European directives and regulations applicable to the residential ventilation industry has been created.

In accordance with the literature review outcomes, the methodology for the case study research has been established. For the in-depth research, semi-structured interviews were conducted amongst four manufacturer representatives: one from a large and one from a medium-sized Danish company, and one from a large and one from a medium-sized Spanish company. The small scale of the research has been acknowledged as one of the main limitations. Consequently, the author has chosen an inductive reasoning approach, acknowledging that from a relatively small-scale research in a quite undiscovered research field, no formal proof leading to a formal one-way conclusion could be drawn; merely, generalisations and suggested conclusions can be made.

The most important outcomes of the interviews were:

(1) Main competition comes from domestic manufacturers;
(2) Product legislation highly varies per country;
(3) Product and certification requirements can even vary per region or consumer;
(4) National legislation is being highly influenced by different stakeholders, like individual manufacturers, national associations, and testing houses;
(5) Certification is often too geographically diversified and too costly for SMEs to keep up;
(6) Public institutions do not seem to favour products from their own country, merely prioritize low cost;

(7) The overall attitude towards further European integration is positive, and continued unification is considered the only way forward for the industry.

These findings were compared with the outcomes of the literature review. Following this analysis, the answer to the research question is:

*Yes, the framework for a Single Marketha*s *been established; yet, in practice is not being fully implemented. Technical trade barriers still exist and form a burden for further economic integration and the growth and expansion of manufacturers, especially SMEs.*

In accordance with the methodology, analysis and conclusions, a two-tailed set of recommendations was made; one set for further action by the EU, and another for further research to be developed. The EU has the possiblity of following two different action plans, of which the first would be the most progressive one:

(1) Map the European countries according to climate into three or four regions;
(2) Implement product and energy-efficiency regulations instead of directives, according to the climate regions;
(3) Introduce a European certification body in line with the European product legislation.

The second option draws a less progressive, but maybe more feasible action plan:

(1) Reinforce the principle of mutual recognition with a specialised European control body;
(2) Integrate a more stringent infringement procedure for national governments in case they do not follow the principles of mutual recognition;
(3) Integrate a more stringent infringement procedure for national government who neglect to implement regulations, transpose directives, or hand in reflection reports on time.

This option might be, in the current environment, the best one.

Next to recommendations for actions, suggestions for further research in four areas have been made:

(1) Investigate to what extent a European Economic Union could be actually achieved as long as not all Member States have integrated the single currency;
(2) Search for a solution to the problem of double regulation of products and components;
(3) Create a framework of all European and national certification and testing institutions;
(4) Conduct the same research as performed by the author, taking different countries as case study.

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Preface

This study is my Bachelor's thesis for the European Studies programme at The Hague University of Applied Sciences (The Hague, the Netherlands). The research was assigned by Eurovent, the European Committee of HVAC&R manufacturers. Eurovent is a member association representing the interests and increasing the visibility of more than 1,000 manufacturers of Heating, Ventilation, Air-Conditioning and Refrigeration equipment spread over more than 25 European countries. Its members are mostly national associations, through which the connection with manufacturers is established.

I started working for Eurovent in August 2014 as an intern, as part of my study programme. The internship was the result of a project carried out for Eurovent from April to June 2014. The project was organised by The Hague University and requested the design of a 3-year business plan for Eurovent. Together with my four teammates, Peace Daniel, Elske Idzenga, Debby van Prooijen and Anneloes Winkster, I received the best grade for the project of all nine project groups of that semester, after which I was hired as an intern. Following my four-month internship, I was asked to stay and work while simultaneously writing my thesis for Eurovent. This was an amazing opportunity. However, the combination of working and writing my thesis proved to be quite a challenge. In the end, I was given a month holiday to focus on the creation of the thesis, during which I followed a very tight schedule and discovered a highly disciplined side of myself.

The research has been carried out with a two-tailed purpose. On the one hand, in the light of my study programme, the aim was to figure out whether one can already speak of a truly European Single Market. On the other hand, in the light of the industry I am working for, the aim was to inform Eurovent's members, in particular the manufacturers of residential ventilation systems, on the current legislative framework concerning their industry. Eurovent's Secretary General, my well-respected boss Mr. Felix Van Eyken, has experienced that many company representatives, especially the ones working for SMEs, are facing difficulties in grasping the quantity of product legislation and standards they have to deal with. The research aimed to tackle this issue by providing a clear overview of the current and upcoming legislative framework.

Through the process, I received support from many different people, without whom I could not have obtained the same results as I have now. Firstly, without the good cooperation with my project teammates in spring 2014, I would have never ended up working at Eurovent and writing my thesis for the association. Additionally, I own a big thanks to my thesis supervisor Mrs. Marjo van den Haspel, Senior Lecturer in European Law at The Hague University, who has had great faith in me when I came to her empty-handed two months before the final deadline. Her great knowledge and ongoing trust in a good result have given me the spirit that I needed. Also from The Hague University, Mr. Dave van Ginhoven, Senior Lecturer, has advised me throughout the process on use of language, style and APA referencing.

Furthermore, I have received a great deal of help from people in **my** professional network, built up through the internship at Eurovent; Mrs. Pilar Budí, Managing Director of AFEC, the Spanish

Association of Air Conditioning Equipment Manufacturers, has brought me into contact with one of the Spanish interviewees, and without the time and effort invested by the four interviewees, I could not have integrated my case study in the research in the way I did now; Mr. Henrik Lind and Hjalmar Nielsen from Denmark, and Mr. Juan Lopez and Mr. Alberto Velazquez from Spain respectively.

From Eurovent, I would like to thank Secretary General Mr. Felix Van Eyken for having so much faith in me. Next to this, he is the one who has assigned the study topic to me, provided me with many useful sources, and has given me constructive feedback.

Lastly, the greatest thanks goes out to Mr. Morten Schmelzer, Strategic Relations Manager at Eurovent, who has played a major role in my professional build-up at Eurovent and has ever since been my ongoing source of support and inspiration, whilst providing me with feedback throughout the entire research process.

List of abbreviations

BAT	Best Available Technology
BV	Bidirectional Ventilation Unit
CFSP	Common Foreign and Security Policy
CEN	European Committee for Standardisation
CEO	Chief Executive Officer
CM	Common Market
Commission	European Commission
Council	(European) Council of Ministers
C**RI**	Comparative Regional Integration
CU	Customs Union
EC	European Community
ECSC Treaty	Treaty establishing the European Coal and Steel Community
EEAA	European Economic Area Agreement
EEC	European Economic Community
EED	Energy Efficiency Directive
EMU	Economic and Monetary Union
EN	European Normalization
EPBD	Energy Performance of Buildings Directive
ERM	Exchange Rate Mechanism
ErP	Energy-related Product
ESM	European Single Market
EU	European Union
EuP	Energy-using Product
EURATOM Treaty	Treaty establishing the European Atomic Energy Community
FTA	Free Trade Area
IMF	International Monetary Fund

ISO	International Organisation for Standardisation
JCMS	Journal of Common Market Studies
JHA	Justice and Home Affairs
MS	Member States of the European Union)
NRVUs	Non-residential ventilation units
OEEC / OECD	Organisation for European Economic Cooperation, in September 1961 changed to Organisation for Economic Co-operation and Development
RVUs	Residential Ventilation Units
TC	Technical Committee (within ISO)
TEEC / TEC	Treaty establishing the European Economic Community, with the signing of the Maastricht Treaty (1992) changed to Treaty establishing the European Community
TEU	Treaty on the European Union
TFEU	Treaty on the Functioning of the European Union
ToL	Treaty of Lisbon
UK	United Kingdom
USA	United States of America
UVU	Unidirectional Ventilation Unit

1. Introduction

"By 1993, Europe will be our home market. That means that we won't just be exporting to eleven other countries. We will be doing business in a single domestic market." This was predicted by Lady Margaret Thatcher in her opening speech of the Single Market Campaign on 18 April 1988 ("Speech opening Single Market Campaign,"). With this statement, she envisaged the spirit of the late 1980's, a period of rapid European economic integration. Already starting with the European Coal and Steel Community in 1951 and the Treaty on the European Economic Community in 1957, the idea of the internal market had naturally developed. Ever since, policy centralisation has spread over many areas. The signing of the Single European Act in 1986, almost 30 years ago, marked the start of a period of rapid economic integration, and in 1992, when the Maastricht Treaty was signed, even the framework for a Monetary Union for roughly half of the European Member States had been set.

The European Commission states that in 1993, "the single market becomes a reality" ("Historical overview," 2014). The question has arisen, though, whether today, 30 years later, this view matches reality and a truly European Single Market[1] already exists. How is the concept of the Single Market being applied? How do businesses experience the European Market? What factors would mark the completion of the Single Market, and is the establishment of an economic union actually possible without the existence of a political union? More generally, the question to what extent the European Single Market has been completed has arisen.

The author has aimed to answer this question through studying the European market, taking the example of the residential ventilation industry. The author has chosen this particular industry because at the moment, it is dealing with a vast amount of newly-developed legislation coming from the European level; amongst others, because indoor air quality in residential building has become more and more important over the past decades. With both newly-built and renovated buildings becoming better and better insulated, good ventilation is needed everywhere and has become important to everyone. The European Commission has acknowledged that very little market and energy data on this sector have been gathered so far, and "ventilation units have not been subject to product-specific policy measures before" ("Commission Document Impact Assessment on Ventilation Units," 2014, pp. 10, 11). Accordingly, the European institutions have started legislating ventilation products, especially residential ventilation products, in an accelerated pace. From the industry, voices have risen about the difficulties in meeting national product requirements; something that would contradict the argument that a Single Market exists. Hence, it is a highly dynamic market which is worth investigating.

The question to be answered in this research is:

To what extent have the objectives of the European Single Market been met, taking the example of the European residential ventilation industry?

[1] Also known and the Single Market or internal market, and abbreviated as ESM

The author has aimed to answer this question by the means of a two-tailed research; firstly, through a thorough literature review on the Single Market, and secondly, through the case study of the opinions of residential ventilation system manufacturers from Denmark and Spain respectively. The literature review (Chapter 2) provides:

(1) An overview of the development of the European Single Market through European primary legislation;
(2) An overview of the development of the European Single Market through European secondary legislation;
(3) A summary of academic and institutional assessment on the extent to which the Single Market has been completed;
(4) An overview of all European legislation affecting the European residential ventilation industry.

The literature review has been used to develop a methodology (Chapter 3), aimed to investigate how to best create a case study suited for this research. Accordingly, a case study has been carried out to detect how manufacturers of residential ventilation systems experience the European Single Market, taking Denmark and Spain as specific cases, and interviewing manufacturer representatives from these countries. The findings of the case study (Chapter 4) provide the view on the European Single Market completion of two Danish manufacturer representatives and two Spanish manufacturer representatives; in both cases from one large and one medium-sized company.

After this two-tailed research, the outcomes of the literature review and the case study have been compared and analysed in Chapter 5), of which conclusions and recommendations have been drawn (Chapters 6 and 7).

In order to provide the reader with basic understanding before continuing reading, the working definitions used in this research paper have been outlined below.

Working definitions

In order to properly discuss the legislation applicable to the residential ventilation industry, firstly the terms *ventilation, residential* and *residential ventilation* needed to be defined. Secondly, as the legal documents discussed in this research paper are mainly *treaties, regulations, directives and standards*, these legal terms have been explained. The six working definitions are outlined below.

Ventilation

To begin with, the term *ventilation* has been defined. This has been done by the comparison of different applicable definitions, starting with the Oxford Dictionary. This dictionary defined ventilation as “the provision of fresh air to a room, building, etc.” (“ventilation,” 2015). Besides this general definition, varying definitions have been used by the Commission in different legal documents to describe ventilation systems in the past decade.

Firstly, the *Commission Regulation (EU) No 1253/2014 laying down ecodesign requirements for ventilation units* defines a ventilation unit as "an electricity driven appliance equipped with at least one impeller, one motor and a casing and intended to replace utilised air by outdoor air in a building or a part of a building" (2014, p.12). The definition demonstrates that this regulation applies only to mechanical ventilation units, excluding natural ventilation units (systems that create air flow solely through the natural use of air and without mechanical drive).

Secondly, the European Commission speaks in the introduction of its *Draft Working Document Ventilation Units* published on 10 October 2012 of the following: "Ventilation units replace indoor air by fresh outdoor air in buildings by mechanical means ('fan-assisted') in order to guarantee an appropriate indoor air quality. This type of ventilation is also known as 'mechanical ventilation' to make a distinction to 'natural ventilation', where the same function is fulfilled by minimum infiltration openings, window airing and buoyancy ('passive stack'), possibly supplemented by small intermittently operating fans in the kitchen, bath and toilet" (p. 11).

Thirdly, a *Preparatory study on the environmental performance of residential room conditioning appliances (airco and ventilation)*, assigned by the European Commission, describes that "Building ventilation can be roughly divided into three categories: natural ventilation, local mechanical ventilation (room by room) and central mechanical ventilation (various rooms)" (Rivière et al., 2009, p. 8).

Extracted from the above-mentioned definitions, the author has defined ventilation as *the replacement of utilised indoor air by fresh outdoor air in a building or part of a building, distinguishable by (1) natural ventilation, (2) local mechanical ventilation (room by room) and (3) central mechanical ventilation (various rooms)*. Examples of ventilation products are cooker hoods, fans, filters and grilles.

Residential

The term *residential,* in the context of *residential ventilation industry,* has been defined as well. This has been done in accordance with the Oxford Dictionary, stating it as "designed for people to live in" (Oxford Dictionaries, 2015). In the context of this paper, one may refer to all ventilation products manufactured for the market of residential buildings –apartments, houses, vacation homes and the like. It should be taken into account that the scope of the paper excludes all ventilation products manufactured for non-residential buildings, for example hospitals, hotels, office buildings and supermarkets.

Then, the term *Residential ventilation system* needed to be defined.

Residential ventilation system

The Commission has defined residential ventilation units in *Commission Regulation 1253/2014 (EU) No 1253/2014 laying down ecodesign requirements for ventilation units* according to flow rate and end use, whereas RVUs either have a maximum flow rate of 250 m3/h, or a maximum flow

rate of 250-1 000 m3/h, and the end use will solely be “for a residential ventilation application” (2014, p. 10).

In addition, in the Commission’s 2014 Impact Assessment on Ventilation Units, a distinction between residential and non-residential was made according to the power level; a residential ventilation unit works on an electric input power of less than 125 Watt per individual fan, and a non-residential ventilation unit works on an electric input power of more than 125 Watt per individual fan (“Commission Document Impact Assessment on Ventilation Units,” 2014, p. 10)**.**

Taking these definitions into account, the two main priorities seem the ventilation systems’ end use and size, presuming that non-residential buildings require larger ventilation systems than residential buildings. As the aim of this research was to investigate all legislation regarding the residential ventilation industry, not excluding large residential ventilation systems in for instance flat dwellings, the working definition needed to be kept general. Accordingly, the author has defined *residential ventilation systems* as *all systems replacing utilised indoor air by fresh outdoor air in a residential building or part of a residential building, distinguishable by (1) natural ventilation, (2) local mechanical ventilation (room by room) and (3) central mechanical ventilation (various rooms)*.

In the sections below, the different legal acts discussed in this research have been explained.

Treaty

The European Union institutions defined a treaty as “a binding agreement between EU member countries” (“EU Treaties,” n.d.). The European Union does not function as a nation-state, and consequently has no constitution; the treaties function as the legal basis for the adoption of all legislative acts and as the main reference in the European Court of Justice, outlining the EU’s main objectives, powers, governance hierarchy and decision-making procedures (“EU Treaties,” n.d.). Treaties are referred to as *primary legislation.*

Regulation

A regulation is a legislative act that is legally binding in its entirety (“Regulations, Directives and other acts,” n.d.). The regulation must be applied in all Member States’ national law immediately after the date of entry into force (this is called direct applicability), meaning it overrules national legislation.

Directive

The contrary of a regulation is a directive, of which the text is not literally binding and which does not need to be applied in all Member States’ national law immediately after the date of entry into force. Moreover, it is a document outlining the Union’s objectives, which need to be achieved by a certain deadline (“Regulations, Directives and other acts,” n.d.). The Member States’ governments may choose themselves through which measures they will meet the objectives (this is called indirect applicability). In other words, the directive needs to be transposed into national law, and this may be done differently in different Member States, as long as the goals outlined in the directive will be achieved.

Regulations and directives are referred to as *secondary legislation.*

Standard

The author has used the ISO[2] definition of a standard, being “a document that provides requirements, specifications, guidelines or characteristics that can be used consistently to ensure that materials, products, processes and services are fit for their purpose” (“What is a standard?,” n.d.). Standards are being set by both European, national and regional legislative bodies.

[2] International Organisation for Standardisation

2. Literature review

In this chapter, literature on the Single Market in general and the unified legislation for residential ventilation systems in particular was reviewed. Section 2.1 shows the development of the Single Market through European legislation; section 2.2 outlines different views on the extent of completion of the internal market, both from academic sources and EU impact assessments and progress reports; and section 2.3 provides a framework of all European legislation applicable to the residential ventilation industry. The section below begins with an introduction on the Single Market and the first steps towards European economic integration.

2.1 European Union Single Market development

In Art. 26 of the youngest treaty elaborating on the Single Market policy, the Treaty on the Functioning of the European Union[3], the European Union Internal Market is described as "an area without internal frontiers in which the free movement of goods, persons, services and capital is ensured in accordance with the provisions of the Treaties" (van Ooik & Vandamme, 2010, p. 41). As the focus of the author lies on the residential ventilation industry and herewith the export within the European Union of products within this industry, the scope of this research was put on the free movement of goods. In this section, the development of the European Single Market from 1945 to today is described.

2.1.1 Development towards economic cooperation

The initiative ideas for enhancing cooperation between European countries already date back to the beginning of the 20th century. However, the first constructive steps towards economic unification were made after the end of World War II. Larry Neal outlines in *The Economics of Europe and the European Union* the initial integration phase from 1945 to 1958. This process commenced with the financial dependence of a major part of the European countries on the United States of America (USA) and Canada, combined with general economic instability, the results from World War II. In order to reinforce the European economic position, joint measures were taken, amongst which the creation of the European Payments Union on 19 September 1950 by the Organisation for European Economic Cooperation[4]. Within this Union, the 18 participating governments replaced their mutual quantitative trade restrictions with trade tariffs, meaning that even though importers needed to pay import duties, they could freely choose the number of products they would import. By the end of 1958, the EPU had become the foundation of a "working multilateral trade and payments system for Europe and the wider world" by 27 December 1958 (2008, pp. 20-28).

[3] Signed in 2007, entered into force in 2009 and further referred to as the TFEU
[4] Shortly OEEC, founded in 1948, at the time consisting of the following 18 members: Austria, Belgium, Denmark, France, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Sweden, Switzerland, Turkey, United Kingdom, and both the British-American and the French occupation zone of Western Germany ("Organisation for European Economic Co-operation," 2015)

As of this point in history, European economic cooperation would develop by the means of the signing of treaties. In accordance with the different treaties, the integration process was supposed to be a phased process. In reality, this was not entirely the case. Pelkmans described the five stages of economic integration of the Hungarian economist and Professor Béla Balassa, who had outlined a preview of the economic integration process in 1961:

(1) The creation of a free trade area (FTA), an area within which tariffs and quotas for trade between FTA member states would be abolished, whilst the members could maintain their national tariffs and quotas for non-members;
(2) After that, a Customs Union (CU) would follow, involving the abolishment of product discrimination for the CU members and the equalisation of tariffs and quotas for non-members, leading to the free movement of goods;
(3) Then, Balassa predicted a Common Market (CM) which would involve the removal of factor movement[5] restrictions, leading to the free movement of capital and labour;
(4) Next, the Economic Union would be created, accompanied with "the harmonisation of national economic policies in order to remove discrimination";
(5) The last stage would involve the set-up of a supranational body with the power to make binding decisions and monitor the Union, and the final unification of all economic policies.

Pelkmans argues that Belassa was wrong, and that in reality, European economic integration consists of overlapping processes (1997, pp. 6–9). The Treaty of Rome already outlined the basic principles for the FTA, CU and CM. However, none of the accompanying objectives would be fully achieved within the next ten years. The Member States already started harmonising their economic policies as of the signing of the Single European Act (1986), whilst the completion of the CU had still not been completed by 1992[6]. This non-consistent overlapping of processes is further explained in sections 2.1.2 and 2.1.3 on primary and secondary ESM legislation respectively.

2.1.2 Development through primary legislation

When looking at the historical overview of EU Treaties introduced throughout the years, starting with the Treaty establishing the European Coal and Steel Community[7] in 1951, six main occasions around primary legislation can be distinguished in the process of creating the internal market:

[5] Factor movement refers to movement within the 'factor market': the market for capital, entrepreneurship, labour, land and raw materials ("Factor Market," n.d.)
[6] The year of the signing of the Maastricht Treaty
[7] Also known as ECSC Treaty or Treaty of Paris, signed on 18 April 1951, entered into force on 23 July 1952 and expired on 23 July 2002 ("EU Treaties," n.d.).

(1) The signature of the Treaty establishing the European Economic Community in 1957;
(2) The partial achievement of the objectives set in before-mentioned Treaty by 1968;
(3) The publication by the European Commission of the White Paper on the Internal Market in 1985;
(4) The signing of the Single European Act (SEA) in 1986;
(5) The signing of the Treaty of Maastricht in 1992;
(6) And the signing of the Treaty of Lisbon and herewith the ratification of the Treaty on the Functioning of the European Union in 2007.

1957: Treaty of Rome

Following the development of the EPU, economic integration was defined on 23 March 1957 by the signing of the Treaty of Rome[8] (Fontaine, 2010) ("Document 11957E/TXT," n.d.). This Treaty was signed by the Heads of State of Belgium, France, Germany, Italy, Luxembourg and the Netherlands, the six members of the then called European Community ("Historical overview," 2014). The Treaty outlines the preliminary establishment of the European single market as it is today ("Verdrag tot oprichting van de Europese Economische Gemeenschap en bijbehorende documenten," 1957).

The section on the free movement of goods firstly introduced the gradual abolishment of import and export duties on products traded within and between Member States, and secondly a common customs policy for the import of products from non-Member States ("Verdrag tot oprichting van de Europese Economische Gemeenschap en bijbehorende documenten," 1957). Art. 15 of this chapter still gave a gateway for Member States to "partially or completely adjourn the abolishment of the customs duties", as long as they had a – to them – valid reason for this, and briefed the other Member States and the European Commission. Thirdly, the prohibition of quantitative restrictions on imported and exported products between the Member States and "all measures having an equivalent effect" was determined ("Verdrag tot oprichting van de Europese Economische Gemeenschap en bijbehorende documenten," 1957, pp. 34, 36). Fourthly, Artt. 85-102 outline the basic principles for the creation of a level-playing field by the means of (1) setting competition law rules for both undertakings and national governments, and (2) restricting protective taxes which directly and / or indirectly could create a competitive advantage for domestic producers with regard to their competitors from other Member States ("VERDRAG tot oprichting van de Europese Economische Gemeenschap," 1957, pp. 73–83).

The Treaty entered into force on 1 January 1958.

1968: Reflection on the Rome Treaty objectives

In his book *Access to European Union: Law, Economies, Politics"*, Nicholas Moussis explains how the gradual abolishment of customs duties and charges having equivalent effect to customs duties

[8] Also referred to as the Treaty establishing the European Economic Community (TEEC), nowadays known as the European Union.

on imports started on 1 January 1958. "(..) the reduction was constant and problem-free. The rate of tariff dismantling was even accelerated by two Council decisions, and completed on 1 July 1968, 18 months ahead of schedule" (Moussis, 1996). Yet, the European Commission states in a *Historical overview* on the EU that most of the non-tariff barriers[9], such as different national safety and packaging requirements, product standards, and administrative procedures, had remained (2014).

This means that the internal market was still far from completed, and further action from the European institutions was required. Even though the first steps towards a European Monetary Union were undertaken by the signing of the Exchange Rate Mechanism agreement[10] in 1972 ("A growing community," n.d.), the mid-1960s to the mid-1980s marked a period of economic and political (power) decline in Europe (Ferrari, 2013, p. 1) and caused a change in the Member States' attitudes. National governments were not willing or able anymore to spend time and resources on further European integration; instead, they were highly occupied with the stimulation and protection of their domestic markets (Awil, 2009). Starting the second half of the 1980's, the economic and political situation within the EU stabilised, and herewith reinforced the relations between the Member States (Boughton, 2002), leading to the creation of the *White Paper on the Internal Market*[11] in 1985 and the signing of the Single European Act in 1986.

1985: White Paper on the Internal Market

On 14 June 1985, prior to the Milan European Council of 28 and 29 June 1985, the European Commission published a white paper identifying "279 legislative measures needed to complete the internal market" ("Single European Act," 2010). These measures were supposed to lead to the abolishment of all types of trade barriers – physical, technical and tax-related – and to create a strong an economic union that could compete with the United States (Fontaine, 2010). The white paper called *Completing the internal market* proposed 31 December 1992 as end date for the achievement of the outlined objectives, which would become the official deadline for the completion of the internal market, as described in the Single European Act (2010).

1986: Single European Act

The Single European Act (SEA), signed in 1986, was a Treaty integrating the abovementioned 279 legislative measures into amendments to the ECSC Treaty and the Treaty of Rome, and outlined two main aims. The first goal was to prepare the European institutions for new Member States, and

[9] Trade barriers are "measures that governments or public authorities introduce to make imported goods or services less competitive than locally produced goods and services" ("What is a Trade Barrier," n.d.). Non-tariff (trade) barriers are trade barriers created by something else than tariffs (taxes imposed on imported products by a national government either to generate revenues or to protect the domestic market)

[10] The agreement to limit the fluctuation of currencies from the different Member States for the purpose of "monetary stability", also known as ERM ("A growing community," n.d.)

[11] Document published by the European Commission with proposals for the Community to undertake action in a specific area ("White paper," n.d.)

the second goal was to prepare the European Union for the single market, for instance through the initiation of the assent[12] and cooperation[13] procedures, granting more decision-making power to the European Parliament, the sole European body elected by EU citizens ("EU Treaties," n.d.). Artt. 13-19 provide supplementary articles to the EEC Treaty ensuring the harmonisation of the internal market ("Treaties Establishing the European Communities - Treaties amending these Treaties - Single European Act," 1987, p. 1026). Furthermore, three articles replaced decision-making procedures within the Council of Ministers requiring unanimous voting with the qualified majority voting procedure[14], allowing decisions to be taken at a faster pace as it would no longer be possible for one or two Member State representatives within the Council to block a decision ("EU Treaties," n.d.). Lastly, the SEA set constructive goals for the harmonisation of tax and customs duties policies, "to ensure the establishment and the functioning of the internal market" (p. 1028).

The Single European Act entered into force on 1 July 1987 ("EU Treaties," n.d.).

1992: Treaty of Maastricht

The European Commission states that by 1992, the 279 new measures integrated through the SEA had been implemented ("Historical overview," 2014). National regulations were replaced by European ones in many economic areas, whilst in others, the principle of mutual recognition was applied, meaning that if a product is approved according to the standards of one Member State, it would automatically needs to be approved by the others (see also section 2.1.3.1 on the mutual recognition policy) ("Historical overview," 2014). The goal of creating a simpler and more cost-efficient trade process between Member States had, on paper, been achieved.

1992 was also the year in which the Treaty of Maastricht[15] was signed by the Union's current twelve Member States. One of the main changes established through this Treaty was the

[12] Following the *assent procedure*, nowadays known as the *consent procedure,* the Council of Ministers needs to obtain the Parliament's assent before taking a decision. Without the Parliament's consent, the proposal cannot be adopted; however, the Parliament's right are limited to one single reading and the acceptation or rejection of the proposal (no amendment rights) ("Consent procedure," n.d.)

[13] Following the *cooperation procedure*, European Parliament may give its opinion on a legislative proposal in the first reading, after which the Council forms a common position. In the second reading, the Parliament has the right of amending or rejecting this common position. Contrary to the *co-decision procedure*, the final decision right lies solely with the Council; however, unanimity within the Council is required if the Parliament has rejected the proposal in the second reading ("Cooperation procedure," n.d.). Today, the *ordinary legislative procedure*, through which the Parliament and Council have equal decision rights, is the most common one

[14] Qualified majority voting does not require a unanimous agreement within the Council, meaning that decisions could not be vetoed by one Member State. The exact counting of votes with the qualified majority voting procedure has changed over the years; through the SEA, 71% of the votes representing at least 8 out of the 12 Member States needed to be in favour of a proposal ("Treaties Establishing the European Communities - Treaties amending these Treaties - Single European Act," 1987, p. 48). Nowadays, under the ToL, at least 15 out of 28 Council Members, representing at least 55% of the votes and 65% of the EU population (van Ooik & Vandamme, 2010, pp. 10, 11, 112)

[15] Officially known as the Treaty on European Union ("Treaty on European Union, signed at Maastricht on 7 February 1992," 1992)

concretisation of the Economic and Monetary Union (EMU). It would take another ten years to finalise this Union. By January 2002, twelve Member States integrated the Euro as their new currency, acknowledging the European Central Bank as their responsible bank, and removing almost all possible transfer barriers ("Treaty on European Union, signed at Maastricht on 7 February 1992," 1992).

The Treaty furthermore added Art. 3b to the TEC, setting the principle of subsidiarity as a basic principle for all actions taken by all European institutions in the future. This means that the European institutions are only allowed to take action in areas where national action does not suffice, or if the action could contribute to achieving the Treaty objectives ("Treaty on European Union, signed at Maastricht on 7 February 1992," 1992, p. 6).

The Maastricht Treaty entered into force on 1 November 1993 ("Treaty of Maastricht on European Union," 2010).

2007: Treaty on the Functioning of the European Union

The Treaty on the Functioning of the European Union (TFEU), signed on 13 December 2007, is basically the newest version of the Treaty of Rome, replacing this 1957 Treaty whilst integrating all amendments made throughout the years by the means of the Single European Act (1987), the Treaty of Maastricht (1993), the Treaty of Amsterdam (1999), the Treaty of Nice (2003), and the Treaty of Lisbon (2009). This Treaty was ratified by the signing of the Treaty of Lisbon on 13 December 2007 and entered into force on 1 December 2009.

In the section above, the six main occasions regarding primary legislation that established the Single Market were outlined. A visualisation of these six occasions and their main impact on the Single Market can be found in Appendix II. In the following section, the four main legal acts, supporting the establishment of the ESM, are explained. These are, in chronological order:

(1) The Public Procurement policy (as of 1993);
(2) The Mutual Recognition policy (as of 1998);
(3) Single Market Act I (signed in 2011);
(4) Single Market Act II (signed in 2012).

2.1.3 Development through secondary legislation

The early 1990's marked the start of further concretisation of the internal market through secondary legislation. The four actions that were expected to have the greatest impact were:

(1) The initiation of a European public procurement policy, starting with the 1993 Directive coordinating procedures for the award of public supply contracts;
(2) The concretisation of a mutual recognition policy, starting with the 1998 Mutual Recognition Regulation;
(3) The simplification of cross-border trade through several measures suggested in Single Market Act I;

(4) The reduction of costs in trade with public governments and the improvement of product safety through several measures suggested in Single Market Act II.

These legal acts are outlined in sections 2.1.3.1 to 2.1.3.4.

2.1.3.1 1993: Public procurement policy

1993 was the initiation year of the public procurement[16] policy, starting with the *Council Directive 93/36/EEC of 14 June 1993 coordinating procedures for the award of public supply contracts*. According to the European Commission, the main aim was to encourage public authorities to choose, when purchasing products, quality over origin, and when choosing a supplier, aspects such as environmental friendliness and innovation ought to be prioritised over the country of origin ("Other aspects of procurement," 2015). Over the years, especially after 2004, many more specialised initiatives were signed to stimulate, for example, energy-efficiency, social consciousness, fair trade, and the contracting of SMEs ("Other aspects of procurement," 2015). One of these initiatives is the PROBIS project, which is designed "to promote bidding through innovative solutions aimed at increasing energy efficiency and sustainability of European public buildings ("Introducing PROBIS," n.d.) in four targeted cities, both for residential and non-residential buildings. Currently, one Hungarian city, two Italian cities and one Swedish city are involved ("Pilot Projects," 2014).

2.1.3.2 1998: Mutual recognition policy

The next step to further integration was the introduction of *Regulation 764/2008 on Mutual Recognition Regulation*. This Regulation defines that according to the principle of mutual recognition,

> *a Member State may not prohibit the sale on its territory of products which are lawfully marketed in another Member State, even where those products were manufactured in accordance with technical rules different from those to which domestic products are subject. The only exceptions to that principle are restrictions which are justified on the grounds set out in Art. 30 of the Treaty, or on the basis of other overriding reasons of public interest and which are proportionate to the aim pursued" (p. 21).*

The Regulation is a follow-up on a previous Directive (98/34/EC) from 1998, adding firstly the direct applicability, and secondly the specific focus on individual cases, obliging authorities to provide specific technical or scientific arguments to the Commission in case they would reject the marketing of a product already approved and marketed in other Member States ("Regulation 764/2008 on Mutual Recognition," 2008, p. 23. 24).

[16] Public procurement is defined by the EU institutions as "the purchase of goods, services and public works by governments and public utilities. It can cover a wide range of activities from the construction of new public buildings to the provision of business equipment and services" ("Internal Market: Awareness, Perceptions and Impacts," 2011)

2.1.3.3 2011: Single Market Act

Following the conclusions of two Single Market reports, published in 2010 by Mario Monti and the European Parliament respectively, the Commission concluded that the "single market has shortcomings" and has accordingly come up with an *Action Plan to relaunch growth and strengthen confidence* in the European Single Market, named the *Single Market Act* and published in April 2011. In this Action Plan, twelve measures were suggested to be implemented, of which two were directly aimed to stimulate the free movement of goods. The first one is the reduction of the administrative burden through simplification of the Accounting Directives. The second one is the creation of easier access to public procurement contracts through revision and modernisation of its legislative framework. These changes were ought to be achieved through new legislative measures, set by the European institutions (pp. 18–20).

2.1.3.4 2012: Single Market Act II

One year after the publication of the Single Market Act, it had appeared to be difficult for the European institutions to jointly agree on implementing measures following the Single Market Act. In order to stimulate rapid action, the Commission came up with *Single Market Act II* (2012), which announces a second set of actions, "designed to generate real effects on the ground and make citizens and businesses confident to use the Single Market to their advantage" (p.5). Again, twelve main focus areas were proposed, of which three were ought to stimulate the functioning of the Single Market for goods. Firstly, the Commission aimed to reduce the costs accompanying public procurement contracts through the creation of a public standard for electronic invoicing. Secondly, product safety ought to be improved through the revision of the General Product Safety Directive, and lastly, the control system on product safety and quality ought to be more structured through the creation of an *Action Plan on Market Surveillance* (pp. 14, 15, 21).

2.2 Extent of completion of the Single Market

Chapter 2.1.2 showed how rapidly the European Union has developed towards an economic union. The Single European Act established the implementation of the Single Market as of 1986; constructive preparations for the creation of the Economic Monetary Union have started with the signing of the Maastricht Treaty in 1992; the single currency was introduced in 2002; and since the SEA was signed, 18 European states have joined the EU. The question asked in this report is whether today, 30 years after the signing of the European Single Act, the European Single Market already functions properly according to the Single Market objectives of 1957 and 1986. This was tested in the sections below by looking at

(1) The level of intra-EU trade;
(2) Possible technical barriers;
(3) Possible administrative barriers;
(4) Possible tax barriers;
(5) The openness of governmental institutions in public procurement processes;

(6) The extent to which internal and external horizontal differentiation exist, and
(7) The European regulatory system.

2.2.1 Intra-EU trade

Firstly, development of trade between the Member States was assessed. Chen & Novey distinguish a positive correlation between a Member States' full integration into the Economic Union, meaning they joined the Eurozone and signed the Schengen Agreement, and trade integration; according to them, 58 % of the trade growth over the period 1999 to 2003 "can be accounted for by improvements in trade integration through a decrease in bilateral and multilateral trade barriers" (2009).

One can read from figure 1 below that the trade from one Member state to another (in 1000 million Euros) has known an overall increase in the period of 2002 to 2013, except for the export from the United Kingdom to other Member States.

Figure 1. Exports to other Member State, 2002 and 2013 (EUR 1 000 million)

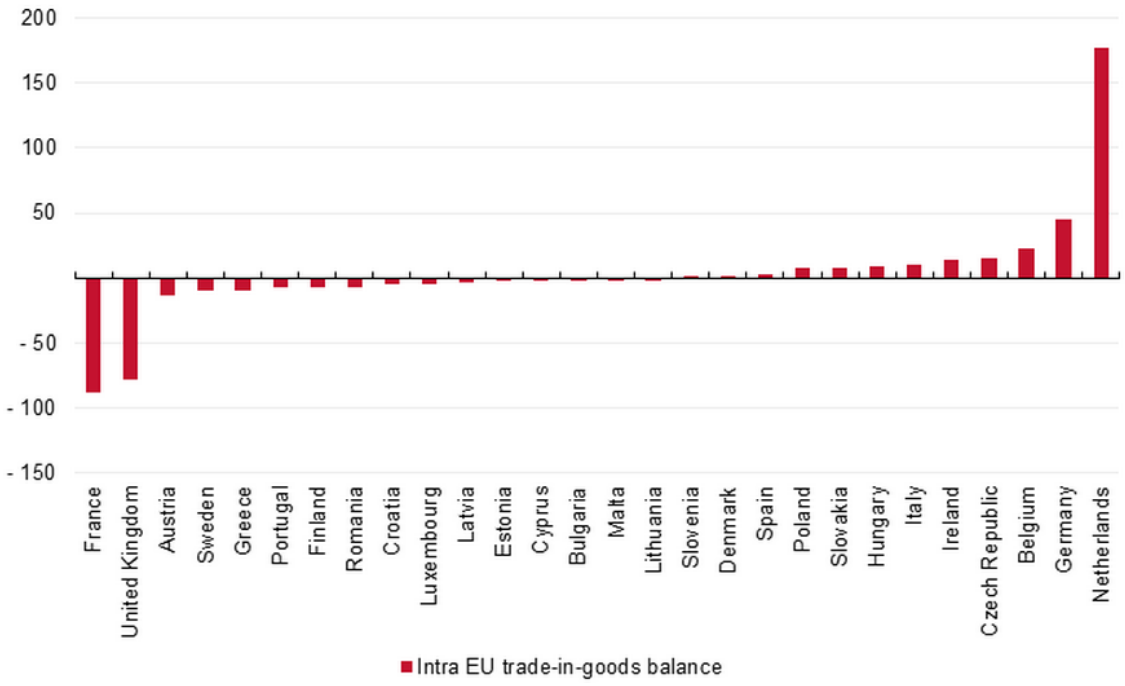
	Exports	
	2002	2013
Belgium	172.6	247.6
Bulgaria	3.8	13.4
Czech Republic	35.1	98.6
Denmark	42.5	52.6
Germany	414.5	623.4
Estonia	3.0	8.7
Ireland	61.6	48.9
Greece	6.7	12.8
Spain	99.5	150.0
France	228.8	258.8
Croatia	3.4	5.3
Italy	166.0	209.3
Cyprus	0.3	0.9
Latvia	1.9	7.2
Lithuania	3.8	14.1
Luxembourg	9.5	11.2
Hungary	31.2	63.4
Malta	1.0	1.1
Netherlands	207.8	382.8
Austria	63.3	92.0
Poland	35.4	113.8
Portugal	22.3	33.3
Romania	10.9	34.5
Slovenia	8.5	19.2
Slovakia	13.7	53.7
Finland	29.2	31.0
Sweden	50.5	72.9
United Kingdom	182.1	178.0

Source: Eurostat 2014

("Exports to other Member State, 2002 and 2013," 2014)

Furthermore, figure 2 outlines the balance of export and import from and to Member States over the year 2013. It is shown that the Netherlands have exported the most compared to their import, whilst France and the United Kingdom imported almost 100% more than they exported.

Figure 2. Intra-EU trade balance by Member State, 2013



Source: Eurostat

(“Intra-EU trade balance by Member State, 2013,” 2014)

The Commission’s *State of the Single Market Integration* report of 2012 shows that economic integration has not known the same pace throughout Europe. Whereas most Member States have known a positive evolution in the period of 1999 to 2011 (when looking at intra-EU imports and exports to GDP ratios), especially the youngest members who were in “the process of catching-up”, some countries experienced stagnation or even decline in economic integration; namely Finland, France, Greece, Ireland, Luxembourg, Spain, and the United Kingdom Generally, the integration report stresses that smaller countries had a more positive attitude towards economic integration than larger countries (2012, pp. 2, 3)..

Following this reflection on the EU trade balance, the question which trade barriers (public measures making domestically produced goods more competitive towards foreign goods) still exist, iss answered in sections 2.2.2, 2.2.3 and 2.2.4 below, looking at technical, administrative and tax barriers respectively.

2.2.2 Technical barriers

The Commission has acknowledged in 2013 that Member States should focus on the removal of trade barriers, especially in sectors that are strong in markets outside the EU but require further integration within the EU, as opportunities for the final removal of barriers are very high in these kinds of situations ("A Single Market for Growth and Jobs: an Analysis," 2013, p. 22).

In addition, Mr. Malcolm Harbour, the Chair of the European Parliament Internal Market and Consumer Protection Committee, stated in an interview in 2012 that in his past twelve years of experience, he had remarked that the European Single Market had been taken for granted, stating that the principle of mutual recognition has not yet sufficiently been applied by the Member States ("No more double standards on Europe's single market," 2012). This view is being underlined by the results of a study on 11 EU-countries[17] conducted over the period of 1999 to 2003 and interpreted by Chen & Novy, stating that one of the two main trade barriers experienced by exporters are Technical Barriers to Trade[18] (2009, p. 2).

2.2.2.1 Minimum harmonisation

Goyens outlines how the principle of *minimum harmonisation*, the setting of minimum standards by EU institutions and herewith the allowance of more stringent national standards, has caused a termination in further integration, as it creates a system where national standards can still highly vary and companies still have to comply to different rules and standards in different Member States when selling their products (Burghof, Goyens, Leibfried, & Pelkmans, 2011).

On the other hand, Jacques Pelkmans concluded in 2011 that the combination of minimum harmonisation and "regulatory mutual recognition", the so-called co-regulation, integrated in 1992, has proven to be a solid way of legislating, "far less costly and rigid" than regulating all products and their components from the European level (Burghof et al., 2011, pp. 64–68). The Commission underlines this view in a 2003 reflection report, arguing that "in most cases", the implemented principle of mutual recognition suffices for businesses to market their products abroad. The Commission furthermore thinks that European legislation integration has caused a reduction of national legislation to comply with ("The Internal Market - Ten Years without Frontiers," n.d., p. 3).

2.2.3 Administrative barriers

In the same reflection report, the European Commission states that the bureaucracy level has declined significantly – by 60 fewer documents to fill in per year – reducing delivery time and expenses for exporters ("The Internal Market - Ten Years without Frontiers," n.d., p. 3).

[17] Austria, Denmark, Finland, France, Germany, Italy, Ireland, the Netherlands, Spain, Portugal and the United Kingdom

[18] Defined by the Organisation for Economic Co-operation and Development (OECD) as "technical regulations, minimum standards and certification systems for health, safety and environmental protection and to enhance the availability of information about products" ("Technical barriers to trade," 2014), normally aimed at enhancing the competitive position of domestic producers

Contrary to these positive reflections, Correia de Brito & Pelkmans pointed out that a 2011 Commission survey amongst 359 business representatives from 26 different Member States shows that, out of all respondents,

> *(1) 29% of those doing cross-border intra-EU business are of the view that public authorities are not open to foreign business and are not responsive to their needs;*
>
> *(2) 38% believes public authorities are not accessible and information regarding cross-border business is not transparent;*
>
> *(3) 55% encounters a high level of administrative burdens; and*
>
> *(4) 39% think there is discrimination between national and foreign business" (2012, p. 3).*

In addition, the Commission itself argues in the *Annual Growth Survey 2013* that "simplifying the regulatory framework for businesses and reducing the administrative burden and red tape, particularly at national level" would contribute to growth (2012, p. 12).

2.2.4 Tax barriers

Import duties within the European Union do no longer exist, however, every Member State still works with its own tax system. The question whether these different systems might form burdens to foreign producers has arisen.

Even though not backed by sources, Goyens argues that the differences in VAT[19]-systems are considered the major obstacle when exporting to Member States, especially for SMEs. She even goes as far as saying that if the European institutions and national governments are not willing to further harmonize their legal VAT-systems, they "should then abstain from advertising the Single Market as being integrated and should not create false hopes of such a market delivering to its companies and its consumers" (Burghof et al., 2011, pp. 69–74). The European Commission shares this opinion in an *Impact assessment on the common system of value added tax as regards a standard VAT return* by stating that the complexity of the different tax procedures in different Member States create difficulties for exporters, causing them to face a lack of clear information and herewith additional burdens when marketing their products in other Member States (2013, p. 4).

Further integration of the tax systems is considered unlikely by the Commission, who has summed up three main reasons in its *EU Tax Policy Strategy*:

[19] VAT stands for Value-Added Tax and is "a type of consumption tax that is placed on a product whenever value is added at a stage of production and at final sale" ("Value-Added Tax - VAT," 2015)

(1) Unification of the tax system is not considered necessary for economic integration;
(2) The unanimity voting procedure required for all taxation decisions, maintained by the Member States, significantly slows down the decision-making process, which makes progress difficult;
(3) The principle of subsidiarity prevents the European institutions from taking further action in this policy area.

The Commission considers coordination more important than harmonisation. This coordination, according to the Commission, involves mainly the prevention of discriminating tax policies and fraud (2015).

2.2.5 Public procurement

As explained in section 2.1.3.1, public procurement concerns contracts between public institutions and private companies. The question has arisen whether these institutions prioritise price, quality or country of origin of the product in deciding on the company to contract. In this respect, Correi de Brito & Pelkmans argue that

> *Among all types of EU single market legislation, the problems with public procurement are undoubtedly the harder ones,*

and are convinced that more harmonisation, including review and infringement procedures, is needed in order to truly open up this market. If this harmonisation would be realised, they expect rapid economic growth (2012, p. iv).

2.2.6 Internal and external horizontal differentiation

Both Stephan Leibfried and Leuffen, Rittberger & Schimmelfennig argue that through internal and external horizontal differentiation, inconsistencies in the economic union have appeared, which have created inequality between states and herewith a lack of unity. Firstly, *internal horizontal differentiation*[20] between Member States has been created through unequal economic integration. An example of this is the fact that currently, only 19 out of 28 Member States have changed their currency to the Euro in participating in the EMU. Secondly, *external differentiation* appeared through the participation of non-Member States in the Economic Union. This can be detected in the fact that the area of free movement of goods, services and capital has expanded beyond the 28 Member States, namely to Iceland, Liechtenstein, Norway and Switzerland through the European Economic Area Agreement (EEAA) with the first three countries and an individual bilateral treaty with the latter. As these countries are not EU Member States, they barely have any influence in the market regulation and herewith are differentiated from EU Member States (Burghof et al., 2011, pp. 80, 81) (Leuffen, Rittberger, & Schimmelfennig, 2015, p. 4).

[20] Horizontal differentiation refers to the lack of integration of participants in one policy level, whereas vertical differentiation refers to the lack of integration between (participants in) different policy levels. See section 2.2.1.7 for further explanation

2.2.7 Regulatory system

Furthermore, Leibfried stresses the major difference between the pyramid hierarchy in a centralised nation state market, where responsibilities are divided amongst governments and administrative institutions (national – regional – municipal – semi-governmental institutions, red.), and the multi-level system of the EU market, where many different actors are involved (World Trade Organisation, different EU institutions, national decision-making institutions, independent agencies like the European Central Bank (ECB), and private organisations such as ISO, CEN[21] and CENELEC[22]). This major and unusual division of powers could create distortion of the regulatory system and delays in decision-making processes. In addition, a part of the decisions made by abovementioned institutions are not to be directly implemented – like national laws in a centralised nation state market – and require transposition (usually at the national level), which leaves room for vast differentiation (Burghof et al., 2011, pp. 80, 81).

2.3European residential ventilation legislation

The primary and secondary legislation on the European Single Market in general were outlined in section 2.1. In section 2.3.1 below, secondary legislation specifically applicable to the European residential ventilation industry are outlined, and in section 2.3.2, intergovernmental standardization bodies and their role in the legislative system are explained.

2.3.1 European legislation on residential ventilation

The author has detected four Directives as keystones for the European legislation on residential ventilation, namely:

(1) The *Ecodesign Directive 2009/125/EC*[23];
(2) The *Energy Labelling Directive 2010/30/EU*[24];
(3) The *Energy Performance of Buildings Directive 2010/31/EU* (EPBD);
(4) The *Energy Efficiency Directive 2012/127/EU*[25] (EED).

European as well as national legislation are based on these four directives. In sections 2.3.1.1 to 2.3.1.4, the main influence of the Ecodesign Directive, the Energy Labelling Directive, the EPBD and the EED respectively are outlined, after which more product-specific regulations and impact assessments are summarized in sections 2.3.1.5 to 2.3.1.10.

[21] European Committee for Standardisation (“Acronyms-C,” 2015)
[22] European Committee for Electro-technical Standardisation (“Acronyms-C,” 2015)
[23] The renewed version of Ecodesign Directive 2005/32/EC, adding the Amending Directive 2008/28/EC and further referred to as Ecodesign Directive
[24] Directive 2010/30/EU on the indication by labelling and standard product information of the consumption of energy and other resources by energy-related products further referred to as the Energy Labelling Directive
[25] Amending Directives 2009/125/EC and 2010/30/EU and repealing Directives 2004/8/EC and 2006/32/EC, further referred to as Energy Efficiency Directive

2.3.1.1 Ecodesign Directive

The first Directive detected by the author as a keystone for residential ventilation legislation is the Ecodesign Directive, which was created with two main aims. The first aim is to reduce the environmental impact of energy-related products[26] by encouraging the production and purchase of energy-efficient products. The second aim is to rule out unfair competition and barriers to trade caused by varying national standards and other measures, through the harmonisation of legislation ("Directive 2009/125/EC on ecodesign requirements for energy-related products," 2009, p. 13).

Shortly stated, the Ecodesign Directive imposes minimum requirements for bringing energy-related products on the EU market. A European Commission brochure outlining the main aims and action points of the Directive stresses the goal of an electricity consumption reduction of 12% by 2020, to be reached through the division and legislation of energy-related products per type, such as air conditioners and comfort fans ("Ecodesign your Future," 2012, pp. 4, 5). Furthermore, the Ecodesign Directive establishes minimum energy performance requirements and accompanying energy performance calculation methods for both newly-built and renovated buildings. The importance of the use of renewable energy sources in building has been stressed in this Directive as well.

As all directives, the Ecodesign Directive does not outline legislative measures to be directly implemented into national law; merely, it provides Member States with general goals and guidelines which they can interpret through national legislation. It should be noted that all requirements outlined in the Directive are minimum requirements, meaning that Member States are allowed to implement measures with higher energy-efficiency requirements than set in the Directive ("Directive 2009/125/EC on ecodesign requirements for energy-related products," 2009, pp. 17, 18).

As mentioned above, ErPs have been categorised into product groups (called *Lots*). For every Lot, the Commission planned a product study investigating the energy-efficiency opportunities, after which a specific regulation harmonising national legislation should be created ("The process of the Ecodesign ErP directive," n.d.). A detailed explanation on this process can be found in Appendix V.

The Lots applicable to the residential ventilation industry, the accompanying regulations, and the deadline for the regulations' implementation into national law are outlined in figure 3 on the next page.

[26] Energy-related products are defined by the Commission as all "energy-using products (EuPs, products which use, generate, transfer or measure energy)", and "other energy-related products (ErPs, products which do not necessarily use energy, but have an impact on energy consumption (direct or indirect) and can therefore contribute to saving energy)" ("Ecodesign your Future," 2012, p. 12)

Figure 3. Overview of Ecodesign Lots and applicable regulations

Lot nr	Product group	Applicable regulation	Implementation deadline
ENTR Lot 6[27]	Air-conditioning and ventilation systems	1253/2014	1 January 2016
Lot 10	Comfort fans	206/2012	1 January 2013
Lot 10	Residential ventilation	1253/2014	1 January 2016
Lot 11	Fans	327/2011	1 January 2013

Source: Eup-Netzwerk ("Overview Ecodesign," n.d.)

The Ecodesign Directive was signed on 21 October 2009, entered into force on 20 November 2009 and ought to be transposed into Member States' national law on 20 November 2010 ("About this document - Directive 2009/125/EC," n.d.).

2.3.1.2 Energy Labelling Directive

The Energy Labelling Directive was detected as the second keystone. This Directive amended and replaced *Directive 92/75/EEC on the indication by labelling and standard product information of the consumption of energy and other resources by household appliances*. In a similar manner as the Ecodesign Directive, it added ErPs to the labelling scope, whereas Directive 92/75/EEC only concerned household appliances ("Directive 2010/30/EU," 2010, p. 1). The idea behind this Directive is that through adding performance labels to products, end-consumers would be better informed on the product performance, and herewith be more likely to choose a product with a high energy-efficiency level. The Directive was signed on 19 May 2010 and ought to be transposed into national law on 20 June 2011 ("About this document - Directive 2010/30/EU," n.d.).

2.3.1.3 Energy Performance of Buildings Directive

As third keystone for European residential ventilation legislation, the Energy Performance of Buildings Directive 2010/31/EU was identified. This Directive was signed on 19 May 2010 and outlined the following five main goals:

(1) Create a control system for air-conditioning and heating systems;
(2) Set minimum requirements for the energy performance of both new and renovated buildings;
(3) Implement an energy performance certification system for all sale and rental advertisements of buildings;
(4) Integrate financial stimulation measures into national law in order to stimulate the improvement of energy efficiency of buildings (for example subsidies or tax reductions on the purchase of energy-efficient heating and cooling equipment, and higher taxes on old-fashioned, non-energy efficient equipment);

[27] The abbreviation *ENTR* represents the Directorate-General responsible for this Lot, in the case of Lot 6 DG-Enterprise.

(5) Ensure the building of only nearly Zero-Energy Buildings[28] by 31 December 3018 for public buildings and by 31 December 2020 for commercial buildings respectively ("Buildings," 2015).

The Energy Performance of Buildings Directive entered into force on 8 July 2010. The deadline for transposition into Member States' national law varied per article number from 9 July 2012 to 31 December 2015, depending on the implementation feasibility ("About this document - Directive 2010/31/EU," n.d.).

2.3.1.4 Energy Efficiency Directive

The fourth and last keystone is the Energy Efficiency Directive, designed with the main aim to stimulate the Member States in saving energy in (governmental) buildings. This resulted in the following three main targets:

(1) Saving energy consumption in existing governmental buildings through renovation;
(2) Only purchasing "highly energy efficient" governmental buildings, and
(3) The three-yearly creation of a long-term National Action Plan by all Member States on how to reduce energy consumption in both public and private buildings ("Buildings," 2015).

Complementing their National Action Plans, the Member States are obliged to hand in annual reports on their progress, and forecast to the Commission ("National Energy Efficiency Action Plans," 2015). Examples of measures introduced by the Member States are tax deduction on energy-saving renovations (Germany), taxes on air traffic (Germany) ("3rd National Energy Efficiency Action Plan (NEEAP) 2014 for the Federal Republic of Germany," 2014, p. 48), and a target for all new buildings, of which 10% should be nZEBs (Belgium) ("Third Flemish Energy Efficiency Action Plan," 2014, p. 6). The Energy Efficiency Directive was signed on 25 October 2012, entered into force on 4 December 2012 and ought to be transposed into Member States' national law on 5 June 2014 ("About this document - Directive 2012/27/EU," n.d.).

In the sections above, the four keystone directives for the legislation on residential ventilation systems have been outlined. In the following sections, the regulations specifically designed for residential ventilation systems are outlined. Firstly, figure 4 on the next page provides a chronological overview of all European legislation, impact assessments and studies currently applicable to residential ventilation systems, after which sections 2.3.1.5 to 2.3.1.10 outline the aims and effects of the most important documents mentioned in figure 4.

[28] Buildings that have "a very high energy performance (…). The nearly zero or very low amount of energy required should be covered to a very significant extent by energy from renewable sources, including energy from renewable sources produced on-site or nearby" ("Directive 2010/31/EU of the European Parliament and of the Council of 19 May 2010 on the energy performance of buildings (recast)," 2010, p. 18), also known as nZEB

Figure 4. Chronological overview of European legislation, assessments and studies on residential ventilation systems

Study on residential ventilation — Published in February 2009

- Preparatory study for the legislation on ventilation units; an outline of the definition, market situation, and legislative environment

ErP Directive 2010/30/EU — To be transposed partially on 19 June 2010 and 31 July 2011

- Basic framework for labelling and product information requirements for energy-related products

Regulation 327/2011 — To be implemented into national law by 26 April 2011

- Harmonisation of ecodesign requirements for fans driven by motors with an electric input power between 125 W and 500 kW
- Currently under revision
- Revised Regulation to be published by 1 January 2016

Regulation 206/2012 — To be implemented into national law by 1 January 2014

- Harmonization of requirements for (mainly residential) air-conditioners and comfort fans

Impact assessment Ventilation Units — Published on 7 July 2014

- Accompanying and laying down the framework for regulations 1253/2014 and 1254/2014

Regulation 1253/2014 — Harmonisation of (mainly energy consumption) ecodesign requirements for all types of ventilation units

- To be implemented into national law by 1 January 2016

Regulation 1254/2014 — To be implemented into national law by 1 January 2016

- Harmonisation of labelling requirements for residential ventilation units

Ventilation Units assistance study — From February 2015 to February 2016

- Provides support to the interpretation and implementation of Regulations 1253/2014 and 1254/2014

2.3.1.5 Regulation 327/2011 on ecodesign requirements for fans

The *Commission Regulation (EU) No 327/2011 of 30 March 2011 implementing Directive 2009/125/EC of the European Parliament and of the Council with regard to ecodesign requirements for fans driven by motors with an electric input power between 125 W and 500 kW* ("Commission Regulation 327/2011," 2011) was created to set product requirements for almost all types of fans, to be placed on the market both separately and integrated into all types of products (not only ventilation products). As the Regulation's definition of a fan might be applicable, however is highly extensive and outlines many exemptions, Artt. 1 & 2 on subject matter and scope and definitions respectively were integrated in Appendix VI.

The Regulation sets the performance requirements for fans (mainly on energy consumption and safety), the procedures for both conformity assessment and market surveillance, and benchmarks for the performance of fans concerning the "best available technology[29]" ("Commission Regulation 327/2011," 2011, pp. 11, 12).

The Regulation ought to be implemented into national law by 1 January 2013, with more stringent requirements to be implemented two years later ("Commission Regulation 327/2011," 2011). In the process of finalizing this study, the Regulation was under revision and in the Consultation phase; a new Draft Regulation had already been designed and many stakeholders were consulted. The revised regulation ought to be published by 1 January 2016 (Declercq, personal communication, May 7, 2015).

It could be noted that the issue of double regulation[30] has come up during the Consultation phase. This issue could be demonstrated through the example outlined hereafter. The Commission considered extension of the scope of the regulation to smaller fans; from fans with an electric input power between 155 watt and 500 kilowatt to fans with an electric input power between 125 watt and 500 kilowatt ("Draft Ecodesign Regulation - Review of Regulation 327/2011," 2015, p. 6). With this extension, some RVUs suddenly fall under the fan regulation, whilst simultaneously having to comply to requirements for RVUs in its entirety, for example as set out in Regulation 1254/2012 (see section 2.3.1.8). Consequently, if this extension of the scope would be approved, RVU manufacturers will suddenly need to comply with different requirements for both the ventilation unit in its entirety and its components. This was one of the main issues discussed by the industry and the Commission during the Consultation Forum of 14 April 2015 (Declercq, personal communication, May 7, 2015).

[29] Of all technologies that are currently on the market of a specific product type, the Best Available Technology (also known as BAT) is the one that is the most advanced when it comes to – in this case – energy-efficiency

[30] A situation where an end product in its entirety needs to comply with requirements set in a certain directive or regulation, whilst components of the product need to comply with separate requirements set in another directive or regulation

2.3.1.6 Regulation 206/2012 on air conditioners and comfort fans

Regulation 206/2012 implementing Directive 2009/125/EC of the European Parliament and of the Council with regard to ecodesign requirements for air conditioners[31] *and comfort fans*[32]*,* signed on 6 March 2012 and hereafter referred to as Regulation 206/2012 on air conditioners and comfort fans, outlines performance requirements for electric air-conditioning systems with a capacity of 12 kilowatt or more, and comfort fans with an electric input power of 125 watt or more (2012, p. 8).

The annexes set the requirements for minimum energy efficiency, maximum power consumption by the products in off-mode, standby mode and on maximum sound power, product information, guidelines for measuring and calculating compliance with the set requirements, a "verification procedure for market surveillance purposes", and benchmarks for the energy performance of air conditioners concerning the "best available technology"("Commission Regulation (EU) No 206/2012," 2012, pp. 15–27). These requirements would gradually become stricter; the first set of requirements applied as of 1 January 2013, and the second (more stringent) set of requirements applied as of 1 January 2014.

The regulation ought to be revised on 30 March 2017 at the latest.

2.3.1.7 Impact assessment on legislation regarding ventilation units

On 7 July 2014, the Commission published the impact assessment *Accompanying the document Commission Regulation (EU) No 1235/2014 of 7 July 2014 laying down ecodesign requirements for ventilation units* and *Commission delegated Regulation (EU) No 1254/2014 of 11 July 2014 supplementing Directive 2010/30/EU of the European Parliament and of the Council with regard to energy labelling of residential ventilation units*, investigating both the industry's and the European institutions' need for a specific legislative framework for ventilation units. In the Executive Summary of the assessment report, it was underlined that in order for the EU internal market to properly function, specific legislation on electrical and thermal efficacy of ventilation units is necessary, as national energy efficiency requirements are considered a potential endangerment of the free movement of goods ("Executive Summary Commission Impact Assessment on Ventilation Units," 2014, p. 2).

In the Impact Assessment, the Commission points out that the ventilation industry knows a lack of reliable information, stating that

[31] The regulation defines an air conditioner as "a device capable of cooling or heating, or both, indoor air, using a vapour compression cycle driven by an electric compressor, including air conditioners that provide additional functionalities such as dehumidification, air-purification, ventilation or supplemental air-heating by means of electric resistance heating, as well as appliances that may use water (either condensate water that is formed on the evaporator side or externally added water) for evaporation on the condenser, provided that the device is also able to function without the use of additional water, using air only" ("Commission Regulation (EU) No 206/2012," 2012, p. 10)

[32] The regulation defines a comfort fans as "an appliance primarily designed for creating air movement around or on part of a human body for personal cooling comfort, including comfort fans that can perform additional functionalities such as lighting" ("Commission Regulation (EU) No 206/2012," 2012, p. 10)

> *different from many other products subject to an impact assessment for ecodesign measures, ventilation units have not been subject to product-specific policy measures before. Furthermore, mechanical ventilation products, especially for residential applications, are a relative newcomer in the building installation market and the various 11 representative associations, nor any commercial research institute, have much experience in gathering market and energy data (2014, pp. 10, 11).*

The Summary further explains that after consultation of stakeholders and assessing the various impacts[33], it was decided to establish a combination of ecodesign requirements for all ventilation units and energy labelling requirements for residential ventilation units in particular[34]. The accompanying regulations established in accordance with this advice are *Commission Regulation 1253/2014 of 7 July 2014 implementing Directive 2009/125/EC of the European Parliament and of the Council with regard to ecodesign requirements for ventilation units*[35] and *Commission delegated regulation 1254/2014 of 11 July 2014 supplementing Directive 2010/30/EU of the European Parliament and of the Council with regard to energy labelling of residential ventilation units*[36] respectively, discussed in sections 2.3.1.8 and 2.3.1.9 respectively. The conclusions outlined in this impact assessment ought to be reviewed in 2020 ("Executive Summary Commission Impact Assessment on Ventilation Units," 2014, pp. 3–6).

2.3.1.8 Regulation 1253/2014 on ecodesign requirements for ventilation units

Signed on 7 July 2014, the *Regulation on ecodesign requirements for ventilation units* sets out energy product requirements for ventilation units in their entirety (so not for the performance of the separate products integrated into ventilation units).

The established requirements for this product range are outlined in the Regulation's annexes, making a distinction between RVUs and NRVUs, and would gradually become stricter; the first set of requirements will apply as of 1 January 2016, and the second (more stringent) set of requirements will apply as of 1 January 2018.

The Regulation established requirements for product information (also differentiating RVUs and NRVUs), a guide for the "verification procedure for market surveillance purposes" (no distinction made), and benchmarks for the energy performance of RVUs and NRVUs concerning the "best available technology" respectively ("Commission Regulation (EU) No 1253/2014," 2014).

The regulation entered into force on 15 December 2014, however, will only be applicable as of 1 January 2016. Review is ought to be finalised by 1 January 2020. Further information on this process can be found in 2.3.1.10.

[33] Impact on for example the costs, energy use, and CO2 pollutant emissions of ventilation systems
[34] For non-residential ventilation units, labelling was not required necessary, considering the fact that this industry does not deal with individual consumers who require additional information on the products they consider purchasing
[35] Further referred to as *Regulation on ecodesign requirements for ventilation units* or *VUs*
[36] Further referred to as *Regulation on energy labelling of residential ventilation units* or *RVUs*

2.3.1.9 Regulation 1254/2012 on energy labelling of residential ventilation units

The *Commission Regulation on the energy labelling of residential ventilation units*, signed on 11 July 2014, was created in accordance with *Directive 2010/30/EU of the European Parliament and of the Council with regard to energy labelling of residential ventilation units*, which requires the Commission to legislate "the labelling of energy-related products" if possibilities for energy consumption reduction have been detected and European mandatory requirements seem the most feasible and effective way of achieving the set objectives, compared to other EU legislation, national legislation, or self-regulation (by the industry, red.) (Regulation 1254/2014 with regard to energy labelling of residential ventilation units," 2014, p. 27). Responding to those conditions, the Commission refers in the regulation to the *Impact assessment on legislation regarding ventilation units* outlined in section 2.3.1.7, stating that so far, no legislation contributing to achieving the policy objectives had been established by European institutions, national governments and / or the industry, and therefore requirements needed to be set at a European level.

In the Regulation, the labelling responsibilities for suppliers[37] of residential ventilation units are outlined. The supplier's responsibility is the attachment of a label to the ventilation unit package, making a distinction between "unidirectional ventilation units (UVUs)[38]" and "bidirectional ventilation units (BVUs)[39]", providing information on, amongst others, the energy consumption, sound power level (in decibel (dB)), maximum flow rate, supplier's name or trademark and model identifier (the code distinguishing a supplier's RVU model from similar models coming from the same supplier). Templates of the required labels can be found in Appendix VII (2014, p. 29).

Furthermore, the Regulation outlines the responsibilities of the dealer[40], namely to:

(1) Ensure that the supplier's product contains the label as outlined above and is clearly visible to the buyer;
(2) Market the product with the product information visible in case the end user does not have direct access to the label, or provides the information on the concerning web page in case the product is being sold via the internet;
(3) Refer to the unit's energy consumption class in the advertisement; and

[37] The Commission has not defined the term *supplier* in this regulation. Generally, the supplier is the person or company supplying the products, being distinguished from a (sub)contractor by the fact that he does not add "specialized input" to the product ("supplier," n.d.)
[38] A UVU has been defined as "a ventilation unit producing an air flow in one direction only, either from indoors to outdoors (exhaust) or from outdoors to indoors (supply), where the mechanically produced air flow is balanced by natural air supply or exhaust" ("Regulation 1254/2014 with regard to energy labelling of residential ventilation units," 2014, p. 9)12
[39] A BVU has been defined as "a ventilation unit producing an air flow between indoors and outdoors and which is equipped with both exhaust and supply fans" ("Regulation 1254/2014 with regard to energy labelling of residential ventilation units," 2014, p. 9)
[40] The term *dealer* has not been defined by the Commission in this Regulation. Generally, the dealer is the person or company buying the products from a manufacturer or distributor with the purpose to resell it. Individual or firm that buys goods from a producer or distributor for wholesale and/or retail reselling, being distinguished by a distributor by the fact that it is a principle party and not an agent for another company ("dealer," n.d.)

(4) Include both the unit's energy consumption class and the user instructions to "any technical promotional material concerning a specific model which describes the technical parameters". The table for the calculation of the RVU's energy consumption class can be found in Appendix VIII (2014, p. 30).

The Commission underlines in this Regulation that an exemption is made for "small ventilation units with an electric power input of less than 30 W per air stream". However, in the planned review for 1 January 2020 at the latest, the Commission advises to assess in particular the possible inclusion of these small ventilation units (2014, p.30).

Lastly, the document outlines the procedure for market surveillance.

The regulation entered into force on 15 December 2014 and is ought to be implemented into national law by 1 January 2016. Until that time, Directive 30/2010 will remain the document of reference. Review is ought to be finalised by 1 January 2020 ("Regulation 1254/2014 with regard to energy labelling of residential ventilation units," 2014, p. 30). More information on the implementation process can be found in section 2.3.1.10 below.

2.3.1.10 Ventilation Units Regulations assistance study

In order for the implementation of both Regulation 1253/2014 and 1254/2014 to run smoothly, the Commission has appointed the Danish Technological Institute and Danish Standards to provide technical assistance over the period February 2015-2016 (Van Eyken, 2015). In addition, the Commission has launched the website www.ventilationunits.eu in April 2015, where process on the study, position papers and other relevant documents provided by stakeholders will be published ("Documents," n.d.). So far, only Eurovent has contributed with the publication of a position paper on the interpretation of Regulation 1253/2014 regarding bidirectional and unidirectional non-residential ventilations in general, and guidelines on the calculation of Specific Fan Power (SPF) in particular ("Documents," n.d.) ("Questions and answers concerning the Ventilation Units Regulation," 2015, p. 1). The first stakeholder meeting will take place in June 2015 (Van Eyken, 2015). The complete timeline of the study and accompanying project can be found in Appendix IX.

2.3.2 Intergovernmental and European standardisation

Product standards in European legislation are often based on CEN and CENELEC standards, jointly developed by European industry representatives in Technical Committees. The international counterpart of these organisations is ISO, whose standards are also used by manufacturers in European product performance rating. The three organisations are outlined below.

2.3.2.1 ISO

According to its official website, the International Organisation for Standardisation (ISO) was founded in 1947 and is based in Geneva, Switzerland. It operates as a worldwide, non-governmental and independent organisation, and works with 163 national standardisation bodies as its members ("About ISO," n.d.). The standards are developed in Technical Committees (TCs), divided per field of expertise. Members may decide to become Participating Member of these

Committees, meaning they are allowed and obliged to participate in the creation of and voting on new standards. Technical Committees, of which currently more than 250 are active, consist of experts in the field of the relevant Committee, coming from the "industry, NGOs, governments and other stakeholders, who are put forward by ISO's members" ("Who develops ISO standards?," n.d.). Examples of Technical Committees and their working field are ISO/IEC JTC 1 - Information technology, ISO/TC 59 - Building and civil engineering works, and ISO/TC 117 - Fans ("List of ISO technical committees," n.d.).

With regard to residential ventilation products, ISO has published many standards, of which 19 standards concern fans only. One example of a standard shown on the website is *ISO 12759:2010 Fans -- Efficiency classification for fans*, which was put into place with the main to ensure "that defined fan performance characteristics are common throughout the world" and that minimum efficiency standards are being recognised on a global level, for instance by the means of the introduction of an energy-efficiency classification system ("ISO 12759:2010(en)," n.d.).

It should be noted that ISO solely provides standards, and not any type of "certification or conformity assessment" accompanying these standards; certification and third-party assessment are being kept separately from the standard development ("ISO, the International Organisation for Standardisation," n.d.).

2.3.2.2 CEN, CENELEC & ETSI

As explained on the official CEN website, the European Union knows three official standardisation bodies, namely CEN, CENELEC and ETSI. All three are recognised by the EU and the EFTA[41].

Firstly, CEN[42] is the European Committee for Standardisation, bringing together the national standardisation bodies of 33 member countries (EFTA-countries plus the Former Yugoslav Republic of Macedonia and Turkey, one member per country) in developing voluntary standards and "other technical documents in relation to various kinds of products, materials, services and processes" ("Who we are," n.d.). CEN's standard drafts are developed by working groups, divided by work field and consisting of national representatives appointed by the CEN Members. These could be experts as well as industry representatives. The draft then is finalised and approved by the Technical Committees ("Technical Bodies," n.d.a).

Secondly, CENELEC[43] is the body specifically focussed on the standardisation of electro-technical products, working with the same member countries and a similar document development structure as CEN ("Technical Bodies," n.d.b).

Thirdly, ETSI is the European Telecommunications Standards Institute and not applicable to this research ("About ETSI," n.d.).

[41] European Free Trade Association, a free trade agreement signed by the EU-members plus Iceland, Liechtenstein, Norway, and Switzerland
[42] Originally called Comité Européen de Normalisation
[43] Originally called Comité Européen de Normalisation Electrotechnique ("CEN-CENELEC Règlement Intérieur," October, p. 4)

The literature review has established the basic legal framework for (1) the European Single Market in general, and (2) the application of the European Single Market objectives in the residential ventilation industry. It also provided an overview of how the Single Market's extent of completion is being regarded by different observers. According to the review outcomes, the methodology used to establish the case study on the residential ventilation industry and within this industry, the two specific countries Denmark and Spain, is developed. This methodology is outlined below, in Chapter 3.

3. Methodology

This research was carried out in order to answer the following question:

To what extent have the objectives of the European Single Market been met, taking the example of the European residential ventilation industry?

Herewith, the following three main aims were developed:

- To map the current status of completion of the European Single Market;
- To map the current European legislation on the European residential ventilation industry;
- To find out the view on and experience of the European Single Market of European residential ventilation manufacturers

This research could be identified as a two-tailed study. The two components *Literature Review* (chapter 2) and *Case studies* (Findings, chapter 4) reflect two different kinds of research and research approaches. The literature research was conducted in order to create a legal framework, outlining both the EU legislation on the Single Market in general and the EU legislation on the residential ventilation industry specifically (sections 2.1 and 2.3 respectively), and to create an overview of the views on the Single Market's success and extent of completion so far (section 2.2). Following the literature review, a case study research was conducted with the purpose of gaining insight in the application of the Single Market objectives in the residential ventilation industry; both on a European and a national policy level. These case studies were substantiated by four interviews, aiming to gain insight in how businesses in practice experience the current status of the internal market.

The two-tailed research approach is reflected in the Methodology section below, describing the research strategy, choice of cases, interview structure, research ethics and limitations.

3.1 Research strategy

The author has chosen to conduct a descriptive case study, a qualitative primary and secondary research, following inductive reasoning. This is explained in sections 3.1.1 to 3.1.3 below.

3.1.1 Descriptive case study

The author had decided to carry out a *descriptive case study*. The main aim was to *describe* the extent to which the European Single Market has been completed, taking the example of the European residential ventilation industry.

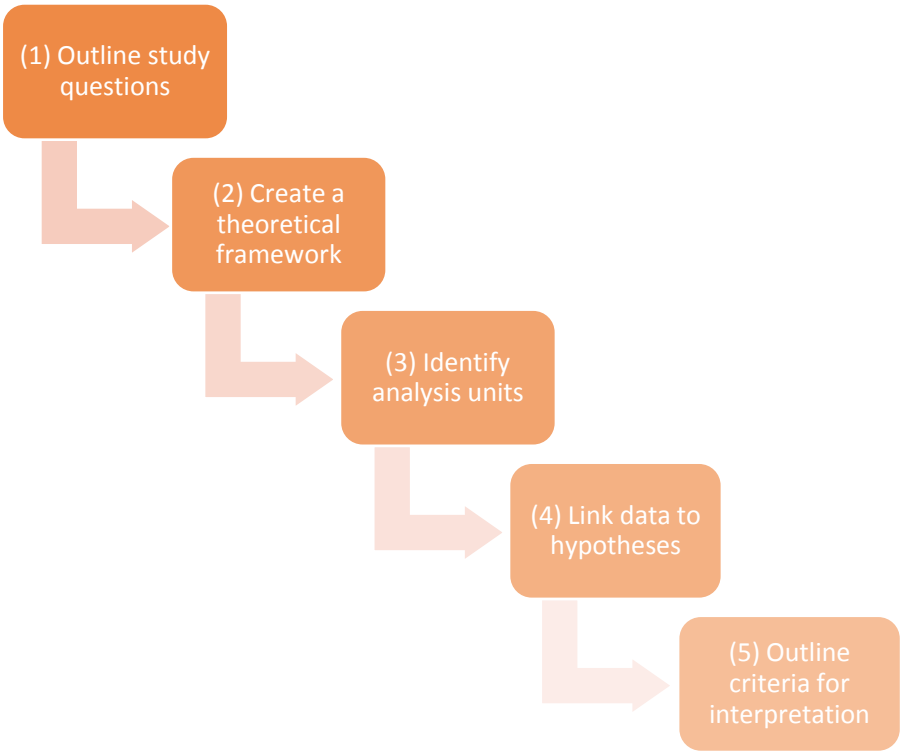
In accordance with Yin's approach of case studies (1991), a case study is considered an appropriate research method when the focus of the study is on contemporary events which have not yet been properly mapped, and where the studied situation cannot be manipulated by the author. Responding to the first criterion: in case of an already mapped situation, solely literature research would suffice to answer the research question. However, as the development of

European ventilation legislation is an ongoing process, and the transposition of legislation to the national level is an issue currently faced, this research requires a two-sided approach (both literature research and case study). In response to the second point, the studied situation cannot be manipulated through for example the conducting of experiments, as the research field concerns stakeholders from different levels – regional, national and European politicians and company representatives – a field in which the researcher lacks the capability of sampling and manipulating the situation (Yin, 1991, pp. 5–8).

In this respect, literature review was conducted to create a legal framework, which afterwards could be compared with the case study findings. Contrary to a historic literature study, this study requires both "direct observation of the events being studied and interviews of the persons involved in the events" (Yin, 1991, pp. 5–8). Through the author's professional involvement in the residential ventilation industry, direct observation and connecting with the persons involved were made possible.

The cases chosen are the countries Denmark and Spain. The author has, in accordance with Berg's and Yin's case study approach (Berg, 2001, p. 230), followed a five-element methodology approach, visualised in figure 5:

Figure 5. Five-step methodology approach in accordance with Yin and Berg (based on Berg, 2001, p. 230)



These five steps are further elaborated below.

3.1.1.1 Study questions and theoretical framework

The centrals study question is:

To what extent have the objectives of the European Single Market been met, taking the example of the European residential ventilation industry?

The author aimed to answer this question by the means of sub questions designed for the literature review and the case study respectively. The study questions answered in the literature were outlined in three sections, whereas section 2.1 answered the question:

Looking at primary legislation, how has the European Union Single Market developed between 1945 and 2015?

Section 2.2 answered the question:

Looking at scholars and impact assessments, to what extent is the Single market considered to be completed?

And section 2.3 answered the question:

Which European legislation currently applies to the European residential ventilation industry?

The responses to these questions formed the basis for the theoretical legal framework. The case study mainly answered two questions:

(1) *What is the national legislation in place applying to the residential ventilation market?*, and
(2) *How do the manufacturers' representatives experience the European Single Market?*

3.1.1.2 Analysis units

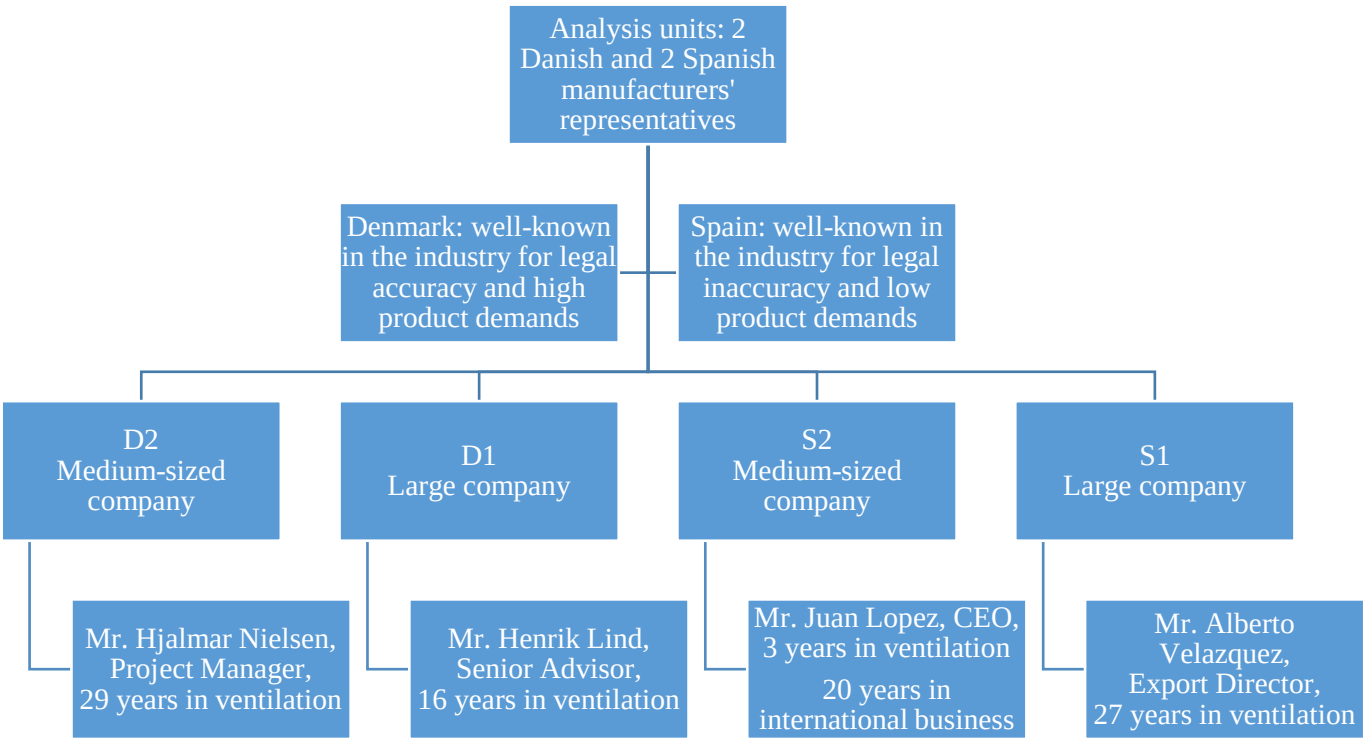
Specific analysis units for the case study were defined by the means of different factors, which may best be explained in figure 6, to be found on the next page.

The choice of these units are not necessarily based on the literature review, as well as on experience within the industry by the author. As shown in figure 6, Denmark and Sweden both have a certain reputation in the industry when it comes to legislation and the transposition of EU laws into national laws. The two countries were chosen as they are concerned highly different when it comes to climate, culture and interpretation of European legislation.

Furthermore, it was expected that national legislation would influence SMEs more than large companies, hence, from both countries, one medium-sized and one large manufacturing company have been chosen (see section 3.2.1 on the definition of company size).

Finally, the goal was to choose interviewees who (1) are dealing with EU export on a daily basis, and (2) have over ten years of experience in the European residential ventilation industry. Due to limitations in time and connections, the author has only partially achieved this goal.

Figure 6. Overview of analysis units



3.1.1.3 Linking data to hypotheses

The findings of the literature review were used as a basis for structuring the conducted interviews. Several hypotheses, derived from the literature review, have been tested during the interviews, being:

Different ways of transposition of EU directives into national law affect export from one Member State to another.

Varying administrative procedures, including varying tax systems, place administrative burdens on exporters.

Despite the establishment of public procurement directives, member states' governments still prefer contracts with domestic suppliers over contracts with non-domestic suppliers.

These hypotheses were integrated into guidelines for the interviews, to be found back in Appendix X.

3.1.1.4 Criteria for the interpretation of findings

Firstly, the interviews were transcribed (see appendices XI-XIV), after which the main findings were extracted and summarised following the structure of the interview themes in the *Findings* section (chapter 4). In the *Analysis* section (chapter 5), these findings are compared with findings from the literature review and, accordingly, conclusions on the level of completion of the internal market

were extracted and outlined in the *Conclusions* section (chapter 6). Lastly, two-tailed recommendations were made in chapter 7: recommendations for further action by the European institutions been made, after which recommendations for fields of further research were been outlined, acknowledging that further research is required in order for the establishment of more generalizing conclusions and exploration of related research areas.

3.1.2 Qualitative primary and secondary research

The author decided to establish the legal framework (chapter 2) by the means of *qualitative secondary research*. This means that the sources used to answer the questions are secondarily retrieved (existing) sources (Smith, Todd, & Waldman, 2009, p. 56). In accordance with Harvard's research guide, the conducted research can be regarded as qualitative (as opposed to quantitative) as it led to data in the form of words and inductive theories usable for generalizing conclusions, whereas quantitative research leads to more deductive theories and statistic and measurable results ("Research Methods: some notes to orient you," n.d., pp. 5, 6).

Furthermore, the case study could be categorised as *qualitative primary research*, as the four conducted interviews used in the case study are considered primarily retrieved sources.

3.1.3 Inductive reasoning

As said, the study has followed an inductive reasoning approach, in accordance with Buttolph Johnson, Mycoff & Reynolds' approach. This approach means that drawn conclusions will rely on supporting arguments and examples extracted from, in this case, reviews stated in documents and case study samples, rather than on formal proof leading to a formal one-way conclusion. In the case of this research, it is being acknowledged that different literature has sometimes shown opposing views, even so as different interviewees could provide opposing answers. In addition, the analysis unit is too small-scoped to contract deductive conclusions from. The case study on four companies may lend itself for generalisation of the situation in the European Union, covering all European manufacturers of residential ventilation products throughout the EU. In this respect, limitations should be taken into account, acknowledging that different interviewees, especially from other countries than the chosen two countries, might have contributed with different experiences and views. In other words, there is "some reason to believe" that the research outcomes have led to a certain generalizing conclusion, however, this could not be "proved deductively" (Buttolph Johnson, Mycoff, & Reynolds, 2008, pp. 42, 43).

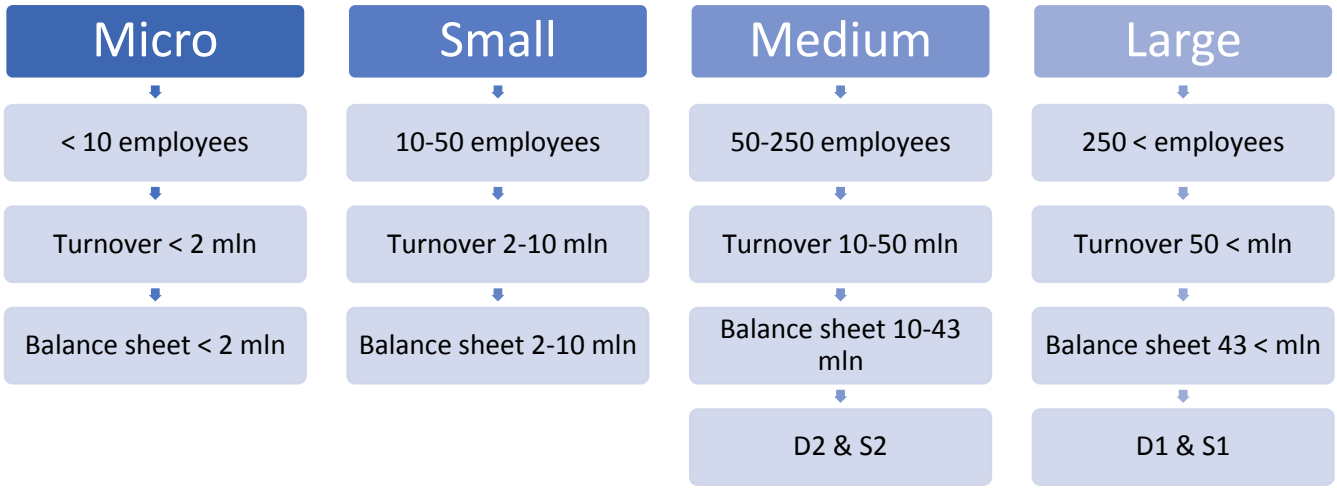
3.2 Choice of cases

Section 3.1.1.2 already shortly explained the choice of countries and company representatives for the case study. In the sections below, this choice is further justified.

3.2.1 SMEs vs. large enterprises

Small and medium-sized enterprises[44] are defined by the European Commission in EU Recommendation 2003/361 and explained in the *Guide to EU definition SME*. The EU makes a distinction between micro, small, medium and large companies based on two criteria: either the number of employees and the annual turnover, or the number of employees and the annual balance sheet[45]. The categorisation is visualised in figure 7, showing the categorisation of the companies chosen for the case studies at the bottom of the figure. It should be noted that the company names are coded, using D1 and D2 for the Danish manufacturers, and S1 and S2 for the Spanish ones. This is further explained in section 3.4.2.

Figure 7. Categorisation of companies by size (based on "What is an SME?," 2015)



NB: Turnover and balance sheet are annual numbers and mentioned in Euros

The firstly chosen Danish company, S1, with over 4,000 employees ("Annual Report 2013/2014," 2014) and an annual balance sheet of about 450 million euros[46] ("Financial data," 2015), is categorised as a large company. The secondly chosen Danish company, D2, with about 320 employees and an annual turnover of 65 million euros[47] (Nielsen, personal e-mail, May 19, 2015), is categorised as a medium-to-large company.

The firstly chosen Spanish company, S1, currently employs over 4,500 people and has an annual turnover over the year 2014 of 515 million euros (Velazquez, personal e-mail, May 11, 2015). It is herewith categorised as a large company. The lastly chosen company, S2, had about 240

[44] An *enterprise* has been defined in the *Guide to EU definition SME* as "any entity engaged in an economic activity, irrespective of its legal form" ("The new SME definition," 2005)
[45] Enterprises may choose themselves which one to take into account and may exceed the set limit of the other. *Annual turnover* is the enterprise's income received during one particular year, calculated "from its sales and services after any rebates have been paid out". This excludes "value added tax (VAT) or other indirect taxes". *Annual balance sheet total is* the enterprise's assets' total value at the end of one particular year ("The new SME definition," 2005)
[46] Calculating from SEK to EUR with the exchange rate of 16 May 2015
[47] Calculating from DDK to EUR with the exchange rate of 19 May 2015

employees and an annual turnover of 30 million euros over 2014 (Lopez, personal e-mail, May 18, 2015), and is consequently categorised as a medium-sized company.

3.2.2 Interviewees

The number of interviewees was decided mainly by the means of the feasibility level. Taking into account the time and resources available, it was considered the most feasible to focus on only two countries. In order to compare experiences by representatives from large enterprises on the one hand and SMEs on the other hand, one interviewee representing each group has chosen; one from a Spanish large enterprise, one from a Spanish medium-sized company, one from a Danish large enterprise, and one from a Danish medium-sized company. Then, the particular interviewees were chosen by the means of their experience with the export of ventilation systems to other EU-countries. The purpose was to find manufacturers' representatives with over ten years of experience within the cross-country residential ventilation industry, however, this has not been achieved. Mr. Lind and Mr. Velazquez both have over ten years of experience in the export of residential ventilation systems (16 and 27 years respectively), and Mr. Nielsen has been working in the industry for 29 years. Mr. Lopez only has three years of experience within the industry and his company S2 is mainly involved in industrial and tertiary air-conditioning. However, the Oxford Dictionary defines air-conditioning as "a system for controlling the humidity, ventilation, and temperature in a building or vehicle, typically to maintain a cool atmosphere in warm conditions" ("air conditioning," n.d.), which partially falls under the definition of ventilation as developed in the introduction. The slightly different sector could also offer indirectly unexpected results, especially since part of the legislation discussed in section 2.3 applies to both the air-conditioning and the ventilation industry.

3.3 Interview structure

The author has chosen to conduct semi-structured interviews through Skype, of which one has been conducted with video image and the other three, due to technical conditions, without video image. The choice for videoconferencing over face-to-face interviews has been made after consideration of the pros and cons of face-to-face interviews versus videoconferencing. Although face-to-face meetings provide the possibility of engaging deeply with the respondent, picking up subtle non-verbal communication, and the discussion of sensitive topics (Smith et al., 2009, p. 70), this was not considered the most feasible option due to the author's lack of time and resources to travel to both Denmark and Spain. Videoconferencing seemed the closest second option.

Furthermore, the choice for semi-structured interviews was made on the basis of the outcomes of the literature review. In the process of the literature review, many unforeseen factors appeared to be of significance to the research. Consequently, the author acknowledged the novelty of the research field and considered the possibility that interviewees would bring in even more new factors. In order to stimulate this wide range of discussion topics conducting interviews that were not completely outlined beforehand was considered applicable.

In accordance with Buttolph Johnson's *Political Science Research Methods*, the interview themes were purposely ordered, starting with simple, neutral questions on the interviewee's position and experience, then shifting to more in-depth questions on the interviewees' experiences, and lastly, discussing more specific and sensitive topics (2008, p. 328).

The interview outcomes are summarised in the *Findings* (Chapter 4). The structure used during the interview and afterwards to outline these findings is outlined in the *Interview guidelines*, to be found in Appendix X.

3.4 Research ethics

Throughout the research process, the author has taken research ethics into account. In the literature review, research ethics were considered important regarding the use of sources (outlined in section 3.4.1), and in the case study, research ethics were considered of high importance as this research involved interaction with human participants (see section 3.4.2).

3.4.1 Use of sources

In order to create an extensive and well-founded legal framework, the author made use of a combination of different types of sources, hereby always taking into account and testing the level of liability and objectivity of the sources. Most of the findings have been found in the following types of sources, ordered by level of validity:

(1) European Union legal documents, for example treaties or regulations, retrieved either hardcopy or digitally (extracted from EUR-lex, the official database of the European Union containing all legislative documents);
(2) Additional information on abovementioned legal documents, mainly retrieved from europa.eu and ec.europa.eu, the official websites of the European Union and the European Commission respectively;
(3) Academic reviews of the Single Market, retrieved digitally from peer-reviewed journals such as *L'Europe en formation*
(4) European Union reflection reports and impact assessments, all digital documents (mainly extracted from EUR-lex or received by e-mail through professional contacts of the author);
(5) Academic reviews of the Single Market, retrieved digitally from non-peer-reviewed journals such as *Intereconomics*
(6) Reviews of aspects of the Single Market, retrieved digitally from varying webpages

3.4.2 Citing of interviewees

In the interaction with participants, in this case four personal interviews were taken into account. Multiple sources confirm that the engagement of human participants in research should at all times be accompanied by the following of a set of basic ethic rules:

(1) Ensuring the participant is well aware of the purpose of both the research in general and the interview in particular;
(2) Ensuring that the participant is mentally capable of making its own decisions (or otherwise accompanied by someone who is empowered to);
(3) Preventing any type of unfair treatment or manipulation of the participant;
(4) Clarifying with the participant whether or not his or her identity may be revealed when referring to their statements in the research paper (Berg, 2001, pp. 56–59), ("ESRC Framework for research ethics," 2015, pp. 8–10), (Smith et al., 2009, pp. 84, 85).

In order to ensure the maintaining of research ethics during engagement with interviewees for this research, an informed consent form has been sent to and signed by all of them. This form contained information on the purpose of the research, and by signing, the confirmed to agree with recording of the interview. In addition, they were all asked whether their name and company name could be used when referring to their statements in the research paper, or they preferred to remain anonymous. Even though some of the interviewees gave permission for the use of their real names, the author in the end has decided not to mention any names or company names, due to the possibility of unforeseen conflicts with competition law.

Accordingly, in order to protect the interviewees' identities, their names and company names were not mentioned; neither when referring to their statements within this research paper, nor in the transcripts (appendices XI-XIV). First names and surnames were replaced by pseudonyms, and company names were coded. The companies, funds and cities they mentioned were coded as well.

Lastly, in section 2.3.1.5 was referred to information on the legislation process, digitally provided by a Belgian expert in the field of all HVAC&R legislation. He does not work for a ventilation manufacturer but as representative of the HVAC&R industry in general, and has been very actively involved in communication between the industry and governmental institutions, both on a national and European level, for over twenty years, and could herewith provide a reflection on the current political discussion mentioned in section 2.3.1.5.. His name and organisation names were replaced by a pseudonym as well to ensure the protection of his identity. Figure 8 provides an overview of all persons and organisations involved, in chronological order.

Figure 8. Overview of pseudonyms and codes used in transcribing and referring to interviews

Interviewee	Position	Referral type	Code
Mr. Henrik Lind	Senior Advisor	Large Danish manufacturer	D1
Mr. Henrik Lind	Vice-President	European association	E1
		Danish city	C1
Mr. Alberto Velazquez	Export Director	Large Spanish manufacturer	S1
		Spanish city	C2
		European association	E2
		Unidentified SME	SME1
		Unidentified SME	SME2
Mr. Juan Lopez	CEO	Medium-sized Spanish manufacturer	S2
		French company	F1
		Spanish city	C3
Mr. Hjalmar Nielsen	Project Manager Development of System Solutions	Medium-to-large-sized Danish manufacturer	D2
		Firstly mentioned fund	F1
		Secondly mentioned fund	F2
		Window manufacturer	W1
		Firstly mentioned Danish city	C4
		Norwegian city	C5
		Secondly mentioned Danish city	C6
Mr. Charles Declercq	Senior Expert Regulation & Normalisation	HVAC&R industry representation association	I1

Lastly, the lines of the transcripts were numbered in order to specify citations of an interviewee. If for example an idea of Mr. Henrik Lind, expressed in an interview on 7 May 2015 and to be found in lines 1 to 6 of the transcript, would be cited, it would look like the following:

(Henrik Lind, personal interview, May 7, 2015, 1-6)

3.5Limitations

Prior to and during the research process, several limitations were encountered. As the research ought to be finished within a time frame of 3.5 months, and the author had no financial resources available, not all limitations could be overcome. In addition, one should take into account that this research concerns a Bachelor's thesis, meaning that the length of the document and the academic knowledge and insight of the researcher are not comparable to the one of a Master's or PhD

researcher. The main limitations encountered are outlined below in sections 3.5.1 to 3.5.5, categorised by topic.

3.5.1 Tax systems, compliance policy, infringement procedures, single currency

It should be noted that not all topics mentioned in the literature review have received equal attention. The varying tax systems in different countries, European compliance policies and infringement procedures have not been discussed in detail. This results from a well-balanced decision made by the author. After weighing the different factors affecting the European Single Market, the abovementioned four factors were considered less influential than other factors such as product requirements and the European legislation applicable to residential ventilation systems.

Additionally, the European Monetary Union and single currency were not explored extensively. As only about half of the Member States participates in the single currency Union, it would be interesting to investigate to what extent this influences the Single Market, and answer the question whether a Single Market can be completed without all countries having a single currency. Answering this question would require an entire new research with a different research approach, and therefore did not fit within this research paper.

3.5.2 Certification

The issue of product certification has not come up during the literature review, whilst in communication prior to the interviews, it appeared to be of great importance. Accordingly, it was integrated in the interview guidelines and extensively discussed during the four interviews. A theoretical framework for the discussion of this topic as well as background information for the reader are missing.

3.5.3 Choice of cases

The choice of cases was made after consultation by the author of several stakeholders within the industry and based on experience during the work for Eurovent in general. Assumptions about the geographically linked differences on climate, culture and interpretation of European legislation were not tested beforehand by literature review or formal interviews; merely tested throughout the research. The same could be said about the choice of interviewees. They do not all have the same position within their companies (Senior Advisor, Project Manager Development of System Solutions, Export Director, and CEO). When purely reasoning with common sense, interviewing Export Directors or Public Affairs Managers and the like would seem the most logic decision. However, despite the wide Eurovent network, it proved difficult to find representatives from manufacturers of residential ventilation systems, as well as contacting participants and making an interview appointment with them on a rather short term (+/- one month). Consequently, the author had decided to merely review the participants' experiences and test their area of expertise in preliminary contact, and by the means of these methods decided whether or not they could support in answering the research questions outlined in section 3.1.1.1.

Mr. Juan Lopez is representative of a manufacturer of air-conditioning systems for industrial and tertiary use, which was slightly outside the original set scope. In addition, he has been working in the industry for only three years. It has been acknowledged that this might decrease the validity level of the research results, however, as explained in section 3.2.2, air-conditioning could be seen in the same category as ventilation; a part of the residential ventilation legislation discussed also applies to industrial and tertiary air-conditioning systems (for instance because it concerns general building requirements); and as a CEO, one may expect that the interviewee has been involved in the industry and export quite intensely for the past three years.

Mr. Hjalmar Nielsen represents a company (D2) that falls slightly above the categorisation of a medium-sized company, even though he was supposed to represent the SME's view. As he stated himself, nowadays almost all ventilation manufacturers are multinationals, (Nielsen, personal interview, May 19, 2015, 117-128), and it proved difficult to find a Danish ventilation manufacturer with a lower turnover and/or number of employees than Mr. Nielsen's. As Mr. Nielsen's company only just exceed the limits of the criteria for a medium-sized company, it was categorised within this study as a 'medium-to-large-sized company'.

3.5.4 Number of cases

It has been acknowledged that only two countries and four interviewees for the case study might detract from the validity of the research results. This limited scope, however, could not be extended, due to a limited amount of time and resources, and because the literature review was considered as high priority as well. Consequently, the latter consumed about half to three-quarters of the research time and documentation.

In addition, one should take into account that the four interviewees were chosen according to their diversity and herewith represent a wide part of the European manufacturers. Nevertheless, it is also acknowledged that only one representative per participant category might not be enough to draw generalized conclusions from, as subjectivity from both the interviewer and the interviewee cannot always be prevented.

3.5.5 Subjectivity of sources

The author has experienced a certain level of subjectivity when reviewing sources. This mainly counted for assessment and impact documents published by the European Commission. A predominant optimistic view on the functioning and impact of the internal market was detected when reviewing most of the above-mentioned documents. The author has aimed to balance this out with the use of sources published by non-politically involved authors.

3.5.6 Subjectivity in interviews

Prior to conducting the interviews, the author had already gained a substantial amount of knowledge and insight on the discussed topics, derived from both the literature review and conversations with industry representatives beforehand through the work at Eurovent. In addition, the further in the interview process, the more knowledge had been gained from conducting the

previous interviews. Consequently, it seemed almost inevitable for the interviewer to become slightly biased on the topic and possibly unconsciously adjusting the questions accordingly. One should take here into account the fact that the interviewer did not have profound experience with the conduct of interviews when initiating this research. Lastly, one should note that it could prove difficult to measure the interviewee's level of neutrality, whereas personal feelings regarding a certain topic may always influence one's professional view on the very same issue.

4. Findings

Following the methodology described in Chapter 3, the author has conducted four interviews for the case study. These interviews were transcribed (see Appendices XIII-XVI), after which the main findings were extracted and outlined in the sections below, categorised by country of origin. In order to protect the interviewees' identities, their real names have been replaced by pseudonyms and the companies and organisations mentioned by them are coded. The used coding system is explained in section 3.4.2. The findings of the interviews are ordered in accordance with the *Interview guidelines*, being:

(1) Competition;
(2) Legislative balance of national legislation;
(3) Legislative balance of European legislation;
(4) Administrative, tax and language barriers;
(5) Protectionism;
(6) Certification;
(7) Public procurement;
(8) Attitude towards EU integration.

If one of these themes has not been discussed in-depth, the heading is still mentioned, followed by the statement that the interviewee did not elaborate on the topic. The *Interview guidelines* can be found in Appendix X.

4.1 Denmark

Sections 4.1.1 and 4.1.2 below show the views of two manufacturer representatives from Denmark. The first interviewee represents a large company, and the second represents a medium-to-large-sized company.

4.1.1 Mr. Henrik Lind's view on the Single Market

Mr. Henrik Lind is Senior Advisor for a multinational in ventilation products (further referred to as D1) with over 4,000 employees working in 56 operating companies and 19 factories, spread over 45 countries ("Annual Report 2013/2014," 2014). The products sold in and especially targeted to the residential market are for example cooker hoods, counter-flow units, filters and grilles ("Product categories," 2012). Before Mr. Lind became Senior Advisor for the entire company, he has been working for the Danish department for 15 years. In this role, his main function was to stimulate the product sale both within Denmark and throughout the rest of geographical Europe.

4.1.1.1 Competition

Mr. Lind has not elaborated on competition coming from different countries.

4.1.1.2 Legislative balance of national legislation

Lind states that national legislation on residential ventilation systems differs per country (Lind, personal interview, May 7, 2015, 26-28), making a link between differences in climate and in priorities. In Scandinavia for example, manufacturers take energy consumption and recovery very seriously, and for example 20 percent of the Danish energy consumption comes from windmills, whilst in other EU-countries, they do not consider these factors at all (Lind, personal interview, May 7, 2015, 32-43). More precisely, he opposes the Scandinavian policy versus the Southern-European policy. In Scandinavia, heating and herewith heat recovery are well-developed, whilst the focus in Southern Europe lies on cooling and cooling recovery (Lind, personal interview, May 7, 2015, 74-83).

Taking Europe in its entirety into consideration, Lind draws a geographical line at the middle of Germany, where above this line the "Scandinavian philosophy" is dominant, whilst beneath this line the "more Mediterranean philosophy" is dominant, partially due to the climate and cultural differences (Lind, personal interview, May 7, 2015, 89-95). He extends this distinction to the speed level of transposition of directives into national law, stating that Northern European countries are very obedient and fast in transposition compared to a more laid-back attitude of the Southern European countries (Lind, personal interview, May 7, 2015, 120-124).

Lind expressed the difficulties faced when exporting to countries like France, Germany and the United Kingdom, elaborating on the German system. As the German government has integrated a separate internal certification system, Eurovent Certification[48] is not very well-known within this country and all manufacturers (both from within and outside Germany) need to obtain German certificates. However, as these rules apply to both domestic and foreign sellers, Lind does not consider it a trade barrier (Lind, personal interview, May 7, 2015, 148-156). He states that in Denmark, on the contrary, energy-efficiency demands are being reflected in a certain requirement of energy-efficiency level shown on a Eurovent certificate, meaning manufacturers do not need to obtain a special Danish certificate, only need to be able to show a certain energy-efficiency level of their product through the Eurovent label (Lind, personal interview, May 7, 2015, 168-171).

4.1.1.3 Legislative balance of European legislation

Lind has so far not experienced any clear gaps in product legislation. However, he does see how double regulation[49] could become a serious issue in the near future, for example in Denmark where the recovery need is high. He explains,

> *"the higher you make your recovery rate of the recovering heating, the bigger pressure rush you get in a unit, and with the pressure in the unit, then you have*

[48] Eurovent Certification is one of the European certification systems, used to mark product performance in accordance with European legislation and provided by Eurovent Certita Certification, an independent certification body operating from Paris, France.

[49] A situation where an end product in its entirety needs to comply with requirements set in a certain directive or regulation, whilst components of the product need to comply with separate requirements set in another directive or regulation. See section 2.3.1.5 for an example of double regulation

> *the fans running faster to produce enough air. And that goes against a lower energy consumption. So, yes, you have this situation that, if you want to optimize one area, then another area is suffering under it" (Lind, personal interview, May 7, 2015, 364-387)*

When asked whether it would be better to regulate end products or components of products, Lind stated that it would depend on the situation, and that it is important for the European institutions to "use common sense" (Lind, personal interview, May 7, 2015, 398-402).

Lastly, Lind explained that the issue of double regulation is also being addressed by interest representatives towards the European institutions, trying to raise awareness of the problems faced by the industry due to double regulation (Lind, personal interview, May 7, 2015, 393-397).

4.1.1.4 Administrative, tax and language barriers

He herewith added that, especially for small manufactures, it is time-consuming and costly to translate all documentation in foreign languages. Generally, 10% of the manuals are destined to 'non-skilled' workers and need to be translated in the local language, whilst the other 90% can be provided in English. In addition, he stressed the difficulties in European bureaucracy in general, stating that these barriers prevent many SMEs from starting to export to other Member States (Lind, personal interview, May 7, 2015, 209-234, 347-354).

4.1.1.5 Protectionism

When asked if interest representation plays a part in defining national legislation, Lind answered that through Danish Ventilation[50], the association, the industry tries "to tell the government what to do from our point of view". He added that the same happens in Sweden, where they really try to steer the government into a 'green direction'. When asked if the Danish manufacturers try to influence Southern-European governments as well, he confirmed that this happens, "by putting focus on what we are good at" and hoping that herewith, similar regulation will be adapted in these countries (Lind, personal interview, May 7, 2015, 60, 61, 65-67, 86-88).

Lind also noted that it will always remain hard to start marketing products in a new country, as people generally are more willing to buy products they are familiar with than products that they have not yet heard of (Lind, personal interview, May 7, 2015, 272-280).

4.1.1.6 Certification

Lind noted that for Eastern European manufacturers, it is hard to catch up with the Western European manufacturers, as the acquiring of certificates costs tens of thousands of euros per product, and all their product documents need to be translated into at least the English language (Lind, personal interview, May 7, 2015, 324-345). One solution might be to lower the barrier by making Eurovent Certificates less costly (Lind, personal interview, May 7, 2015, 355-358).

He hereby added that a more stringent control and infringement system would contribute to the general compliance and transposition speed (Lind, personal interview, May 7, 2015, 120-124),

[50] National association representing Danish manufacturers of ventilation equipment

stressing that energy-efficiency claims of manufacturers do not always match the reality as a solid control system is not in place (Lind, personal interview, May 7, 2015, 133-136). Lind hereby stressed the value of Eurovent Certification, which only provides certificates after independent product testing (Lind, personal interview, May 7, 2015, 136-139).

4.1.1.7 Public procurement

When asked about the basis on which governmental institutions choose their contractors in public procurement, Mr. Lind responded that he thinks these choices are mainly based on the quality or image of the products, more than the origin of the products (Lind, personal interview, May 7, 2015, 284-296).

4.1.1.8 Attitude towards EU integration

Lind stated that the European Single Market does already exist, however it is not yet perfect and it requires to “get rid of the last trade barriers”. He expressed the belief that further European is the way forward, and the “hope that somehow there will be a more common European attitude to how ventilation should work” (Lind, personal interview, May 7, 2015, 105, 106, 240-247, 407-409).

He hereby stressed the fact that, despite the initiation of directives like the ErP Directive, the current European legal system leaves a lot of room for differentiation in local legislation, and a more harmonized European system would be more convenient for the industry (Lind, personal interview, May 7, 2015, 158-164).

4.1.2 Mr. Hjalmar Nielsen’s view on the Single Market

Mr. Hjalmar Nielsen is Project Manager Development of System Solutions at a Danish medium-to-large manufacturer of both residential and non-residential ventilation products, further referred to as D2. The company currently employs 320 people (Nielsen, personal e-mail, May 19, 2015) and its main export area is in Northern and Western European countries. In his function, Mr. Nielsen has for almost 30 years been responsible for the development of ventilation systems specifically designed for certain markets or purposes.

4.1.2.1 Competition

Nielsen appointed German manufacturers and three to four Swedish manufacturers a main competition in the European market, stressing the fact that Swedish manufacturers have had a leading position in ventilations systems development for many years (Nielsen, personal interview, May 19, 2015, 117-128). He furthermore noted that in ventilation, nowadays almost all manufacturers are multinationals.

In addition, he stated that specific nation-bound building habits are of influence on the market. Comparing Denmark to Germany, he explained that in Denmark, (new) flat dwellings are normally being rented including a kitchen. The cooker hood in the kitchen is then integrated in the centralised ventilation system of the dwelling. On the contrary, in Germany, (new) flat dwellings are usually being rented out without a kitchen. Consequently, tenants install their kitchens and

herewith the cooker hoods individually, and these are not integrated in the centralised ventilation system (Nielsen, personal interview, May 19, 2015, 133-145).

4.1.2.2 Legislative balance of national legislation

According to Nielsen, additional certification and standardisation requirements are not established by the government, but by the end consumer. Taking the example of Germany, he explained that often, additional national certificates are required, such as the RLT Raumlufttechnische Geräte certificate or testing visits from the TÜV institute.

In addition, tests on hygienic performance are often required. These tests are being promoted and carried out by the *Institut für Lufthygiene* (ILH) in Berlin. Nielsen explained that the German consumer has been convinced by both abovementioned institutions and manufacturers that a ventilation system is only good when it has been certified by these institutions. Consequently, Nielsen's company has acquired these certificates in order to penetrate the German market, whereas in other countries, their Eurovent Certificate suffices. When asked about the Passive House certificate, Nielsen mentioned that this certificate is only required for small ventilation systems destined for one-family houses (Nielsen, personal interview, May 19, 2015, 145-165, 176-195, 199-212).

He further mentioned fire safety requirements as another difficulty faced in many European countries. These requirements are often defined on a local level by local fire inspectors, and not well documented. Consequently, one discovers these requirements only whilst already having started marketing the products, and maybe having to adjust them again (Nielsen, personal interview, May 19, 2015, 306-319).

Lastly, he added that within the Scandinavian countries, policy unification comparable to a single market has already existed for over twenty years, as these countries' governments have been meeting for that long in the *Nordic Committee* to exchange views on building regulation. Consequently, the national legislation is up to 70% similar (Nielsen, personal interview, May 19, 2015, 268-277).

4.1.2.3 Legislative balance of European legislation

Nielsen did not see any gaps in product legislation. He added that standards on for instance large air handling units have been jointly developed on a European level by the manufacturers, naming *EN 1886:2007 Ventilation for buildings - Air handling units - Mechanical performance* and *EN 13053:2006+A1:2011 Ventilation for buildings - Air handling units - Rating and performance for units, components and sections* as examples (Nielsen, personal interview, May 19, 2015, 235-239). These are standards developed through the European Committee for Standardisation (red., "Search Standards," 2015). He did, on the other hand, state the difficulties faced in the process of this joint development, as views on 'good' product performance are highly varied, comparing Scandinavian countries with Germany (Nielsen, personal interview, May 19, 2015, 240-245).

4.1.2.4 Administrative, tax and language barriers

When asked whether he has encountered any administrative, tax or language barriers, Nielsen responded that in general, it is not a problem. The only exception known by him is the sometimes very specific product labels by Swedish authorities, on for example the level of recyclability and the amount of environmentally harming materials used in the product (Nielsen, personal interview, May 19, 2015, 345-348).

4.1.2.5 Protectionism

When asked who he thinks is of influence on the progressive and green-focussed legislation in Denmark, Nielsen answered that one the one hand, the government itself has quite a 'green view' and wants to reduce the use of fossil fuels, and on the other hand, manufacturers and the manufacturers' national associations are often being consulted in the process of drafting new legislative proposals (Nielsen, personal interview, May 19, 2015, 366-380).

4.1.2.6 Certification

Nielsen did not elaborate on European certification.

4.1.2.7 Public procurement

Nielsen has not experienced any favouring countries of origin in national governments' decisions for public procurement contracts, with France as an exception; he did, however, point out that their choice too often is based on the product price instead of the product life-cycle cost (short-term financial savings over long-term quality) (Nielsen, personal interview, May 19, 2015, 387-406, 423-425).

4.1.2.8 Attitude towards EU integration

When talking about European integration in general, Nielsen expressed his vision that further unification of standards "is absolutely the only way to make a common market" (Nielsen, personal interview, May 19, 2015, 436-440).

4.2 Spain

Sections 4.2.1 and 4.2.2 below show the views of two manufacturer representatives from Denmark. The first interviewee represents a large company, and the second represents a medium-to-large-sized company.

4.2.1 Mr. Alberto Velazquez's view on the Single Market

Mr. Alberto Velazquez is Export Director at S1, a multinational in ventilation products with 4700 employees active in more than 100 countries (Velazquez, personal e-mail, May 11, 2015). The company has a wide product range, varying from systems for residential, commercial, public and industrial use. For 17 years, Mr. Velazquez has been active in the international export of the company's products.

4.2.1.1 Competition

Velazquez explained that within Europe, the domestic manufacturers are always the strongest ones in their home countries. A manufacturer from another Member State might “be strong in one or two, and marginal in the others”. He hereby stressed firstly that the Germans are mainly ruling the German market and the French the French market, and, secondly, that it is almost impossible for SMEs to expand to other markets (Velazquez, personal interview, May 11, 2015, 133-139).

4.2.1.2 Legislative balance of national legislation

Velazquez stated that “it is remarkably difficult to sell in different countries in Europe, because of the many different national regulations that apply to residential ventilation”, costing manufacturers a lot of time and money to comply to (Velazquez, personal interview, May 11, 2015, 38-43). Velazquez stressed that especially the French, German, and UK markets prove difficult to enter, as they all have their own product requirements and rating system, with in Germany the Passive-House Certification programme, focussing on the energy performance of entire buildings, plus different product requirements per federal state; in France NF-requirements, demanding a third-party performance rate of ventilation systems; and in the United Kingdom SAQ-listing, a system according to which products are tested in a UK laboratory and rated on their energy-efficiency level, after which they are listed on a public list, where the lower the product is on the list, the less attractive it is to end consumers. In general, Velazquez stressed that a product approved in one country will not necessarily be approved in another country, even though it meets the European requirements, going “against the horizontal transparency and the free movement of products” (Velazquez, personal interview, May 11, 2015, 46-58, 70-77, 107-115).

Furthermore, Velazquez shortly explained the current legal situation in Spain, where since about five years ago, mandatory requirements for mechanical ventilation are in place regarding the construction of residential buildings (Velazquez, personal interview, May 11, 2015, 210-213).

When asked whether he had detected a difference in stringiness of regulation when comparing the Northern with the Southern European countries, Velazquez explained that he does not necessarily experience a difference in stringiness of legislation. Moreover, he notices a different level of development; as the need for ventilation is higher in Northern than Southern European countries, the focus of development of this product range is also higher in the Northern than the Southern European countries (Velazquez, personal interview, May 11, 2015, 197-207).

To the question whether product requirements are going as far that products need to be adapted to be able to be sold in different countries, Velazquez answered that his company produces specific products for the French market, which cannot be sold elsewhere. Besides this specified market, “with small changes”, the same products “can be sold for instance in England, Holland and Spain.” In general, for every market, the products require “different software, different capacities (…) and different software” (Velazquez, personal interview, May 11, 2015, 239-247).

4.2.1.3 Legislative balance of European legislation

Velazquez explained that ventilation is one of the most important electricity consumers in buildings. Consequently, he considers it logical the EU institutions are currently developing a high amount of new regulations and directives for products within this range. He hereby noted that the speed and quantity of new legislation contributes to the complexity of the legal situation faced by manufacturers (Velazquez, personal interview, May 11, 2015, 188-194).

4.2.1.4 Administrative, tax and language barriers

Velazquez has not experienced any administrative barriers within his company. This is mainly due to the fact that the company has subsidiaries in every export country, which are based in and familiar with that particular country and its administrative system (Velazquez, personal interview, May 11, 2015, 287-293).

4.2.1.5 Protectionism

When asked who he thinks has the most influence on national legislation, Velazquez answered that he considers the laboratories testing the product on their performance as the driving factor behind differentiated legislation. This, because they are the ones profiting from the differentiated product requirements and herewith required testing procedures. He further explained that joint attempts by European manufacturers, united in European associations, to stimulate the test laboratory's recognition of each other's testing results so far have not made much difference (Velazquez, personal interview, May 11, 2015, 172-187).

4.2.1.6 Certification

Velazquez argued that, however third-party approval now often is regulated on a national level or is not being regulated at all, the principle of third-party approval is a positive concept. He hereby named the example of ecodesign labelling, which companies currently can perform themselves; consequently, any product can carry any label and the label loses its value. In addition, the current costs for different energy-efficiency audits in different countries, as well as electrics-safety third-party approval, have become a significant burden for manufacturers. Velazquez suggested the introduction of a European system including an annual audit, carried out by an officialised European body (Velazquez, personal interview, May 11, 2015, 222-238). When asked about Eurovent Certification, Velazquez noted that, according to him, Eurovent Certita Certification currently does not focus yet on residential ventilation products; consequently, S1 does not have any residential ventilation products Eurovent certified (Velazquez, personal interview, May 11, 2015, 248-251).

He furthermore noted that the obtainment of one certificate for one product in for example France or one particular German federal state may cost about 30,000 Euros, and in France much effort needs to be put in technical support as well. These factors create burdens for importers, especially SMEs, as they might not have the resources to (1) spend such amounts on certifying their products, and (2) set up a special department taking care of all technical and administrative issues (Velazquez, personal interview, May 11, 2015, 118-135).

4.2.1.7 Public procurement

When asked whether public procurement is already as open to domestic as to non-domestic manufacturers, Velazquez answered that he does not have any experience with public procurement of residential ventilation systems, however in general, it is a two-sided matter. On the one hand, governmental institutions usually work with domestic architectures, who again work with domestic suppliers; on the other hand, cost-efficiency is often prioritized over product origin (Velazquez, personal interview, May 11, 2015, 150-161).

4.2.1.8 Attitude towards EU integration

Velazquez predicted difficulties with the revision of regulations and directives, for example the revision of ErP Directive 2010/30/EU by January 2016, as then all Member States separately will integrate the new requirements into their national legislation. Consequently, products will probably need to be differently adapted to different markets again (Velazquez, personal interview, May 11, 2015, 217-219).

The future would be to unify all product standardisation, labelling and testing to the European level. Velazquez pointed out here that this would mostly benefit exporting manufacturers, as opposed to manufacturers who are strong in their domestic markets and, through the 'opening' of the market, suddenly would need to deal with much higher competition (Velazquez, personal interview, May 11, 2015, 254-261).

In conclusion, Velazquez stated that further integration is necessary in order for the markets to open and to herewith strengthen the European manufacturers' position. Currently, the European ventilation industry is not that strong, and, he said, "the stronger you are in your home market, the stronger you are outside" (Velazquez, personal interview, May 11, 2015, 297-307).

4.2.2 Mr. Lopez' view on the Single Market

Mr. Juan Lopez has since three years been Chief Executive Officer (CEO) of a Spanish manufacturer of industrial and tertiary air-conditioning systems, further referred to as S2. With almost 250 employees and an annual turnover over 2014 of 30 million euros (Lopez, personal e-mail, May 18, 2015), the company is categorised as medium-sized. Mr. Lopez has been CEO of S2 for three years.

4.2.2.1 Competition

According to Lopez, the competition coming from two main sides. Firstly, big internationals that have penetrated most European markets; and secondly, when looking at the residential ventilation industry, local manufacturers, mainly of air handling units (Lopez, personal interview, May 12, 2015, 186-194).

4.2.2.2 Legislative balance of national legislation

Lopez has experienced that, even though all Member States follow general European guidelines, "each country has its own specific demands". He hereby noted France as an example of a country with much more demanding requirements than Spain (Lopez, personal interview, May 12, 2015, 56-58).

Furthermore, Lopez pointed out the difference between countries, whereas some market are mostly focussed on a high energy-efficiency level – which, to integrate this into the product, makes the product more costly – whilst other market merely focus on cost-efficiency – which is only possible to meet if the product is less energy-efficient. As Lopez' company is a small company, it does not have the capacity nor the resource to fabricate different products for different markets within the same product range; consequently, Lopez needs to seek for a balance and cannot sell the company's products in all markets (Lopez, personal interview, May 12, 2015, 70-88).

4.2.2.3 Legislative balance of European legislation

Lopez does not think any gaps exist in European product legislation (Lopez, personal interview, May 12, 2015, 102, 103).

Furthermore, Lopez is already facing difficulties with double regulation; as legislation on both ventilation systems in their entirety and on components changes every one to three years, products or parts of products constantly need to be changed. When asked about a solution, Lopez said he would prefer that the end product would be regulated instead of the components; however, what for him is a component, might be the end product for other, especially when one looks at fans, which are both integrated into products and used as an individual ventilation system (Lopez, personal interview, May 12, 2015, 228-263).

4.2.2.4 Administrative, tax and language barriers

Lopez has so far not experienced any administrative or tax barriers. On the other hand, he considers the obliged translation of technical documents as a significant burden. His company has established a special department for translation to some languages; for others, external translators with the required technical knowledge need to be hired (Lopez, personal interview, May 12, 2015, 118-140).

4.2.2.5 Protectionism

When asked where Lopez thinks the protectionist national regulation comes from, he answered that according to him, governmental decision-making is mainly being influenced by local associations. As the politicians are not always that well-informed, they request support from national associations, and once these associations have obtained a power position in the government, they want to keep this role. They "may or may not have some interest in the certification", and they try to "keep a place in the system" (Lopez, personal interview, May 12, 2015, 108-117).

4.2.2.6 Certification

When asked about, Lopez stressed the difference between the financial burden of certification on large companies and SMEs respectively, as for example the acquiring a Eurovent certificate for a certain product range costs the same for large as for small companies, whereas for large companies the price is only a small part of their budget, compared to SME's like Lopez' (Lopez, personal interview, May 12, 2015, 45-48).

Lopez hereby noted that certificate requirements are not necessarily government-bound, as well as customer-bound; not all governments have established an auditing system, and some customers

for instance do and others do not request Eurovent certified products. The same happens with local French customers; some do and other do not require locally certified products (Lopez, personal interview, May 12, 2015, 141-151).

4.2.2.7 Public procurement

When asked about the openness of public procurement projects, Lopez noted that his company normally sells to contractors and not directly to governmental institutions. However, when reflecting on deals from the past, he did not experience any specific preference for domestic products or unfair treatment by governmental institutions. He did mention that he does not know what happens "under the table" (Lopez, personal interview, May 12, 2015, 199-226).

4.2.2.8 Attitude towards EU integration

Lopez is in favour of more European standardisation, if only it were to create a one-time cost and effort process, instead of going through the same process over and over again. He added that a European regulatory, certification and auditing system could be integrated, not necessarily through Eurovent certification; the priority for him is that one official body would take care of it instead of national bodies (Lopez, personal interview, May 12, 2015, 167-174). However, the auditing procedure should be executed on a local level; both to create a level-playing field considering transport costs for the manufacturers, and to make use of the existing testing laboratories instead of creating a dispute over which laboratory should obtain the European contract (Lopez, personal interview, May 12, 2015, 320-327).

Additionally, Lopez acknowledged that this might not be feasible, as the EU is dealing with different climates (hence different product requirements), different cultures, and countries with different sector focusses (for example Germany as highly industrialized country versus Greece as agriculture and tourism country) (Lopez, personal interview, May 12, 2015, 271-287). He proposed that, when setting requirements, more than considering product size, the end use of the product should be considered; also, because at the moment, residential and non-residential ventilation are not really being differentiated; merely the size of the ventilation system. It would also be an idea to set slightly different requirements for different countries, however still regulating this standardisation and the auditing from a centralised European level (Lopez, personal interview, May 12, 2015, 346-363).

5. Analysis

This study was carried out to establish to what extent the European Single Market has been completed. The author aimed to answer this question by the means of a two-tailed research; a theoretical (legal) framework of the Single Market in general and of the residential ventilation legislation in particular have been sketched, after which the experiences in practice were mapped through a case study of residential ventilation manufacturers from Denmark and Spain. Below, the outcomes of the literature review are compared with those of the interviews, in line with the themes used in conducting the interviews. The sections in this chapter follow the same order as the *Findings* chapter and the *Interview guidelines* (Chapter 4 and Appendix X respectively), combined with additional aspects from the literature review.

5.1 Competition and intra-EU trade

France and the United Kingdom are the two Member States with the highest intra-EU trade deficit ("Intra-EU trade balance by Member State, 2013," 2014). In accordance with Chen & Novey, a link could be made between the United Kingdom's non-membership of the Economic Monetary Union, and herewith lack of full economic integration, and the high trade deficit.

Generally, when penetrating a new market, the main competition seems to come from domestic manufacturers on the one hand, and a couple of large (mainly German and Swedish) multinationals on the other hand. Moreover, according to Velazquez, it proves difficult for manufacturers to gain a strong market position on more than two countries, and SMEs have a very small chance of gaining strong positions in foreign markets (Velazquez, personal interview, May 11, 2015, 133-139).

One way or another, penetrating a new market will always remain difficult, as exporters need to deal with inevitable factors: cultural differences to adapt to, national habits to adapt to – both of the end consumer and in building in general – and people generally are more willing to buy a product of which they know the brand name, whether this is a domestic or a foreign one, than an product from an unknown brand or supplier (Lind, personal interview, May 7, 2015, 274-280).

5.2 Legislative balance of national legislation

National product performance requirements, safety standards, certification systems, still highly vary from country to country. Some of these requirements have been established by national or regional governments, while others are not legally set, but through intense marketing from manufacturers and testing or certification institutes are generally demanded by the end-consumers (Nielsen, personal interview, May 19, 2015, 145-149). Either way, the European legislative system regarding residential ventilation systems still leaves room for national differentiation affecting the market, and the principle of mutual recognition does not yet seem to be fully implemented. The question arises then when a national requirement becomes a trade barrier, a governmental measure "to make

imported goods or services less competitive than locally produced goods and services" ("What is a Trade Barrier," n.d.). As the requirements are the same for domestic as for foreign manufacturers, this proves difficult to define. The question that arises then as well is whether domestic manufacturers have adapted their products to the national requirements, or vice versa; the national requirements have been adapted to support domestic manufacturers. Partially, it seems inevitable that product requirements differ per country, especially when comparing areas with different climates.

5.2.1 Difference North-South

As not all European countries have the same climate, their criteria on what defines a good ventilation system differ as well, prioritizing for instance heat recovery in Scandinavian countries and cooling recovery in Mediterranean countries (Lind, personal interview, May 7, 2015, 74-83). Furthermore, cultural differences play a part in the governments' attitudes towards implementation of European legislation and the stringiness of product requirements, whereas Denmark and Sweden are considered the most obedient and stringent, and countries in the South of Europe the least obedient and stringent (Lind, personal interview, May 7, 2015, 74-83). Interestingly enough, the Spanish interviewees did not mention any clear North-South division in legislative stringiness, only in ventilation systems development (Velazquez, personal interview, May 11, 2015, 197-207).

5.2.2 Germany as an example

Although Denmark was expected to have the hardest market to penetrate, the results from the interview show that Germany has the toughest system. Four different national certification and labelling systems are in place and less attention is being paid to European standards and certification systems. Additionally, requirements differ per region and per customer, making market penetration very costly and time-consuming (Nielsen, personal interview, May 19, 2015, 145-165, 176-195, 199-212).

5.2.3 France and UK a good second and third

Besides Germany, France and the United Kingdom have come out as countries with very specific requirements; France with a very stringent national certification system comparable to Germany's (NF), and the United Kingdom with a public product performance rating system (SAQ-list) (Velazquez, personal interview, May 11, 2015, 103-112). It is interesting to note that the abovementioned three countries all fall under the larger European countries within Europe, and that the *2012 Single Market Integration Report* states that over the period 1999-2011, smaller countries had a more positive attitude towards integration than larger countries ("State of the Single Market Integration 2013," 2012, pp. 2, 3).

5.2.4 Different products for different countries

As a consequence of these varying product demands, manufacturers have appeared to be unable to market one and the same product in all European countries. The combination of minimum harmonisation and mutual recognition, introduced in 1992 and warmly welcomed by Jacques Pelkmans for the prevention of "regulating literally everything", does not always seem to work.

Merely, it creates opportunities for national governments to introduce requirements more stringent than required, causing high variation in national standards and the termination of further integration (Burghof et al., 2011, pp. 69–74). As argued by the interviewees, this even goes as far as causing large companies to produce different variations of the same product for different markets, and SMEs to refrain from entering new markets, as they often lack the (financial) capacity to adapt their products. This view is supported by European parliamentarian Harbour, who in 2012 expressed the opinion that the European institutions had to

> *reinforce the rights of being able to sell what is already tested and approved in another country, and make it less easy for MS to deny access ("No more double standards on Europe's single market").*

5.3Legislative balance of European legislation

Having looked into the difficulties faced when entering different European markets, the author also investigated which problems are being faced at the European level regarding legislation and standardisation.

5.3.1 Unification of legislation

To start with, it should be said that all residential ventilation products seem to be covered by directives and / or regulations (as mentioned by all four interviewees); no product group has left unlegislated. A part of this legislation is based on CEN, CENELEC or ISO standards, which means European manufacturers actually have a say in the development of product requirements. The joint development of standards often proves difficult, as explained by Nielsen, because the views on the 'good performance' of a product, or on the performance calculation, differ highly per country (Nielsen, personal interview, May 19, 2015, 240-245). This again could be linked to climate and cultural differences leading to different priorities.

5.3.2 Double regulation

With the full unification of product legislation, a relatively new problem has arisen, namely the issue of double regulation. As ventilation units in their entirety as well as their components are being regulated according to the Ecodesign Directive, manufacturers have to follow a vast amount of legislation development. The different regulations and directives are not being published and reviewed simultaneously. Consequently, it often happens that one year, a ventilation system needs to be modified according to new regulation on ventilation units, and the next year, it needs to be modified again according to new regulation on one of its components, like a fan. This is time-consuming and costly for the manufacturers, as confirmed by Mr. Lopez (Lopez, personal interview, May 12, 2015, 228-263) and mentioned as a developing issue by manufacturers during the Consultation Forum for the review of the Fan Regulation on 14 April 2015 (Declercq, personal communication, May 7, 2015).

The fast pace of legislation development could be explained by the fact that ventilation units are one of the main electricity consumers in buildings, and energy consumption reduction has become one of the EU's main focus areas (Velazquez, personal interview, May 11, 2015, 188-194). A solution for above-mentioned problem is not yet evident, as a component for the one manufacturer might be an end product for the other. Therefore, legislating all products and their components seems inevitable.

5.3.2 Categorisation of ventilation systems

Elaborating on the discussion of which product type falls under which legislative act, another problem has arisen. The current European legislation seems too much focussed on the size of systems and their components, categorising for instance by electric input power, whilst this categorisation does not always match with reality. Illustrating this issue is the current distinction made by the Commission between residential and non-residential ventilation systems, measuring the flow rate or level of electric input power of the system ("Commission Regulation (EU) No 1253/2014," 2014) ("Commission Staff Working Document Impact Assessment," 2014, p. 11). The Commission seems to have forgotten that apartment buildings sometimes have centralised ventilation systems, making the system's size comparable to those in commercial (non-residential) buildings such as hospitals and shopping malls. This is only one example to show that, as Lopez remarked, residential and non-residential ventilation are not really being differentiated; merely the size of the ventilation system (Lopez, personal interview, May 12, 2015, 346-363).

5.4 Administrative, tax and language barriers

Next to possible barriers created by varying product requirements, both the literature review and the case study brought to light various other burdens faced by exporters, namely administrative, tax and language barriers.

5.4.1 Administrative & tax barriers

As described by all interviewees and underlined by a 2003 Commission reflection report, no real administrative or tax barriers are being experienced anymore nowadays. On the contrary, a 2011 survey amongst European business representatives showed the opposite ("Annual Growth Survey 2013," 2012, p. 12), supported by Goyens, who mentioned differentiated VAT-systems as one of the main burdens for intra-EU exporters (Burghof et al., 2011, pp. 69–74). These different views could be linked to different experiences, as all interviewees have over 15 years of experience in international business and might not see burdens in what other, less experienced company representatives would consider a burden. Furthermore, representatives from micro and small companies might experience more difficulties with administrative and tax matters than representatives of medium-sized and large companies, as larger companies might have the resources to designate entire departments to take care of administrative matters. All in all, under current legislation, complete harmonisation would not even be possible, as it goes against the EU principle of subsidiarity ("EU Tax Policy Strategy," 2015).

5.4.2 Language barriers

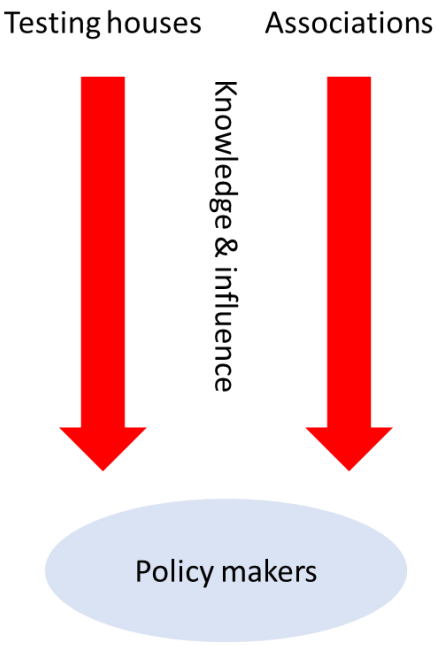
Whilst administration and tax systems are not really experienced as an export burden, translation requirements are. When exporting to countries where another language is used, manufacturers need to translate (part of the) product manuals and other accompanying documents into the domestic language. The interviewees described this as costly and time-consuming.

Nevertheless, the question is whether this 'burden' could ever be removed, and whether it is actually a parameter to measure the completion of the internal market. Factory workers who understand only their domestic language, should at any time have access to a manual in their domestic language. This would be the responsibility of the manufacturer, hence, no matter how much integration takes place, as long as not all Europeans speak the same language, manufacturers will have to deal with translations issues.

5.5Protectionism

Returning to the topic of product requirements, the setting of different product requirements by national governments could be considered as a way of protecting the domestic market. The question then arises whether this protectionism has been initiated by the policy makers themselves, or whether they have been influenced by the domestic manufacturers. In the literature review, no specific information on this matter came up, and the answers given in the interviews about the Danish and Spanish government were significantly varying. Generally, the Danish government maintains a 'green vision' for more than a decade already, and is additionally being directed by both private companies and national associations towards the creation of product performance requirements more stringent than the European ones (Lind, personal interview, May 7, 2015, 60, 61 65-67, 86-88) (Nielsen, personal interview, May 19, 2015, 366-380). The Spanish government does not seem to have its own clear vision, moreover is being influenced by Spanish associations on the one hand and Spanish testing houses, profiting from differentiated product requirements and herewith required testing procedures, on the other hand. The Spanish politicians even seem to lack the technical knowledge needed to legislate ventilation products and to estimate the legislation's impact on the industry, and therefore are happy with any input from external stakeholders (Lopez, personal interview, May 12, 2015, 108-117) (Velazquez, personal interview, May 11, 2015, 172-187). A visualisation of this power play can be found in figure 9 on the next page.

Figure 9. Decision-making balance in Spain



From both Denmark and Spain, manufacturers try to influence foreign governments and the European institutions through their national associations.

5.6 Certification

In line of the differentiated product requirements, difficulties are faced regarding third-party approval in general and certification in particular. This topic has not appeared in the literature review, however was discovered to be of great importance to the interviewees. Some countries, like Germany, work with different certificates and testing labs per region, making export extremely costly and time-consuming, whilst others do not require third-party confirmation of the energy performance level indicated on the product at all. In case of the latter, the customers sometimes ask for certain certificates. When certification is not being required by the national government nor the customer, manufacturers could basically label their products as energy-efficient as they would want, for example according to ecodesign requirements, without any third-party approval and without the performance indicated reflecting the actual performance of the product (Velazquez, personal interview, May 11, 2015, 248-251). An additional problem is being faced mainly by SMEs and companies from Eastern Europe, namely the price of certification. Generally, certifying one product range according to French, German or Eurovent Certification, costs between 20,000 and 30,000 Euros, which makes it a very heavy burden. Other certification programmes might be less costly, however have not come up in the case study.

In order to increase the accessibility, awareness and affordability of certification, a unified European third-party approval system should be established. Mr. Velazquez remarked that the centralisation of certification and testing might not be well-approved by national testing houses, as they recently have been growing and gaining power in the national governments (Velazquez, personal interview, May 11, 2015, 171-174). In response to this, one could use Mr. Lopez's suggested solution, namely to centralise standards and all formalities regarding testing, auditing and certification, with the division of the testing responsibilities over the current testing houses (Lopez, personal interview, May 12, 2015, 320-327). These houses would only need to adjust their programmes and testing procedures, but would not lose their businesses.

5.7Public procurement

In order to create a 360-degree overview of the Single Market, the preference of public institutions in contracting has also been reviewed. The author aimed to establish whether public institutions purposely choose products from domestic manufacturers when purchasing ventilation systems, or whether they purely judge based on quality and price. Favouring the quality of a product over the country of origin in a public procurement procedure has been encouraged by the Commission ever since 1993, however, hard numbers of this division proved to be difficult to find during the literature review. The case study also showed varying results. Generally, public institutions seem to prefer cost-efficiency over quality or country of origin of the products, with only one exception; in case the institutions work with domestic architects who advise on the contractors, most of the contractors are domestic as these two parties are familiar with each other (Velazquez, personal interview, May 11, 2015, 150-161).

5.8EU integration

In the last part of this analysis, the views on how to proceed in the future are compared. First of all, it is very interesting to note that none of the reviewed literature, nor the interviewed manufacturer representatives, consider a stagnation or diminution of legislation unification as an option; all writers and interviewees seem to agree that further integration is the way forward.

One of the – seemingly most obvious – solutions for further integration has not been implemented by the European institutions. This would be the replacement of directives by regulations. The major downside of a directive is that it provides the Member States solely with objectives and guidelines, leaving the specific legislation up to the Member States and herewith room for vast differentiation. It is surprising that about half of the product legislation discussed in this study are directives and not regulations, creating above-mentioned peek holes for Member States to introduce protectionist measures, although many directives like the Ecodesign Directive state that one of the main purposes is to enhance harmonisation and remove barriers to trade. The question why the

European institutions have chosen for so many directives instead of regulations, remains unanswered.

5.8.1 Unification as a the way forward

Generally, as mentioned by all interviewees, the only way to stimulate intra-EU trade, especially to involve SMEs and manufacturers from Eastern Europe, seems to further harmonise and regulate product standards, certification, and third-party approval. This action would have a two-sided consequence. On the one hand, it would stimulate exporting manufacturers, especially SMEs, in expanding their markets and growing stronger. On the other hand, it would weaken the competitive position of the domestic manufacturers, as they would lose their competitive position (Velazquez, personal interview, May 11, 2015, 254-261). Nonetheless, for the domestic manufacturers, it would also become easier to expand their market.

5.8.2 Difficulties in unification

Even though unification seems the answer to many problems, it would be accompanied with some difficulties. The European market will always be dealing with different climates, cultures, languages and sector focusses per country, whereas some countries are very much focussed on technology Research & Development than others. Additionally, it would be challenging to convince both national governments and testing houses to unify product standards. A solution for this might be to create a system in which standardisation and certification are being regulated on the European level, whilst third-party approval is being implemented on the local level by the already existing testing houses (Lopez, personal interview, May 12, 2015, 271-287, 320-327, 346-363). An additional solution might be to adapt product requirements slightly according to climate and industry, creating regions comprising a couple of countries with the same climate and similar sector focus.

5.8.3 Scandinavia as ‘best-practice’ example

A ‘best-practice’ example are the Scandinavian countries Denmark, Norway and Sweden, who have been jointly developing their legislation for over twenty years already, and whose product requirements are up to 60-70% similar. However, this might prove more difficult when cooperating with 28 instead of three national governments, merely as the cultural and climate differences are much more significant (Nielsen, personal interview, May 19, 2015, 268-277).

Velazquez (personal interview, May 11, 2015, 297-307) stressed the fact that it is of high importance for the EU to take measures stimulating growth and giving a chance to SMEs, in order for the European market in general to grow and regain its competitive position towards competitors like China and the USA. Because, as he stated,

“the stronger you are in your home market, the stronger you are outside”.

6. Conclusions

Margaret Thatcher predicted in 1988 that the “single domestic market” would be completed by 1993, and the Commission has confirmed this achievement in 2014, by stating that in that year, the internal market had become reality (“Historical overview,” 2014) (“Speech opening Single Market Campaign,” 1988). In practice, this does not always seem the case. The question to be answered in this research is:

To what extent have the objectives of the European Single Market been met, taking the example of the European residential ventilation industry?

The answer to this question is not a simple *yes* or *no*. On paper, the European Single Market has been completed; yet, in practice, this is not the case.

Product legislation varying per country *en soi* is not a technical trade barrier, as long as it is the same for domestic as for foreign sellers. Nonetheless, in some countries, it has become a technical trade barrier, as the legislation for residential ventilation products has been developed in cooperation with the domestic manufacturers, providing them with a competitive position towards foreign manufacturers. The latter then need to take costly and time-consuming measures adapting their products and acquiring certificates, in order to enter the market. This is underlined by (1) the fact that generally, the main competitors in European countries are always the domestic manufacturers, and (2) several researches have shown that European businesses in general consider technical trade barriers one of the main burdens in intra-EU trade. Specific examples of countries that do not seem to meet the Single Market objectives are Denmark, Germany, France and the United Kingdom.

Even though some difficulties faced in intra-EU trade will remain inevitable, such as the adaption to a country’s climate, culture, consumer habits and language, many other burdens were ought to be eliminated by 1993. This is not yet how businesses experience the market. In addition, the process of European residential ventilation legislation is still in its initiation phase and herewith could be improved in many areas. These areas include the joint development of standards, the issue of double regulation, the way of categorising ventilation systems, and the choice for regulations over directives.

In conclusion, it is argued that the basic framework for the European Single Market, as well as the way to bring this into practice, have been developed, however practice has not yet completely developed. The time has come to fine-tune legislation and to direct the European governments and manufacturers into further cooperation and unification. As former President of the European Commission and great advocate of the Single Market, Mr. Jacques Delors, already stated in 1992:

There is no need to come up with new ideas. When the ideas are good, just apply them at the right time51 (Solbes Mira, 2011).

[51] Literally translated from the original speech, which was in French : "On n'a pas besoin d'inventer des idées nouvelles. Quand elles sont bonnes, il suffit de les appliquer au bon moment" (Solbes Mira, 2011)(Solbes Mira, 2011)

7. Recommendations

From the analysis and the conclusions in chapters 5 and 6 respectively, a set of recommendations was drawn.

Throughout the research process, the author has discovered possibilities for elaborated market mapping and research in various areas. Therefore, a two-tailed set of recommendations was made, consisting of (1) an action plan for the European institutions, and (2) recommendations for further research.

7.1 European action plan

In accordance with the conclusions, a couple of recommendations could be made for actions to be taken by the European institutions and manufacturers. Two possible scenarios have been sketched. The following scenario is very progressive and aims for rapid completion of the single market. The European institutions should:

(1) Map the European countries according to climate into three or four regions;
Goal: prepare for further unification of legislation, taking into account different climates
(2) Implement product and energy-efficiency regulations instead of directives, according to the climate regions;
Goal: unify legislation and get rid of minimum requirements and the last technical trade barriers
(3) Introduce a European certification body in line with the European product legislation
Goal: eliminate national certification systems and create a third-party approval system applicable to all European manufacturers.

If this plan would be followed, a fully unified market would be the result. Yet, the feasibility of this plan should be questioned, as it requires intense integration, cooperation from the Member States, and high investments by the Union in establishing a European certification body. Another, less progressive but more feasible option, would lead to a (less rapid and direct) development towards a complete economic union. In this case, the European institutions should:

(1) Reinforce the principle of mutual recognition with a specialised European control body;
Goal: ensure the recognition by governments and consumers of foreign products once they comply to another Member States' requirements
(2) Integrate a more stringent infringement procedure for national governments in case they do not follow the principles of mutual recognition;
Goal: ensure that national governments take both the principle of mutual recognition, and other Member States' product assessment seriously
(3) Integrate a more stringent infringement procedure for national government who neglect to implement regulations, transpose directives, or hand in reflection reports on time.

Goal: motivate Member States to follow the Single Market's rules and remove unnecessary horizontal internal differentiation

This second option might be, in the current environment, more feasible.

Next to recommendations for actions, suggestions for further research have been made in section 7.2 below.

7.2 Further research

As said, the research showed that many areas still require further exploration in order to draw solid conclusion on these matters. Four suggestions for further research have been made. The following two recommendations concern the Single Market in general:

(1) Investigate in how far a European Economic Union could be actually achieved as long as not all Member States have integrated the Euro. The effects of the use of different currencies on European business could be researched, as well as the feasibility of the integration of one single currency in all Member States;
(2) Search for a solution to the issue of double regulation. It seems a problem that is difficult to solve. Nonetheless, the problem will only grow with continuous unification of legislation, and the industry needs a way to work with different legislation for their different products and components;

And the following two recommendations concern the residential ventilation industry in particular:

(3) Map all European and national certification and testing institutions, in order to create a framework. This could be done in cooperation with above-mentioned institutions and national governments. This research could also show which certificates are required by national governments, and which ones are voluntary;
(4) Conduct the same research as has been done by the author, but taking different countries as case study. Herewith, results could be compared and the validity of drawn conclusions and recommendations could be increased.

8. List of references

3rd National Energy Efficiency Action Plan (NEEAP) 2014 for the Federal Republic of Germany pursuant to Directive 2012/27/EU of the European Parliament and of the Council of 25 October 2012 on energy efficiency. (2014, June 12). ec.europa.eu. Retrieved from http://ec.europa.eu/energy/sites/ener/files/documents/2014_neeap_en_germany.pdf

About ETSI. (n.d.). Retrieved May 21, 2015, from http://www.etsi.org/about

About ISO. (n.d.). Retrieved May 18, 2015, from http://www.iso.org/iso/home/about.htm

About this document - Directive 2009/125/EC of the European Parliament and of the Council of 21 October 2009 establishing a framework for the setting of ecodesign requirements for energy-related products (Text with EEA relevance). (n.d.). Retrieved May 1, 2015, from http://eur-lex.europa.eu/legal-content/en/NOT/?uri=CELEX:32009L0125

About this document - Directive 2010/30/EU of the European Parliament and of the Council of 19 May 2010 on the indication by labelling and standard product information of the consumption of energy and other resources by energy-related products (Text with EEA relevance). (n.d.). Retrieved May 24, 2015, from http://eur-lex.europa.eu/legal-content/EN/NOT/?uri=CELEX:32010L0030

About this document - Directive 2010/31/EU of the European Parliament and of the Council of 19 May 2010 on the energy performance of buildings. (n.d.). Retrieved May 1, 2015, from http://eur-lex.europa.eu/legal-content/en/NOT/?uri=CELEX:32010L0031

About this document - Directive 2012/27/EU of the European Parliament and of the Council of 25 October 2012 on energy efficiency, amending Directives 2009/125/EC and 2010/30/EU and repealing Directives 2004/8/EC and 2006/32/EC Text with EEA relevance. (n.d.). Retrieved May 1, 2015, from http://eur-lex.europa.eu/legal-content/EN/NOT/?uri=CELEX:32012L0027

Acronyms-C. (2015). Retrieved May 5, 2015, from http://www.cencenelec.eu/helpers/Pages/Acronyms.aspx?filter=C

Aggerholm, S. (2013, March 21). Cost-optimal levels of minimum energy performance requirements. Danish Building Research Institute, SBi.

A growing community. (n.d.). Retrieved May 8, 2015, from http://europa.eu/about-eu/eu-history/1970-1979/index_en.htm

air conditioning. (n.d.). Retrieved May 16, 2015, from http://www.oxforddictionaries.com/definition/english/air-conditioning

Annual Report 2013/2014. (2014). D1. Retrieved from http://hugin.info/138279/R/1846135/643402.pdf

A Quick Guide To Spain's Autonomous Communities. (2010, September 9). Retrieved May 15, 2015, from http://www.eyeonspain.com/spain-magazine/autonomous-communities.aspx

A Single Market for Growth and Jobs: an Analysis of Progress Made and Remaining Obstacles in the Member States - Contribution to the Annual Growth Survey 2014. (2013, November 13). European Commission. Retrieved from http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52013DC0785&from=EN

Awil, A. (2009). The Myth of Eurosclerosis: European Integration in the 1970s. *L'Europe En Formation*, *353-354*(August/Winter 2009). Retrieved from http://www.academia.edu/669935/The_Myth_of_Eurosclerosis_European_Integration_in_the_1970s

Berg, B. L. (2001). *Qualitative research methods for the social sciences* (Fourth). Long Beach: Allyn & Bacon. Retrieved from https://mthoyibi.files.wordpress.com/2011/05/qualitative-research-methods-for-the-social-sciences__bruce-l-berg-2001.pdf

Boughton, J. M. (2002, March). Globalization and the Silent Revolution of the 1980s. Retrieved May 18, 2015, from http://www.imf.org/external/pubs/ft/fandd/2002/03/bought.htm

Buildings. (2015, May 1). Retrieved May 1, 2015, from http://ec.europa.eu/energy/en/topics/energy-efficiency/buildings

Burghof, H.-P., Goyens, M., Leibfried, S., & Pelkmans, J. (2011). The European Single Market – How Far from Completion? *Intereconomics*, *46*(2).

Buttolph Johnson, J., Mycoff, J. D., & Reynolds, H. T. (2008). *Political Science Research Methods* (sixth). Washington DC: CQ Press.

CEN-CENELEC Règlement Intérieur - 1ére Partie: Organisation et Structure. (October). CEN / CENELEC. Retrieved from http://boss.cen.eu/ref/IR1_F.pdf

Chen, N., & Novy, D. (2009, January). International Trade Integration: A Disaggregated Approach. Centre for Economic Performance. Retrieved from http://cep.lse.ac.uk/pubs/download/dp0908.pdf

Commission delegated regulation 1254/2014 of 11 July 2014 supplementing Directive 2010/30/EU of the European Parliament and of the Council with regard to energy labelling of residential ventilation units. (2014, November 25). Office for Official Publications of the European Union. Retrieved from http://www.eceee.org/ecodesign/products/domestic_ventilation/ventilation_energylabelling_1254-2014_EN.pdf

Commission Regulation (EU) No 206/2012 of 6 March 2012 implementing Directive 2009/125/EC of the European Parliament and of the Council with regard to ecodesign requirements for air conditioners and comfort fans (Text with EEA relevance). (2012, March 10). Official Journal of the European Union. Retrieved from http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32012R0206&rid=1

Commission Regulation (EU) No 327/2011 of 30 March 2011 implementing Directive 2009/125/EC of the European Parliament and of the Council with regard to ecodesign requirements for fans driven by motors with an electric input power between 125 W and 500 kW (Text with EEA relevance). (2011, April 6). Official Journal of the European Union.

Commission Regulation (EU) No 1253/2014 of 7 July 2014 implementing Directive 2009/125/EC of the European Parliament and of the Council with regard to ecodesign requirements for ventilation units. (2014, November 25). Official Journal of the European Union.

Commission Staff Working Document Impact Assessment Accompanying the document Commission Regulation implementing Directive 2009/125/EC of the European Parliament and of the Council with regard to Ecodesign requirements for ventilation units and Commission Delegated Regulation implementing Directive 2010/30/EU of the European Parliament and of the Council with regard to energy labelling of ventilation units. (2014, July 7). European Commission.

Commission Staff Working Document Impact Assessment Accompanying the document Commission Regulation implementing Directive 2009/125/EC of the European Parliament and of the Council with regard to Ecodesign requirements for ventilation units and

Commission Delegated Regulation implementing Directive 2010/30/EU of the European Parliament and of the Council with regard to energy labelling of ventilation units (executive summary). (2014, July 7). European Commission.

Commission Staff Working Document Impact Assessment Accompanying the document Proposal for a Council Directive amending Directive 2006/112/EC on the common system of value added tax as regards a standard VAT return. (2013, October 23). European Commission. Retrieved from http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52013SC0427&from=EN

Communication from the Commission - Annual Growth Survey 2013. (2012, November 28). European Commission. Retrieved from http://ec.europa.eu/europe2020/pdf/ags2013_en.pdf

Consent procedure. (n.d.). Retrieved May 6, 2015, from http://europa.eu/legislation_summaries/glossary/assent_procedure_en.htm

Cooperation procedure. (n.d.). Retrieved May 6, 2015, from http://www.eu2007.de/en/About_the_EU/Decision_Making/Co_operation_procedure.html

Correia de Brito, A., & Pelkmans, J. (2012). Enforcement in the EU Single Market. Centre for European Policy Studies. Retrieved from http://www.ceps.eu/system/files/Enforcement%20in%20the%20EU%20Single%20Market.pdf

dealer. (n.d.). Retrieved May 20, 2015, from http://www.businessdictionary.com/definition/dealer.html

Declercq, C. (2015, May 7). 2015-05-06 - Thesis update Kirsten - Comments Charles.

Directive 2009/125/EC of the European Parliament and of the Council of 21 October 2009 establishing a framework for the setting of ecodesign requirements for energy-related products (recast). (2009, October 31). Official Journal of the European Union. Retrieved from http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32009L0125&rid=6

Directive 2010/30/EU of the European Parliament and of the Council of 19 May 2010 on the indication by labelling and standard product information of the consumption of energy and other resources by energy-related products (recast) (Text with EEA relevance). (2010, June 18). Official Journal of the European Union. Retrieved from http://eur-

lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32010L0030&qid=1430674119798&from=EN

Document 11957E/TXT. (n.d.). Retrieved April 15, 2015, from http://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX:11957E/TXT

Documents. (n.d.). Retrieved May 23, 2015, from http://www.ventilationunits.eu/documents/

Draft Working Document Ventilation Units. (2012, October 10). European Commission. Retrieved from http://ec.europa.eu/enterprise/policies/sustainable-business/ecodesign/product-groups/airco-vent/files/swd_ventilation_en.pdf

Ecodesign your Future - How Ecodesign can help the environment by making products smarter. (2012, February 15). European Commission.

ESRC Framework for research ethics - Updated January 2015. (2015, January). Economic and Social Research Council. Retrieved from http://www.esrc.ac.uk/_images/framework-for-research-ethics_tcm8-33470.pdf

EU Tax Policy Strategy. (2015, April 10). Retrieved May 5, 2015, from http://ec.europa.eu/taxation_customs/taxation/gen_info/tax_policy/index_en.htm

EU Treaties. (n.d.). Retrieved April 20, 2015, from http://europa.eu/eu-law/decision-making/treaties/index_en.htm

Factor Market. (n.d.). Retrieved from http://financial-dictionary.thefreedictionary.com/Factor+market

Ferrari, L. (2013, May). The Crisis of Western Europe's Global Standing in the 1970s: EC Elites' Perceptions of Decline and Strategies to Counter it. Academia.edu. Retrieved from http://www.academia.edu/3566241/The_Crisis_of_Western_Europe_s_Global_Standing_in_the_1970s_EC_Elites_Perceptions_of_Decline_and_Strategies_to_Counter_it

File: Exports to other Member State, 2002 and 2013 (EUR 1 000 million).png. (2014). Eurostat. Retrieved from http://ec.europa.eu/eurostat/statistics-explained/index.php/File:Exports_to_other_Member_State,_2002_and_2013_(EUR_1_000_million).png

File: Intra-EU trade balance by Member State, 2013 (EUR 1 000 million).png. (2014). Eurostat. Retrieved from http://ec.europa.eu/eurostat/statistics-explained/index.php/File:Intra-EU_trade_balance_by_Member_State,_2013_(EUR_1_000_million).png

Financial data. (2015). Retrieved May 16, 2015, from URL to remain anonymous for the protection of interviewees and their company

Fontaine, P. (2010, July). Europe in 12 lessons. Directorate General for Communication, European Commission. Retrieved from file:///C:/Users/Eurovent%20Secretariat/Downloads/NA3110652ENC_002.pdf

Henrik Lind. (2015, May 7). Personal interview with Mr. Henrik Lind [Skype].

Historical overview. (2014, October 3). Retrieved April 15, 2014, from http://ec.europa.eu/internal_market/top_layer/historical_overview/index_en.htm

Home - Product - Residential. (n.d.). Retrieved May 15, 2015, from URL to remain anonymous for the protection of interviewees and their company

Internal Market: Awareness, Perceptions and Impacts - Aggregate Report. (2011, November). Eurobarometer. Retrieved from http://ec.europa.eu/public_opinion/archives/quali/5983_awareness_en.pdf

Introducing PROBIS. (n.d.). Retrieved May 11, 2015, from http://www.probisproject.eu/project/project-description/

Is it necessary a million pages to legislate in Spain? (2015). Retrieved May 15, 2015, from http://www.spanisharchitect.info/english/click-here-for-help-and-advice-on-spanish-construction-and-architectural-matters/building-regulations-in-spain/

ISO 12759:2010(en). (n.d.). Retrieved May 19, 2015, from https://www.iso.org/obp/ui/#iso:std:iso:12759:ed-1:v1:en

ISO members. (n.d.). Retrieved May 18, 2015, from http://www.iso.org/iso/home/about/iso_members.htm

Leuffen, D., Rittberger, B., & Schimmelfennig, F. (2015). The European Union as a system of differentiated integration: interdependence, politicization and differentiation. Journal of European Public Policy.

Lopez, J. (2015, May 18). Rm: Documento Escaneado.

Moussis, N. (1996). *Access to European Union: Law, Economics, Policies* (17th ed.). European Study Service.

National Energy Efficiency Action Plans. (2015, May 1). Retrieved May 1, 2015, from http://ec.europa.eu/energy/node/84

Neal, L. (2008). *The Economics of Europe and the European Union* (2008th ed.). New York: Cambridge University Press, New York.

Nielsen, H. (2015a, May 19). Interview with Mr. Hjalmar Nielsen [Skype].

Nielsen, H. (2015b, May 19). SV: Interview 19 May.

No more double standards on Europe's single market. (2012, January). Retrieved May 4, 2015, from http://esharp.eu/interview/5-no-more-double-standards-on-europe-s-single-market/

Organisation for European Economic Co-operation. (2015). Retrieved April 27, 2015, from http://www.oecd.org/general/organisationforeuropeaneconomicco-operation.htm

Other aspects of procurement. (2015, May 6). Retrieved May 11, 2015, from http://ec.europa.eu/growth/single-market/public-procurement/other-aspects/index_en.htm#europe2020

Overview Ecodesign. (n.d.). Retrieved May 1, 2015, from http://www.eup-network.de/product-groups/overview-ecodesign/

Pelkmans, J. (1997). *European Integration: Methods and Economic Analysis*. New York: Addison Wesley Longman Limited.

Pilot Projects. (2014, November 24). Retrieved May 11, 2015, from http://www.probisproject.eu/pilot-projects/

Product categories. (2012). Retrieved May 7, 2015, from URL to remain anonymous for the protection of interviewees and their company

Project Plan. (n.d.). Retrieved May 23, 2015, from http://www.ventilationunits.eu/project-plan/

Questions and answers concerning the Ventilation Units Regulation. (2015, April 27). Eurovent. Retrieved from http://www.ventilationunits.eu/media/1014/pp-2015-04-27-eurovent-questions-and-answers-concerning-the-ventilation-units-regulation.pdf

Regulation (EC) No 764/2008 of the European Parliament and of the Council of 9 July 2008 laying down procedures relating to the application of certain national technical rules to products lawfully marketed in another Member State and repealing Decision No 3052/95/EC. (2008, August 13). Official Journal of the European Union. Retrieved from http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2008:218:0021:0029:en:PDF

Regulations, Directives and other acts. (n.d.). Retrieved May 6, 2015, from http://europa.eu/eu-law/decision-making/legal-acts/index_en.htm

Research Methods: some notes to orient you. (n.d.). Harvard. Retrieved from http://isites.harvard.edu/fs/docs/icb.topic851950.files/Research%20Methods_Some%20Notes.pdf

residential. (2015). Retrieved April 27, 2015, from http://www.oxforddictionaries.com/definition/english/residential

Rivière et al., P. (2009, February). Preparatory study on the environmental performance of residential room conditioning appliances (airco and ventilation). Retrieved from http://ec.europa.eu/enterprise/policies/sustainable-business/ecodesign/product-groups/airco-vent/files/residential_ventilation_en.pdf

Search Standards. (2015). Retrieved May 20, 2015, from http://standards.cen.eu/dyn/www/f?p=204:105:0:::::

Siderius, H.-P. (2012, February 27). The ecodesign and energy labelling process – challenges and solutions. Retrieved May 1, 2015, from http://www.eceee.org/ecodesign/Horizontal-matters/Assessment%20Ecodesign%20en%20Energy%20label%20delays%20-%20120227-1.pdf

Single European Act. (2010, October 26). Retrieved April 20, 2015, from http://europa.eu/legislation_summaries/institutional_affairs/treaties/treaties_singleact_en.htm

Single Market Act II - Together for new growth (Text with EEA relevance). (2012, October 3). European Commission. Retrieved from http://ec.europa.eu/internal_market/smact/docs/single-market-act2_en.pdf

Single Market Act - Twelve levers to boost growth and strengthen confidence “Working together to create new growth” {SEC(2011) 467 final}. (2011, April 13). European Commission. Retrieved from http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52011DC0206&from=EN

Smith, K., Todd, M., & Waldman, J. (2009). *Doing your undergraduate social science dissertation*. Oxon: Routledge.

Solbes Mira, P. (2011, October 12). Les régions ultrapériphériques européennes dans le marché unique: Le rayonnement de l’UE dans le monde. ec.europa.eu. Retrieved from http://ec.europa.eu/internal_market/outermost_regions/docs/report2011_fr.pdf

Speech opening Single Market Campaign. (1988, April 18). Retrieved May 24, 2015, from http://www.margaretthatcher.org/document/107219

Standards - What is a standard? (n.d.). Retrieved May 18, 2015, from http://www.iso.org/iso/home/standards.htm

State of the Single Market Integration 2013 - Contribution to the Annual Growth Survey 2013 -. (2012, November 28). European Commission. Retrieved from http://ec.europa.eu/europe2020/pdf/sgmktreport2013_en.pdf

supplier. (n.d.). Retrieved May 20, 2015, from http://www.businessdictionary.com/definition/supplier.html

Technical barriers to trade. (2014, March 28). Retrieved April 24, 2015, from https://stats.oecd.org/glossary/detail.asp?ID=2683

Technical Bodies. (n.d.a). Retrieved May 21, 2015, from http://standards.cen.eu/dyn/www/f?p=CENWEB:6:::NO:::

Technical Bodies. (n.d.b). Retrieved May 21, 2015, from http://www.cenelec.eu/aboutcenelec/whoweare/technicalbodies/index.html

Technical Building Code. (2013, March 15). Retrieved May 15, 2015, from http://www.iea.org/policiesandmeasures/pams/spain/name-22827-en.php

Technical committees - List of ISO technical committees. (n.d.). Retrieved May 19, 2015, from http://www.iso.org/iso/home/standards_development/list_of_iso_technical_committees.htm

The Internal Market - Ten Years without Frontiers. (n.d.). European Commission. Retrieved from http://ec.europa.eu/internal_market/top_layer/historical_overview/docs/workingdoc_en.pdf

The new SME definition - User guide and model declaration. (2005, March 30). European Commission.

The process of the Ecodesign ErP directive. (n.d.). Retrieved May 1, 2015, from http://www.eceee.org/ecodesign/process

The Technical Building Code. Presentation. (n.d.). Retrieved May 15, 2015, from http://www.codigotecnico.org/ingles/introduction/

Third Flemish Energy Efficiency Action Plan. (2014, March 28). ec.europa.eu. Retrieved from https://ec.europa.eu/energy/sites/ener/files/documents/Flemish%20NEEAP_en_0.pdf

Timeline of EU integration. (2014). Retrieved April 23, 2015, from http://www.civitas.org.uk/eufacts/OS/OS15.php

Title of the document: SPA41- CER (Energy Performance Certificate for Buildings). (2014, January). Odyssee-Mure. Retrieved from http://www.measures-odyssee-mure.eu/public/mure_pdf/household/SPA41.PDF

Title of the measure: Building Regulation. (2014, October). Odyssee-Mure. Retrieved from http://www.measures-odyssee-mure.eu/public/mure_pdf/household/DK8.PDF

Treaties Establishing the European Communities - Treaties amending these Treaties - Single European Act. (1987). Office for Official Publications of the European Communities. Retrieved from http://europa.eu/eu-law/decision-making/treaties/pdf/treaties_establishing_the_european_communities_single_european_act/treaties_establishing_the_european_communities_single_european_act_en.pdf

Treaty of Maastricht on European Union. (2010, October 15). Retrieved April 23, 2015, from http://europa.eu/legislation_summaries/institutional_affairs/treaties/treaties_maastricht_en.htm

Treaty on European Union, signed at Maastricht on 7 February 1992. (1992, July 29). Official Journal of the European Communities. Retrieved from http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=OJ:C:1992:191:FULL&from=EN

Value-Added Tax - VAT. (2015). Retrieved May 5, 2015, from http://www.investopedia.com/terms/v/valueaddedtax.asp

Van Eyken, F. (2015, April 27). Ecodesign and Energy Labelling Regulations Ventilation Units - Technical assistance study for European Commission February 2015-February 2016. Eurovent.

Van Ooik, R. H., & Vandamme, T. A. J. A. (2010). *European Basic Treaties* (2010th ed.). Deventer: Kluwer.

Velazquez, A. (2015a, May 11). Personal interview with Mr. Alberto Velazquez [Skype].

Velazquez, A. (2015b, May 14). RE: Question about S1 and the Spanish market.

ventilation. (2015). Retrieved April 27, 2015, from http://www.oxforddictionaries.com/definition/english/ventilation

VERDRAG tot oprichting van de Europese Economische Gemeenschap. (1957, March 25). European Commission.

Verdrag tot oprichting van de Europese Economische Gemeenschap en bijbehorende documenten. (1957, March 25). European Commission. Retrieved from http://eur-lex.europa.eu/legal-content/NL/TXT/PDF/?uri=CELEX:11957E/TXT&from=EN

We're ISO, the International Organization for Standardization. We develop and publish International Standards. (n.d.). Retrieved May 18, 2015, from http://www.iso.org/iso/home.html

What is an SME? (2015, April 8). Retrieved from http://ec.europa.eu/growth/smes/business-friendly-environment/sme-definition/index_en.htm

What is a Trade Barrier. (n.d.). Retrieved May 8, 2015, from http://um.dk/en/tradecouncil/barriers/what-is/

White paper. (n.d.). Retrieved April 20, 2015, from http://europa.eu/legislation_summaries/glossary/white_paper_en.htm

Who develops ISO standards? (n.d.). Retrieved May 19, 2015, from http://www.iso.org/iso/home/standards_development/who-develops-iso-standards.htm

Who we are. (n.d.). Retrieved May 21, 2015, from https://www.cen.eu/about/Pages/default.aspx

Working Document - Draft Ecodesign Regulation - Review of Regulation 327/2011. (2015, March 31). European Commission.

Yin, R. K. (1991). *Case Study Design: Research and Methods* (third). London: SAGE Publications. Retrieved from http://faculty.washington.edu/swhiting/pols502/Yin.pdf

Appendices

Appendix I Additional information on the Maastricht Treaty

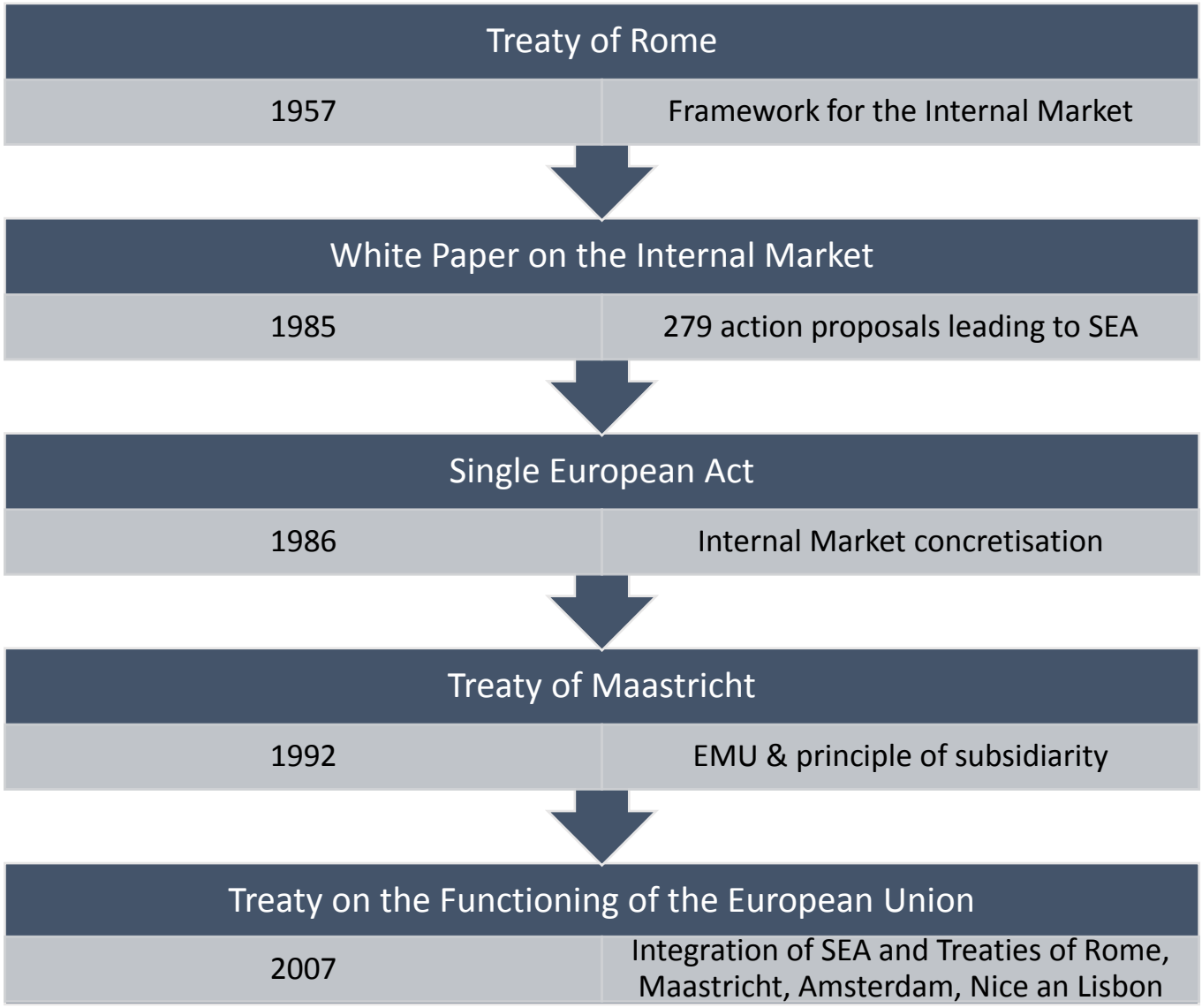
The Maastricht Treaty of 1992 outlines five main aims:

(1) The creation of a three-pillar Union[52], stimulating the evolution of European political integration;
(2) The establishment of the free movement of persons by integrating the concept of EU citizenship, granting citizens of all EU Member States "the right to live and vote in elections in any EU country" ("Timeline of EU integration," 2014);
(3) The stimulation of European democracy and citizen's support through dedicating more power to the European Parliamentarians;
(4) The establishment of an Economic and Monetary Union (EMU);
(5) Change of the name from the European Economic Community to European Community (EC), underlining the changed character of the Community; joint policies were no longer limited to economic affairs ("Treaty of Maastricht on European Union," 2010).

One should note here that the Maastricht Treaty was not an independent new treaty. Titles II, III and IV of this treaty are provisions amending the TEC, ECSC Treaty and the EURATOM Treaty respectively, whilst Titles I, V, VI and VII outline the common provisions, provisions on a common foreign and security policy, provisions on cooperation in the fields of justice and home affairs, and final provisions respectively ("Treaty on European Union, signed at Maastricht on 7 February 1992," 1992).

[52] 1) The European Communities; 2) the Common Foreign and Security Policy (CFSP); 3) the police and judicial cooperation in criminal matters through the Justice and Home Affairs Council (JHA) ("Treaty of Maastricht on European Union," 2010)

Appendix II Overview of the main legal acts and their consequences for the European Single Market



Appendix III (Residential) Ventilation units definition according to Commission Regulation 1253/2014 of 7 July 2014

For the purposes of this Regulation the following definitions shall apply:

(1) 'ventilation unit (VU)' means an electricity driven appliance equipped with at least one impeller, one motor and a casing and intended to replace utilised air by outdoor air in a building or a part of a building;
(2) 'residential ventilation unit' (RVU) means a ventilation unit where: (a) the maximum flow rate does not exceed 250 m3/h; (b) the maximum flow rate is between 250 and 1 000 m3/h, and the manufacturer declares its intended use as being exclusively for a residential ventilation application;
(3) 'non-residential ventilation unit' (NRVU) means a ventilation unit where the maximum flow rate of the ventilation unit exceeds 250 m3/h, and, where the maximum flow rate is between 250 and 1 000 m3/h, the manufacturer has not declared its intended use as being exclusively for a residential ventilation application;
(4) 'maximum flow rate' is the declared maximum air volume flow rate of a ventilation unit that can be achieved with integrated or separately co-supplied controls at standard air conditions (20 °C) and 101 325 Pa, where the unit is installed complete (e.g. including clean filters) and according to the manufacturer's instructions, for ducted RVUs the maximum flow is related to the air flow at 100 Pa of external static pressure difference, and for non-ducted RVUs to the air flow at the lowest achievable total pressure difference to be chosen from a set of values of 10 (minimum)-20- 50-100-150-200-250 Pa, whichever is equal or just below the measured pressure difference value;
(5) 'unidirectional ventilation unit' (UVU) means a ventilation unit producing an air flow in one direction only, either from indoors to outdoors (exhaust) or from outdoors to indoors (supply), where the mechanically produced air flow is balanced by natural air supply or exhaust;
(6) 'bidirectional ventilation unit' (BVU) means a ventilation unit which produces an air flow between indoors and outdoors and is equipped with both exhaust and supply fans;
(7) 'equivalent ventilation unit model' means a ventilation unit with the same technical characteristics according to the applicable product information requirements, but placed on the market as a different ventilation unit model by the same manufacturer, authorised representative or importer. For the purposes of Annexes II to IX, additional definitions are set out in Annex I.
Source: "Commission Regulation (EU) No 1253/2014," 2014, p.

Appendix IV Commission impact assessment appendix B: Product illustrations

Residential ventilation units (RVUs)

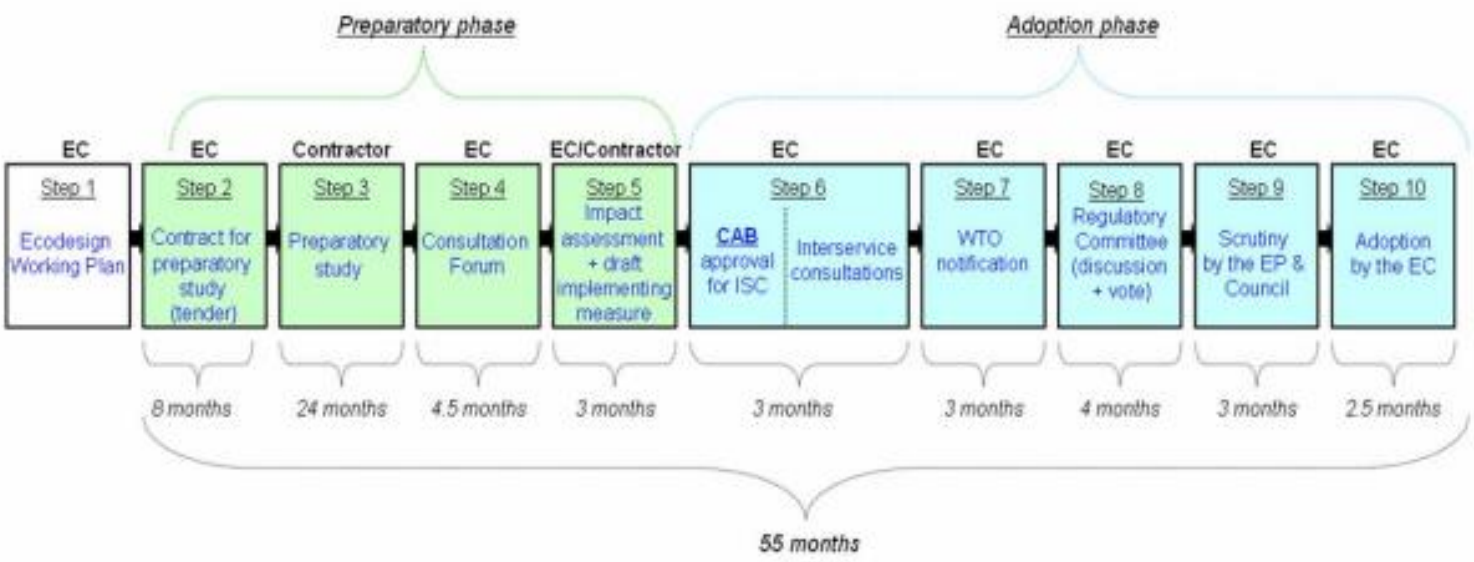
A/F. Boxed fans (exhaust) for central house ventilation (typical 250 m³/h @ 150 Pa).

B/C/D. Rooftop fans (exhaust) for central house, small office, school ventilation. B=centrifugal (radial outlet); C= centrifugal, diagonal outlet. D=mixed flow with vertical outlet.

E. Duct fan.

G. Small central HR ventilation unit (250-500 m³/h).

Appendix V Overview of the legislative process of Ecodesign Lots



Source: Siderius, 2012

Appendix VI Definition of a fan according to Regulation 327/2011

Art. 1 Subject matter and scope

1. This Regulation establishes ecodesign requirements for the placing on the market or putting into service of fans, including those integrated in other energy-related products as covered by Directive 2009/125/EC.

2. The Regulation shall not apply to fans integrated in:

(i) products with a sole electric motor of 3 kW or less where the fan is fixed on the same shaft used for driving the main functionality;

(ii) laundry and washer dryers ≤ 3 kW maximum electrical input power;

(iii) kitchen hoods < 280 W total maximum electrical input power attributable to the fan(s).

3. This Regulation shall not apply to fans which are:

(a) designed specifically to operate in potentially explosive atmospheres as defined in Directive 94/9/EC of the European Parliament and of the Council (1);

(b) designed for emergency use only, at short-time duty, with regard to fire safety requirements set out in Council Directive 89/106/EC (2);

(c) designed specifically to operate:

(i) (a) where operating temperatures of the gas being moved exceed 100 °C;

(b) where operating ambient temperature for the motor, if located outside the gas stream, driving the fan exceeds 65 °C;

(ii) where the annual average temperature of the gas being moved and/or the operating ambient temperature for the motor, if located outside the gas stream, are lower than – 40 °C;

(iii) with a supply voltage > 1 000 V AC or > 1 500 V DC;

(iv) in toxic, highly corrosive or flammable environments or in environments with abrasive substances;

(d) placed on the market before 1 January 2015 as replacement for identical fans integrated in products which were placed on the market before 1 January 2013; except that the packaging, the product information and the technical documentation must clearly indicate regarding (a), (b) and (c) that the fan shall only be used for the purpose for which it is designed and regarding (d) the product(s) for which it is intended.

Art. 2 Definitions

In addition to the definitions set out in Directive 2009/125/EC, the following definitions shall apply:

1. ‘Fan’ means a rotary bladed machine that is used to maintain a continuous flow of gas, typically air, passing through it and whose work per unit mass does not exceed 25 kJ/kg, and which:

— is designed for use with or equipped with an electrical motor with an electric input power between 125 W and 500 kW (≥ 125 W and ≤ 500 kW) to drive the impeller at its optimum energy efficiency point,

— is an axial fan, centrifugal fan, cross flow fan or mixed flow fan,

— may or may not be equipped with a motor when placed on the market or put into service;

2. ‘Impeller’ means the part of the fan that is imparting energy into the gas flow and is also known as the fan wheel;

3. ‘Axial fan’ means a fan that propels gas in the direction axial to the rotational axis of one or more impeller(s) with a swirling tangential motion created by the rotating impeller(s). The axial fan may or may not be equipped with a cylindrical housing, inlet or outlet guide vanes or an orifice panel or orifice ring;

4. ‘Inlet guide vanes’ are vanes positioned before the impeller to guide the gas stream towards the impeller and which may or may not be adjustable;

5. ‘Outlet guide vanes’ are vanes positioned after the impeller to guide the gas stream from the impeller and which may or may not be adjustable;

6. ‘Orifice panel’ means a panel with an opening in which the fan sits and which allows the fan to be fixed to other structures;

7. ‘Orifice ring’ means a ring with an opening in which the fan sits and which allows the fan to be fixed to other structures;

8. ‘Centrifugal fan’ means a fan in which the gas enters the impeller(s) in an essentially axial direction and leaves it in a direction perpendicular to that axis. The impeller may have one or two inlets and may or may not have a housing;

9. ‘Centrifugal radial bladed fan’ means a centrifugal fan where the outward direction of the blades of the impeller(s) at the periphery is radial relative to the axis of rotation;

10. ‘Centrifugal forward curved fan’ means a centrifugal fan where the outward direction of the blades of the impeller(s) at the periphery is forward relative to the direction of rotation;

11. ‘Centrifugal backward curved fan without housing’ means a centrifugal fan where the outward direction of the blades of the impeller(s) at the periphery is backward relative to the direction of rotation and which does not have a housing;

12. ‘Housing’ means a casing around the impeller which guides the gas stream towards, through and from the impeller;

13. ‘Centrifugal backward curved fan with housing’ means a centrifugal fan with an impeller where the outward direction of the blades at the periphery is backward relative to the direction of rotation and which has a housing;

14. ‘Cross flow fan’ means a fan in which the gas path through the impeller is in a direction essentially at right angles to its axis both entering and leaving the impeller at its periphery;

15. ‘Mixed flow fan’ means a fan in which the gas path through the impeller is intermediate between the gas path in fans of centrifugal and axial types;

16. ‘Short-time duty’ means working of a motor at a constant load, which is not long enough to reach temperature equilibrium;

17. ‘Ventilation fan’ means a fan that is not used in the following energy-related products:

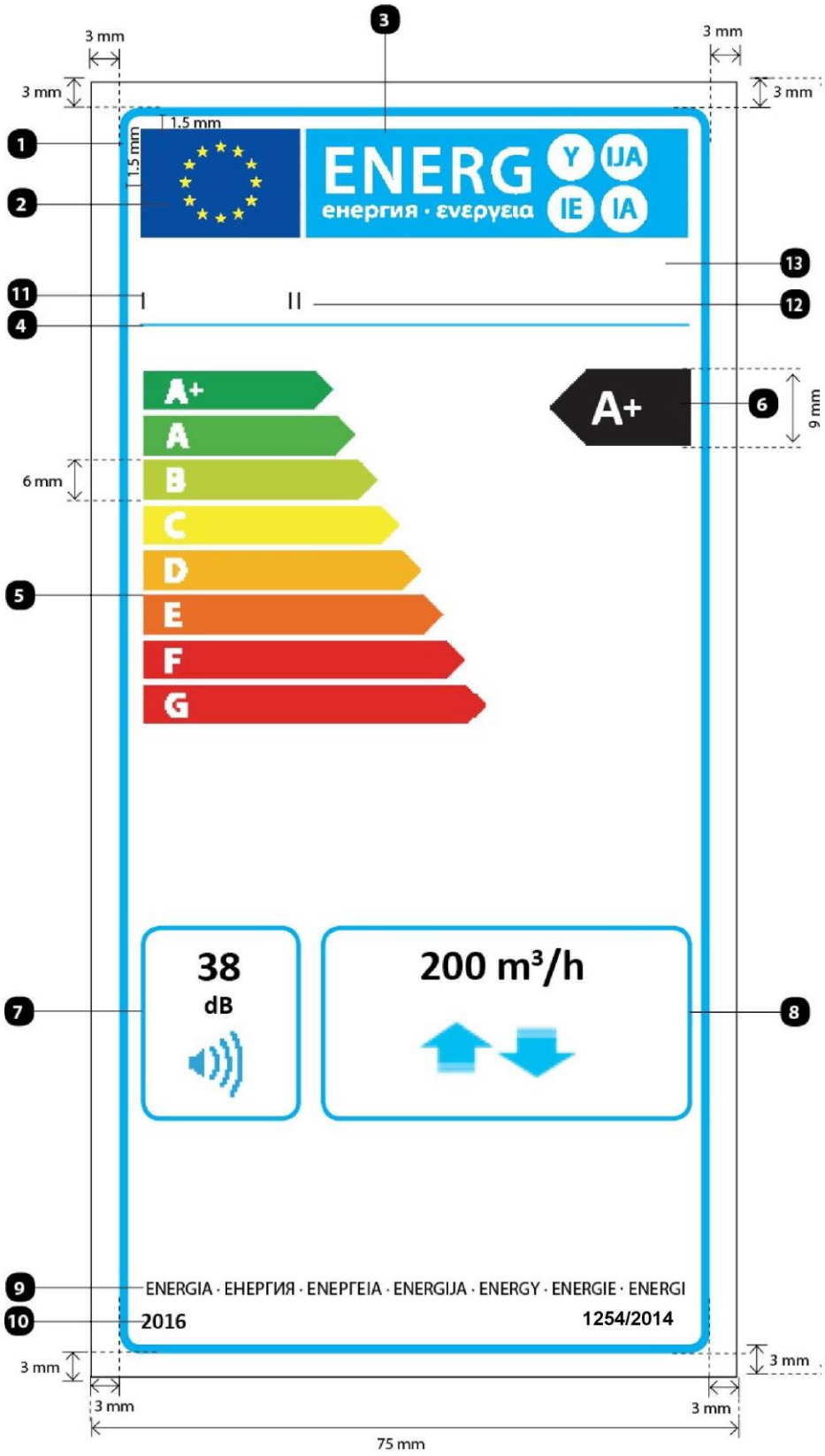
— laundry and washer dryers > 3 kW maximum electrical input power,

— indoor units of household air-conditioning products and indoor household air-conditioners, ≤ 12 kW maximum airco output power,

— information technology products;

18. The ‘specific ratio’ means the stagnation pressure measured at the fan outlet divided by the stagnation pressure at the fan inlet at the optimal energy efficiency point of the fan.

Appendix VII Template for an RVU label from Regulation 1254/2014



Source: Annex II of “Regulation 1254/2014 with regard to energy labelling of residential ventilation units,” 2014, p. 36

“The label shall fulfil all of the following requirements (numbers refer to the figure above):

1. EU label border stroke: 3,5 pt — colour: Cyan 100 % — round corners: 2,5 mm.
2. EU logo: Colours: X-80-00-00 and 00-00-X-00.
3. Energy logo: Colour: X-00-00-00.
   Pictogram as depicted: EU logo + energy logo: width: 62 mm, height: 12 mm.
4. Sub-logos border: 1 pt — colour: cyan 100 % — length: 62 mm.
5. A+–G scales:
   — Arrow: height: 6 mm, gap: 1 mm — colours:
   — Highest class: X-00-X-00,
   — Second class: 70-00-X-00,
   — Third class: 30-00-X-00,
   — Fourth class: 00-00-X-00,
   — Fifth class: 00-30-X-00,
   — Sixth class: 00-70-X-00,
   — Seventh class 00-X-X-00,
   — Last class: 00-X-X-00,
   — Text: Calibri bold 13 pt, capitals, white.
6. Specific energy consumption class
   — Arrow: width: 17 mm, height: 9 mm, 100 % black;
   — Text: Calibri bold 18,5 pt, capitals, white; ‘+’ symbols: Calibri bold 11 pt, white aligned on a single row.
7. Sound power level in dB:
   — Border: 1,5 pt — colour: cyan 100 % — round corners: 2,5 mm;
   — Value: Calibri bold 16 pt, 100 % black;
   — ‘dB’: Calibri regular 10 pt, 100 % black.
8. Maximum flow rate in m3/h:
   — Border: 1,5 pt — colour: cyan 100 % — round corners: 2,5 mm; —
   Value: Calibri bold 16 pt, 100 % black; —
   ‘m3/h’: Calibri bold 16 pt, 100 % black;
   — One or two arrows — each width: 10 mm, each height: 10 mm. — Colour: cyan 100 %.
9. Energy:
   — Text: Calibri regular 6 pt, capitals, black.
10. Reference period:
    — Text: Calibri bold 8 pt.
11. Supplier's name or trademark Supplier's model identifier
12. The suppliers' name or trade mark and model identifier shall fit in a space of 62 × 10 mm.”

(“Regulation 1254/2014 with regard to energy labelling of residential ventilation units,” 2014, pp. 37, 38)

Appendix VIII Specific energy consumption (SEC) classes of residential ventilation units calculated for average climate as of 1 January 2016

Classification from 1 January 2016

SEC class	SEC in kWh/a.m²
A+ (most efficient)	SEC < – 42
A	– 42 ≤ SEC < – 34
B	– 34 ≤ SEC < – 26
C	– 26 ≤ SEC < – 23
D	– 23 ≤ SEC < – 20
E	– 20 ≤ SEC < – 10
F	– 10 ≤ SEC < 0
G (least efficient)	0 ≤ SEC

Source: Annex II of “Regulation 1254/2014 with regard to energy labelling of residential ventilation units,” 2014, p. 33

Appendix IX Technical assistance study project plan - Ecodesign and Energy Labelling Regulations Ventilation Units

February 2015:	Project launch
June 2015:	Draft transitional method document (task 3)
	First stakeholder meeting
July 2015:	Draft report (tasks 1-3: definitions, standards, transitional methods)
October 2015:	Draft questions and answers document (task 5)
November 2015:	Second stakeholder meeting
November 2015:	Draft report (tasks 4-6: cooperation with CEN, Q&A, air leakage rates)
January 2016:	Final report

Sources: Van Eyken, 2015; “Project Plan,” n.d.

Appendix X Interview guidelines

To what extent have the objectives of the European Single Market been met, taking the example of the European residential ventilation industry?

Kirsten Vreede

Thank you very much for supporting my research by making time for an interview. You may find below the themes to be discussed. Please note that I will conduct a semi-structured interview, meaning we will not work with set questions, only according to themes – please feel free to come up with any related topics.

1. **General information**
   Information on company and own work experience
2. **Specific company information**
   Company size and export range
3. **Competition**
   Competition in different countries, domestic versus foreign exporters
4. **Legislative balance of national legislation**
   National legislation and standards
5. **Legislative balance of European legislation**
   Gaps in product legislation, double regulation
6. **Practical access**
   Administrative, tax and language barriers
7. **Protectionism**
   Extent protection of domestic markets, initiated by governments or manufacturers
8. **Certification**
   (National or European) Regulation and price of certification
9. **Public procurement**
   Prioritizing of quality or origin of the product
10. **Attitude towards EU integration**
    Extent of completion of the internal market, further integration versus less integration

Appendix XI Danish legislative framework for residential ventilation

Implementation of EPBD

Mr. Henrik Lind, Senior Advisor for the Systemair Group and Vice-President of Eurovent, explained that the Danish government has had a Green Profile for the last 10 to 15 years (Lind, personal interview, May 7, 2015, line 38, 39). Odyssee-Mure, a joint monitoring project providing a database on the energy-efficiency trends and measures of the Member States, outlined the Danish transposition of the EPBD resulting in the *Building Regulations 2010*. These regulations comprise the energy efficiency requirements for private and commercial new buildings. Next to these requirements, the Building Regulations include two "voluntary low energy classes": one of a 33% lover energy use than the regular standard, called *low energy class 2015*, and one of a 66% lower energy use than the regular standard, called *low energy class 2020*. A revised version of the regulations is to be expected this year (2015) ("Building Regulation," 2014, p. 1).

Energy Efficiency Action Plan report

As outlined in section 2.3.1.4 on the European Energy Efficiency Directive, Member States are ought to publish annual reports on their energy-efficiency policies and results. The Danish 2013 report on the *Cost-optimal levels of minimum energy performance requirements in the Danish Building Regulations* out all residential building requirements (then) in place and numbers on the different types of energy used within houses, future plans to improve these, and plans for ways to build and renovate buildings in such a way that they are both energy-efficient and cost-efficient (Aggerholm, 2013, p. 2).

The Danish standardisation body, Danish Standards Foundation, is a full member of ISO, meaning representatives of this body, meaning that the body representatives have voting rights within the policy meetings, and are allowed to "sell and adopt ISO International Standards nationally" ("ISO members," n.d.).

Appendix XII Spanish legislative framework for residential ventilation

Implementation of EPBD

Mr. Velazquez, Export Director at a large Danish ventilation manufacturer, explained that the current national regulation on residential ventilation is called *Código Técnico de la Edificación*, translated as *Technical Building Code* (TBC). This Building Code is the result of the Spanish transposition of the EPBD ("Technical Building Code," 2013) set by the Ministry of Development, which is responsible for "the competences on construction and civil works in Spain" (Velazquez, personal e-mail, 14 May, 2015). It can be seen as national framework outlining all building requirements that come from the national Building Act[53], working with "Performance-Based Codes or objectives" ("The Technical Building Code. Presentation," n.d.). The International Energy Agency explained that the current TBC out five main aims, namely to (1) limit the energy demand of heating and air-conditioning systems; (2) improve the efficiency of heating and air-conditioning systems; (3) increase the energy-efficiency of lighting systems; (4) stimulate the use of solar energy for the generation of hot water; and (5) stimulate the use of solar energy[54] to generate electricity ("Technical Building Code," 2013).

However, Velazquez stressed the fact that the TBC is currently not being supported by a third-party approval [testing] system (Velazquez, personal e-mail, 14 May, 2015).

Spanish architects furthermore explained that Spain's 17 autonomous regions (see the map on Spain on the following page) are all authorised to implement their own versions of the Technical Building Code, which makes them always having to compare the national to the applicable regional legislation and follow one of the two directions that are the most stringent ("Is it necessary a million pages to legislate in Spain?," 2015).

Energy Efficiency Action Plan report

As outlined in section 2.3.1.4 on the European Energy Efficiency Directive, Member States are ought to publish annual reports on their energy-efficiency policies and results. The Spanish government has not published such a document yet ("Buildings," 2015).

[53] In Spanish known as the *Ley de Ordenación de la Edificacion* or LOE
[54] In the document referred to as "photovoltaic contribution", a method to covert solar energy directly into electricity ("Technical Building Code," 2013)

Source: “A Quick Guide To Spain’s Autonomous Communities,” 2010

Energy Performance Certificate for Buildings

As of 14 April 2013, the Spanish government has introduced a general requirement on energy performance certification for buildings in their entirety. All new buildings or building units should be sold or rent with a certificate showing its energy performance level. The government has established guidelines for the calculation methods for this certification (“Energy Performance Certificate for Buildings,” 2014, p. 1)

http://www.measures-odyssee-mure.eu/public/mure_pdf/household/SPA41.PDF

Spain’s national standardisation body, AENOR (Asociación Española de Normalización y Certificación), is also a full member of ISO (“ISO members,” n.d.). Details on this membership can be found in Appendix XI.

Appendix XIII Transcript of interview with Mr. Henrik Lind

Background information

Mr. Henrik Lind is Senior Advisor for a multinational in ventilation products (further referred to as D1) with over 4,000 employees working in 56 operating companies and 19 factories, spread over 45 countries ("Annual Report 2013/2014," 2014) and an annual balance sheet of about 450 million euros ("Financial data," 2015). Amongst the products the D1 manufacturers are air curtains, air distribution products, air handling units, chillers, fans and heating products. The products sold and especially targeted to the residential market are for example cooker hoods, counter-flow units, filters and grilles ("Product categories," 2012). Before Mr. Lind became Senior Advisor for the entire company, he has been working for 15 years from the Danish department. In this role, his main function was to stimulate the product sale both within Denmark and throughout the rest of geographical Europe.

Transcript

Date: 7 May 2015
Location: Skype – interviewer from Brussels, Belgium, interviewee from Spain
Length: 00:40:38
Interviewee: Mr. Henrik Lind, Senior Advisor for a large ventilation products manufacturer
Interviewer: Ms. Kirsten Vreede, fourth-year student European Studies at The Hague University of Applied Sciences and Junior Communications Advisor at Eurovent
Transcriber: Ms. Kirsten Vreede

Interviewer: Yes, so, you have been working for D1 for 16 years, or something?
Interviewee: Yes, something like that, yes. D1 Denmark.
Interviewer: Yes. And you are retired now?
Interviewee: I am semi-retired, still working for the D1 Group, but I am out of daily business, so to say. I am what you call a Senior Advisor. Still working for the Group.
Interviewer: Okay. And before that, you have been working in the ventilation as well?
Interviewee: Sorry?
Interviewer: Before that, have you worked in the ventilation as well?
Interviewee: No, before that I worked ten years in the refrigeration business.
Interviewer: Okay, okay.
Interviewee: Which is not ventilation but it is close to [it].
Interviewer: And, so D1 Denmark also produces residential ventilation products, right?
Interviewee: No, but we sell them.
Interviewer: Okay, you sell them. Okay, and, to how many countries do you export?
Interviewee: Well, if you talk residential, we do not export, because we only import and sell in Denmark.

Interviewer: Okay.

Interviewee: But what we produce in Denmark is what you call for commercial use.

Interviewer: But you are experienced with export to other EU countries, right?

Interviewee: Yes. A lot. I have been doing that for sixteen years.

Interviewer: And to which countries mainly? If we speak within the EU?

Interviewee: Well, I would say all European countries but of course, Norway and Sweden, which are our neighbours, have taken a big part. But all European countries. Even Russia.

Interviewer: And do you think there is a difference, when exporting to different countries, when it comes to legislative barriers that you face?

Interviewee: Yes, it differs from country to country. But I would say generally, we will have to find some kind of adjusting to every country's, what you call it, local ways of doing things. And if that is not possible, we try to market on our advantages. You know, there is a slightly difference on how you look at ventilation in Scandinavia and in the rest of Europe. In Scandinavia, producers are, take very much care of recovery, energy consumption, and so on. Which in other countries they do not even think about.

Interviewer: Yes. Because I also heard that Denmark is one of the most stringent countries when it comes to product standards for energy-efficiency; most developed.

Interviewee: That is correct. We have a, a Danish not only the present, but, the governments we have had for the last ten, fifteen years, they have what we call a Green Profile. And they, I can tell that 20 percent of our energy consumption in Denmark comes from windmills, I mean that says something. So, we have the Ecodesign and the ErP in the Eurovent, but in Denmark we go further and put up higher demands. This is something the Danish government has decided.

Interviewer: Yes, because there is from…

Interviewee: And that means that our units are very good when it comes to energy consumption and things like that.

Interviewer: Okay. Because from the European Union, there are minimum standards, but countries can implement it as strict as they want, right?

Interviewee: Yes. Of course they do not do it as a barrier. I mean, everyone can export and sell air handling units in Denmark, as long as they just fulfil the Danish requirements. And some of them do and some of them do not. There are some countries that produce air handling units that would never be sellable in Denmark. But, I mean, everybody can do it, technically, so it is not, it is not a barrier. It is just a matter of whether you want to do it or not.

Interviewer: Because it is just as strict for the Danish manufacturers as for other manufacturers?

Interviewee: Yes.

Interviewer: Okay. And do you think that Danish manufacturers also influence the legislation in Denmark?

Interviewee: Of course. Yes, through Danish Ventilation, the association, we try to tell the government what to do from our point of view, where we fulfil requirements, we are only interested in, as many as possible, because we have learned how to do things a proper way. And the more tough the rules are, the easier it would be for us because we are adjusted now. Of course, we try to tell government: yes, keep on doing it, that is the way. The same you see in Sweden, for instance, that they, they really try to join the government in idea of green ventilation. And that is also for D1; one of D1's slogans is […]. Because we believe in, we believe in green ventilation.

Interviewer: So it is, could you say that for the Scandinavian manufacturers they do not have to modify their products, when exporting to other EU countries, but the other way around? Manufacturers would have to…

Interviewee: Not when we talk… when we talk about energy consumption, yes, but then, there are… if you take Southern Europe, eh, the climate is different, and that means the conditions are different. In Denmark and in Sweden, heating recovery is very very important, because we use a lot of energy for heating houses. In Spain, they do not use energy for heating houses, so recovery is not a big issue in Spain. Here, you talk about Eurovent, well you talk about cooling recovery instead of.. but, the use of recovery systems are not so efficient here in Southern Europe as in Northern Europe. And that is, due to, energy is so expensive in Scandinavia. And we… so, you could say that, yes, we are well prepared, but customs in some countries, they do not care what we are good at. I mean, it does not… it does not bring them anything. Maybe there are, there other things are important, and there are… We have to somehow find a way to adjust or we convince them that they should listen to us. But it is a difficult job.

Interviewer: So you also try to influence the legislation in Southern European countries?

Interviewee: Yes, indirectly, by, by putting focus on what we are good at and then hope that the business itself will adopt these things. That is, is discussion that has been going on for a long time, in Europe and also in Eurovent, where Europe is, is so to say split in the middle of Germany. From the middle of Germany and upwards, they have the Scandinavian philosophy and from the middle of Germany and south on they have the, what you call it, the more Mediterranean philosophy. And you cannot say which one is right and which one is wrong because some of it is depending on, eh, on temperature and conditions and the way you use the system, so…

Interviewer: Yes. But it might also be… culturally bound?

Interviewee: Yes, absolutely, it is… culture means a lot in this business. One strange

country is England, they have some special, who do you call it, things they used to do and, if we want to sell in England then somehow we have to adjust our units to the way the English do it. It is not a, it is not a barrier, because it is not technical. It's just not things we do, but if we want to sell there, we have to change our units, so fit in to the way the English do it.

Interviewer: Yes. So you think it will… it should continue to be that way? Or do you think it should be more… European?

Interviewee: No, I think and hope that somehow there will be a more common European attitude to how ventilation should work. I mean the ErP, the Ecodesign and the ErP regulations, directives, help us a lot. That is common European, and that goes for all countries. The best example is, within electrical goods, I mean it is now old that you cannot do use the old-fashioned parts anymore. In this way, European legislation is, is everyone is standardising. Not the way they are doing things the Scandinavian way, but we try to put as much influence on the decisions as we can. Of course, other countries do the same, and eh, somehow they always end up with a common solution that can be used.

Interviewer: Yes, yes. Because that is, if you are talking about EPBD Directive, and Ecodesign Directives, it is just an outlining of goals basically, of course, it is not a set of… rules and standards that need to be directly implemented by the… member states.

Interviewer: Do you think it would be better if there would be more regulations? And that the countries get less freedom?

Interviewee: There should be more directives; the directive has to be obeyed, and I think that the only way to find it, to solve the problems is to have directives, to – then, because then all countries within EU oblige to follow it. The problem is that some, some countries takes it serious and when there comes a new rule they follow it; other countries they say okay, we will look at it, mañana mañana.

Interviewer: So maybe, yes…

Interviewee: The Nordic countries, they have a, they have an ability to quickly adjust whereas the further south you come to Europe the more relaxed they look at the regulation and the directives. That is how it is.

Interviewer: So maybe the one solution would be also to have stricter infringement procedures, to control the implementation and, set fines if, yes…

Interviewee: Absolutely, this is a way many countries could save a lot of energy, eh, if they just put out some kind of control on the systems when they are, when they are up running, because they are not all that efficient. One thing is that you, on your paper write I have a unit here that is fantastic, the efficiency, but if nobody ever, if anybody ever checks it, I mean, you can write whatever you want in your papers. That is where Eurovent comes in because if you are Eurovent certified, then you have to have your unit tested and then the buyer

is sure that the efficiency that it achieves is real. Because otherwise we will lose our certificate. So in that aspect, Eurovent is very, very important. But then again, in many countries, Eurovent is, is regarded in other countries, they say okay, we heard about it but that would be mañana. It differs highly to country.

Interviewer: And I also heard that, for example in countries like Belgium and France, that they, or mainly France, that they purposely set the... let us say the product standards a bit differently than the certification standards, eh, so that products need to get a different certificate in that specific country.

Interviewee: Yes, that is… that is one of the things, that, as a European manufacturer, if you talk about barriers, it is that there are some local, eh, local regulations which we have to adjust to. I think one of the worst countries are Germany. They have a lot of, eh, other regulations which we have to adjust to. And they also have an internal German certification system, which is one of the reasons that a Eurovent certificate is not that well-known in Germany because they have an alternative certification system based on German standards. And that is not a trade barrier, because we as a manufacturer from outside, we are free to obtain that certificate also, but it costs a lot of money and time, so it is… it would be a good thing for the business if we could, could avoid these local rules, but then again, it's a kind of protection. So it is, there still is a long way to go before all, all the goods, they can flow completely free.

Interviewer: Yes. So do you think that the European Union should take Eurovent Certification as a standard?

Interviewee: Yes, in repeat, because, if the set local standards are not allowed to outrule the, what you call it common European standards, that would be a good thing, but in the ErP Directive, they have to be followed. But still, there is a lot of possibility to make local laws, and some countries do it. And that is, for us as exporters it is a little bit irritating.

Interviewer: But on the other hand, you say that it's in the Scandinavian countries the same, that it is very strict; do you have a different certification system as well?

Interviewee: There is not an alternative Scandinavian certification system, we all use Eurovent as certification in Scandinavia. But of course we, the Danish government has put up more strict rules on energy consumption. That is a difference. But that, if you are a foreigner exporting to Denmark, you do no have to take a new extra certificate, I mean that is the difference. I mean if we want to export to Germany, we have to take the German local certificate. But it is not that way for Denmark, you just have to be able to, to make unit with a good efficiency, that is it.

Interviewer: And how do the manufacturers prove that then? It gets tested in Denmark?

Interviewee: Sorry, I did not hear that?

Interviewer: I said, how do the manufacturers prove that they comply to a certain standard and energy-efficiency level?

Interviewee: Sorry, the voice, you just went wrong, can you repeat it, because I did not hear half of what you said.

Interviewer: I said how do the manufacturers from other countries prove that their products have a certain energy-efficiency level?

Interviewee: In Scandinavia?

Interviewer: Yes.

Interviewee: There is only one way, a Eurovent certificate.

Interviewer: No but you said there, besides that, you have special energy-efficiency standards

Interviewee: Yes but the efficiency, that you can see from the Eurovent certificate Programme. It is so broad that the requirements that we put up in Denmark, they are covered if you have a Eurovent certificate.

Interviewer: Okay. Okay, I see. And so for, D1 is quite a large company, let us say. So did they overcome, or how do you say that, did they still, you are still exporting to Germany and those other countries, paying the extra certificate?

Interviewee: Sorry?

Interviewer: Are you still exporting to other countries like Germany, paying for the extra Certificate?

Interviewee: Yes, yes, we are. But for us, it is not so, it is not impossible for us to sell in Germany, because… but of course, if we adjust us to more German habits, we could sell even more. But we are, as said, we are selling to all European countries.

Interviewer: Yes okay. And, but, for small and medium-sized companies, it might be more difficult?

Interviewee: Yes. Unfortunately, I would say that the regulations and the demands in the EU nowadays… not only about certification and ErP-rules, but all kind of documentation and requirements makes it more and more difficult for small, for a small company to fulfil requirements. It could take a nice thing as the Machine Directive, which is running, which is for all kind of machines, I mean the documentation for a small company, with maybe 25 persons, I mean European languages and make documentation, well, that is impossible. And that is, what I think is one of the things that are not so good in Europe, because, you are killing many small manufacturers, not only in our business but in all kind of business, because they have to meet all these European requirements, which, to some extent, is overkilling in my opinion.

Interviewer: So these, would you consider as administrative barriers?

Interviewee: Yes, and in the same, if you have a country like Denmark, the big manufacturers like us, we are Eurovent certified, but there are smaller Danish manufacturing companies who are not Eurovent certified, but being in that position, they can sell in Denmark, but it is more hard for them to export, the costs, you know, they do not have any documentation in other languages and so on. So it puts a little to

how much smaller companies can export because it is European bureaucracy. but not only on ventilation or certification, but generally, European bureaucracy is huge. So it is good for the big companies and it is not so good for the small ones.

Interviewer: Although they are promoting the other way around, saying that they want more Small and medium-sized companies?

Interviewee: Yes.

Interviewer: So, for, let us say fluent and smooth export throughout the EU, a company would require actually translators and a whole legal department, in order to do it properly?

Interviewee: Yes, because it can be a rule of law that if you buy any equipment, any kind of machinery, you have to have a user's manual in local language. It is by law in Europe. And if you are a small manufacturer in Denmark or in Holland or Belgium exporting to many countries, how can you afford to take on […], make all this translation and documentation and so on, it is very hard. But also many do not do it, they sell anyhow. But that is a bad side of EU.

Interviewer: Yes. So, if you would ask…

Interviewee: Sorry, that is a big truck passing by.

Interviewer: Yes, you are sitting beside the road or something?

Interviewee: Yes, I am sitting on the terrace.

Interviewer Great.

Interviewee: It is 25 degrees, so I prepared to sit outside.

Interviewer: Yes, I can imagine. What was I going to say? Yes, so actually, if I would ask you whether the European Single market already exists, you would say… not yet?

Interviewee: Yes, I would say yes, it does. But there are… it is not 100% perfect, all working, but it is working well.

Interviewer: So you could say that it is still in the developing phase? In the beginning? And we just need to initiate more directives?

Interviewee: No, I think it is developed, it is more a question about, we still have to work on getting rid of, shall we call it, the last trade barriers. It is very funny if you look into history, you cannot remember because you were not born yet, but I do, those days, countries like France were very hard to export to because they had a lot of laws, but I would say today, I consider France more open and they have been taking away many local French regulations, definitely for the European. I think it helps business also, who are most difficult, who are not trying to be Europeans, that is the Germans. In our business; that of course can differ from business to business. so I think there has been, the development is going the right way, but and then again, there will always be competition, and there will always be someone who tries to take advantage of any situation, so I do not think you will ever end up in a 100% free flow, because there will

always be someone who tries to do something, to get an advantage.

Interviewer: Yes. And also, every country will have a certain level of protectionism.

Interviewee: Yes. And then again, as in Denmark, you might have a government that does not makes barriers or protection, but they put up demands that are higher than in the rest of Europe. And that is, I think there will always be… so I think you could say that the system is working but there are minor things that you can still work on to improve.

Interviewer: Yes. Because if it would be regulated on a European level, all the standards and energy-efficiency levels, that would also mean that the market in Scandinavia would be more open; and the competition would grow, I guess?

Interviewee: Well, it is open I mean… many European manufacturers also try to export in Denmark but some of them have difficulties in meeting the Danish requirements and the rest, that is – as you talk about – is habits, because people, they buy things that they know… it is hard to get into a new market when you come as a foreigner. I am not talking about Denmark, I am talking about generally, it is difficult to pinch a new market when you come with a product, because people know their old products, they know how they work, and they… why should they buy new foreign products they never heard about? But that is mentality in people. I am the same; when I buy a car, I will only buy a car which I know is Well sold and running all over Europe. I would never buy a new car I never heard about.

Interviewer: Yes, that is true.

Interviewee: And that habit is something that many people have in Europe. So, penetrating a new market is, it takes a lot of marketing.

Interviewer: Yes. And how do you see that in the governments regarding public procurement?

Interviewee: I do not know how this is in other countries, but in Denmark, there definitely is no ruling out on the country. I can take C1, the second largest town, where D1 is lying. The community, they love to buy Swedish air handling units instead of those produced in the same town. Here, is does not have that we are in town. They buy a foreign product because they like them better than ours. So I think in Scandinavia, this does not exist. I think you have to go to… well I would not know where… officially it does not exist, but maybe some countries, they look more at the local manufacturers than us. But I do not see that as a problem inside EU, not at all. It is a problem when you export to Russia, mister Putin has just implemented a rule that all public buildings in Russia, when they install ventilation systems, components have to be Russian produced. But that is Russia and that is outside the EU. I have not seen that in Europe.

Interviewer: So in that sense, it is really open?

Interviewee: In my opinion, it is open, yes, I have never met any, how do you call it, doors being closed because of such rules. But then again, do not forget, we Danish, we

are, well to be honest, but also sometimes a little bit stupid. Because with an EU rule, we say yes, of course, we will do, yes sir. I think in other countries, they have a more relaxed attitude to that.

Interviewer: So a bit too obedient sometimes?

Interviewee: Yes, sometimes. But I cannot prove what I am saying, so… it is just my… when I talk to people here down in Southern Europe, they say, they take many rules more relaxed. It takes longer time before it is… rules are spread around and directives are implemented so it takes a longer time.

Interviewer: Yes. But that is not necessarily a bad thing, you would say?

Interviewee: No, I mean, you just have to be aware of when they say this is how this market works, and then you have to adjust your way of doing things, that these are the conditions in this market and then you just have to learn to operate under such conditions.

Interviewer: But so you did not necessarily work for the Danish department, but you worked for D1 in its entirety?

Interviewee: In the systems, yes, I was in the D1 Denmark, and my job was to make as much money as possible in D1 Denmark, period. That was my clear instruction, so… but now I work for the whole Group, but only as an advisor.

Interviewer: And then for E1 as Vice-President?

Interviewee: And then use quite a lot of team in Eurovent, because I think it is important that we work on getting E1 better known everywhere in Europe. We are strong countries, but we could be even stronger, and in some countries, E1 is not that well-regarded; there we have to work on getting E1 better known.

Interviewer: And also increase the knowledge and conscience in Eastern European countries?

Interviewee: Yes, absolutely, because they are… they still have a long way, but it is also hard for hem because it costs a lot to get a Eurovent certificate, and it is expensive for a small European manufacturer. That is how it is.

Interviewer: Yes, because per product, it is tens of thousands of euros sometimes, right?

Interviewee: Yes. And they also have to adjust themselves, they have to translate everything into other European languages. Western-Europe, we are used to use English, but I think the use of English is coming in Europe but it is still not as common as in Western Europe. And very often, if you buy machinery in the EU, and the operators for the daily use, the manuals have to be in local language, but many technical manuals, it is still okay that they are in English. And that means that Western-Europeans, we are used to read manuals in English.

Interviewer: Okay. So sometimes, an English manual suffices?

Interviewee: But if you buy… we have a lot of machinery in our factory. And when you have the manuals of the machinery, it has to be in local language, in Danish. But it is maybe ten percent of the documentation. The 90 percent of the documentation

is in English, because as soon as it takes what you call skilled people to do it, it is acceptable within the EU that it is in one of the main languages, which is often English, or German or French. But then again, you also know that in your country, people speak… most people speak English, German and French, and so for us it is not a problem.

Interviewer: No, that is true. But then, do you think Eurovent Certification should be less costly, in order to get it more widespread?

Interviewee: I would say that for the Eastern European manufacturers, it would be a good thing if it was cheaper, because they cannot afford it.

Interviewer: And then it would be maybe also more culturally integrated as a standard?

Interviewee: Yes. I just have to move now because I am running out of battery, I just go to wherever I get some power. Okay, that is all fine.

Interviewer: Okay, good. So as you said with ErP Directive, and now with ventilation units directives, regulations, already many products are more… well-regulated from a European level; do you think there is a clear gap in some product areas? If you speak of ventilation?

Interviewee: No, I think that now, some may be more than other, but I do not see any peek holes, where there are regulation for a product group. Of course, they will be updated all the time, but of course, it is many product groups so it takes time to update. Right now they are calling new regulation for residential air handling unit, yes, of course, then they are fully update, but maybe it takes a couple of years, to form new regulation for the commercial air handling units but that does not mean that it does not work. It needs to be updated all the time, it takes some time to update things. But I do not see any holes.

Interviewer: Okay. And regarding double regulation, do you think that is becoming more a problem?

Interviewee: Double regulation, what do you mean?

Interviewer: Let us say that a ventilation unit in its entirety is covered by one directive, but then with the Fan Regulation, the fan inside the unit needs to comply to other standards?

Interviewee: Yes, yes, I think that could become a problem in the future, because, things start to get more and more complicated, so… in Denmark, we have a funny thing, so we have what you call a need for recovery, but at the same time, the higher you make your recovery rate of the recovering heating, the bigger pressure rush you get in a unit, and with the pressure in the unit, then you have the fans running faster to produce enough air. And that goes against a lower energy consumption. So, yes, you have this situation that, if you want to optimize one area, then another area is suffering under it. These are things that happen, yes. And for sure, there will be more in the future, and some of the things will be maybe, if not silly, but some of it will be difficult because you have to…

Interviewer: Sorry, that is my housemate coming in. Yes? So that could become an issue?
Interviewee: Yes. Not a big one, but there will be situations where the rule go against each other, for sure.
Interviewer: So maybe that is something that the EU should create a regulation for, that…
Interviewee: I think this is one of the things where in the association, all the businesses that are united in Eurovent, and that is our job to try to explain to the Parliament that what is good and what is bad and how to avoid these double regulations. A lot of lobbying here.
Interviewer: Yes. And do you think it would be better to regulate the products in its entirety then, or the, let us say, the small products integrated? Or is that hard to say?
Interviewee: I would say, use common sense, but generally I think it would be the total final product and not the single component, but then again, I think it is best to use common sense to say: what makes more sense in the situation?
Interviewer: Yes. So maybe also more cooperation within the European institutions, to…
Interviewee: Yes. What I mentioned.
Interviewer: But then, if you look at its entirety, you are pro further integration for the Single market?
Interviewee: Yes, absolutely, because the way it works today, as said, works pretty well, and it could be working better, but I think this is the idea of the EU, that is that the goods can flow free, and that brings prosperity to all of us, so yes, absolutely.
Interviewer: Okay. Yes, I think that that is it from my side, I do not know if you have anything else to add?
Interviewee: No. I hope you can use this and then good luck with your bachelor.
Interviewer: Thank you. I will stop the recording.

Appendix XIV Transcript of interview with Mr. Alberto Velazquez

Background information

Mr. Alberto Velazquez is Export Director at S1, a multinational in ventilation products with 4700 employees active in more than 100 countries, and with an annual turnover over the year 2014 of 515 million euros (Velazquez, personal e-mail, May 11, 2015). The company has a wide product range, varying from systems for residential, commercial, public and industrial use. Within the residential area, the Group produces acoustic cabinet fans, bathroom extract fans, chimney heat recovery systems, comfort cooling fans, dehumidifiers, domestic heating range, hand and hair dryers, heat recovery units, humidifiers, in-line duct fans, kitchen cooker hoods, kitchen extract fans, roof-mounted fans, and whole house extract units ("Home - Product - Residential," n.d.). For 17 years, Mr. Velazquez has been active in the international export of the Group's products.

Transcript

Date: 11 May 2015
Location: Skype – interviewer from Belgium, interviewee from Spain
Length: 00:37:27
Interviewee: Mr. Alberto Velazquez, Export Director at S1
Interviewer: Ms. Kirsten Vreede, fourth-year student European Studies at The Hague University of Applied Sciences and Junior Communications Advisor at Eurovent
Transcriber: Ms. Kirsten Vreede

Interviewer: So I have seen that you have been working for […] for quite some time already, since 1988?

Interviewee: Sorry?

Interviewer: I have seen that you have been working for [...] for quite some time already?

Interviewee: Yes, for them, yes.

Interviewer: So, since 1988, or something?

Interviewee: 1988, yes, you have seen this correctly, yes.

Interviewer: So always in the ventilation industry?

Interviewee: Yes, always in the same company, in the export department, first as technical support, to say, and then with consultancy and sales, so yes, always in the section of export and sales.

Interviewer: Okay. And are you, your geographical area, is that Europe, or also…or a part of

Europe, or outside Europe?

Interviewee: Yes, part of Europe, and partly outside Europe. I mean the way we structure the sales in our department, because the company is Spanish, the group is Spanish, we divide the work in those countries where we have subunits, companies with our own group, in which case, my department is giving the service to these business units and then, as the business unit, we consider also what we consider export sales, which means sales to those countries where we do not have our own company. This is where I have the responsibility in sales. So I have responsibility on service, to extend our business units and sales on those countries where we do not have a business unit.

Interviewer: Okay. So then you sell to other distributors?

Interviewee: Yes.

Interviewer: Okay. And in Europe, which geographical area is that?

Interviewee: Well, basically Scandinavia, Eastern Europe, Turkey, Africa, Middle-East, and part of South-America. In Asia we have a group, and then Central and North America, we also have a lot of companies, that is and Western Europe.

Interviewer: Yes, okay, I see. So, do you notice any differences when exporting to different countries within the European Union when it comes to product requirements and legislation?

Interviewee: Yes, when I was going through your notes, I find that you are focussing your study on residential ventilation, right?

Interviewer: Residential ventilation, yes, that is correct.

Interviewee: In our company, our group is a little bit special, because we are with, we sell to many markets, we sell fans and ventilation systems for residential applications, for commercial non-residential applications, and also for industrial applications. If we concentrate on residential, the direct answer to your question is yes. It is remarkably difficult to sell in different countries in Europe, because of the

many different national regulations that apply to residential ventilation. This leads to a necessity in many cases, it happens with specific products, under specific certifications, approvals, that every time cost a lot of money and effort. I mean, you are sitting in Belgium, I guess?

Interviewer: Yes.

Interviewee: So, for instance around you, in Belgium it is not so difficult, neither in Holland, but if you want to go to Germany, you will have a Passive-House Certificate for your product. You have more chance to sell to a residential market and this is something that is costing a lot of money and a lot of time. Similar for Switzerland, same applies to France, in France you have the NF-requirements and specific regulation for ventilation for individual residentials. In Spain as well, England as well, so, this is something that practice is fracturing the European market. It is something that goes against the horizontal transparency and the free movement of products, because as I was mentioning, a product that is approved or certified in the Spanish or the French or the British or the German legislation, will not go directly in new other markets. Some of them have; if you have local certain approvals, you spend everything there or no commercial chances at all. This makes it kind of a middle-aged scenario. It is like Kindall, castles, and everyone is in his castle and defending his own small country. The European manufacturers, you know that we are together in one party as Eurovent, and then there is E2, do you know E2, the Ventilation Association?

Interviewer: E2, yes.

Interviewee: One of the E2 has as goal for the future, and we try to stress exactly working on this, working in a line-up little to little, to different requirements across Europe are unified, so that the product that is sold in France or in Germany can be applied in our markets. I am naming these countries as examples. But, that is a thing that I think is going to be very difficult, and it will not happen in the short term. So in my

opinion, the market will keep in this way fragmented with companies in the main markets, of course, companies that keep strong in those countries are weak or not present at all in the others. And if on top of this, you consider the new Commission Regulation that comes into force in January 2016, that, as you know, will graduate efficiency of the ventilation units, then… once they will introduce this labelling with the colours et cetera, it will be for manufacturers another twist of the way, if you like, it will still be complicated. You will have a product that on the one hand meets the mandatory cross-border European reglementation, this is by law, and then, still, if you want to be selling in some countries, you will have to work through meeting the local requirements and the local reglementation.

Interviewer: So even though it is more regulated on a European level, there will still remain different requirements in different countries?

Interviewee: Yes. Because the European reglementation, when thinking about the energy-efficiency of a unit, but we can have the same efficiency for a high airflow or for a low airflow. So let us say you can be green, or high marketed in energy-efficiency, coming into force, let us say for a bigger unit or for a smaller unit, that you still need a bigger unit for Spain and a smaller unit for France, for instance, to make it simple. And you have two different products, both products have to be improved by European mandatory regulations, and you have to keep focus right on.

Interviewer: Okay. And you mentioned especially Germany as a first country, so do you have some examples of the standards or the certificates in that country?

Interviewee: Well, the most famous is the Passive-House certification. The Passive-House Certification has a big impact. In fact, it has become quite famous in and out of Germany, and we selling in our markets, from time to time we hear that it is marketed or sometimes Italy mentions the Passive-House Certificate. They consider that the product is Passive-House certified as a higher level. Although in

Germany, the Passive-House is, as the name expresses, not really a certification for a product but a complete house. This is… you can have the rating for the complete house and then you have to produce a very tight underloop of the building and then, the more tight the house is, the more you need ventilation. Otherwise there would be not enough air inside. So this is why… and then of course, the requirements of the energy-efficiency of the rating system is also high. But, even inside Germany, it is not obtained...the product cannot be sold in different lands, because this is sometimes… the certificate is obtained in Munich, then you have the one in Berlin, and they have their own issue. In France as well, you need to have the NF-Certification, a third-party approval. In NF, [….]
and in terms of ventilation also, you have to rate the performance of ventilation units. In England, the most famous scheme of rating, again very different, that is called SAQ-listing, is a public policy, I do not know if you already have the info, it is a public web it is official, but you should go to the laboratory, or one of the laboratories approved, and then they test the efficiency of your product, and then depending on the result, it is put on a public list. And the more efficient, the higher you are on the list. And there is no, there is no preference. So you do that and your product is not enough efficient, you appear on the second page of this list, and on the image of the product itself, it will look not very well. Ja?

Interviewer: Yes.

Interviewee: In Denmark, there is also a similar thing to, for fans, but there are quite different rules as well. And so forth, you know. You know, I guess, there are no mandatory regulations, but then nobody will accept some of the certificates in the main companies.

Interviewer: And when we talk about national certification and testing, do you have a… an indication of how costly that is for the companies? Is that like… I hear that sometimes it is 20,000 euros for one product or something?

Interviewee: To certify one product, in one domestic public unit in Germany, Passive-House – I mean to obtain Passive-House, you have to go through one of the approved labs, probably is costing you more, like 30,000 euros, a lot of technical work because they ask for a lot of technical documentation, so normally, it is near to one year. This is an indication. Imagine if you want to sell in France, in Germany for instance, France is not so expensive but also maybe in the range of 30,000, and also very demanding in technical support. Actually, if you end up having people, then you can increase.

Interviewer: Yes. So, [...] is of course a very large company, but if we would be talking about small and medium-sized companies, then it does not seem very feasible to start exporting to these countries.

Interviewee: Yes, a barrier. But if you, if you look at what I said before, if you have, as said this middle-aged market, on every market you will find SME companies, but that can afford after years and being in one market to continue alive and of course they become gradually strong, but by no means can easily expand in other markets. At this moment, I would say that not a single company in Europe is as strong in several markets. They may be strong in one or two, and marginal in the others. But the Germans are very strong in Germany, and almost not present in other markets, the French – the same, the Dutch – the Dutch companies, they have some good share in England, because in England, the European policy in general is only a matter of ranking them with this SAQ-listing, and if the labs approve them you have the rank. But, basically, we are looking out on SME market or at least some of them, except, I would say, there are two groups. One is called SME1 and the other one is SME2, but in fact, they are big, because they have a presence in several markets, but in the area of those markets, they have to comply with a lot of rules. It is like an accumulation of SMEs.

Interviewer: Yes, I see. And then, do you also think that the national governments, if they are

initiating contracting for new buildings, that they mainly choose the domestic manufacturers? Or is that already quite dispersed?

Interviewee: Well, about residential, normally the public governments, when they are promoting buildings, basically it is public buildings; public offices, bodies for schools or hospitals; it is another domain. But still, I would say that they… I do not think that they push for local. Another thing is, that, in fact, the German Lander of Bavaria is going to make a hospital in Munich. I am sure that the politicians – I will not go into detail – but in the end, they choose an engineer or an architect that will be familiar with German products, more familiar than someone from outside. I guess this is probably happening in practice. But, from that point of view – from that perspective, I would say that in commercial ventilation it is, but in ventilation of public big buildings, where regulations are not applying, things are more open. Because for these rules, choosing the cheaper product normally counts heavier than this. Not so much where this is coming from.

Interviewer: Okay. And with this, let us say you describe some protectionism, by all these national requirements and certification programmes, do you think that that mainly comes from the national governments or do you think it is pushed through by the big companies in that country?

Interviewee: Well, definitely not the companies. I do not think it is a matter of governments, I mean ventilation is, compared to the industry in general, a very small industry. So I do not think it is matter of companies and governments. I think it is a more of a *de facto* situation, if you understand me, that little to little, the small and medium companies, over the years, have been accomplishing but some have faced and difficulties by some local governments, local authorities, then, some laboratories and testing houses are becoming bigger, and in this moment, I think, a significant driver are the interests of these testing houses, who make a business, make a living out of this. I mean, in E2's terms, we have tried to put together the testing houses

that in fact are the driving forces in these regulations. And of course, they do not have any interest at all in losing their business. At least, we understand this, we would make a list for them to recognize each other's testing – well, most if this testing – and, although we keep trying, I think it is going to get hard, but, as E2 for instance, in that point, I will try to send you some documentations, as a reference, and as European manufacturers as a whole, our position is okay, we understand that you have a business, and that you have the goal in the market to show the integrity of the products. But on the other hand, the industry can rather honestly tell you: this is not going to be an open market if we continue like this, so please, you should recognize the testing made by other countries, and appoint official bodies. This, so that the manufacturers do not have to start by the book page one, you know? For the costs and all this. But I think, honestly speaking, it is difficult. But we are on that stage at the moment.

Interviewer: Yes. And, of course there are more and more directives and regulations specified for certain product groups…

Interviewee: Yes, it is adding more goals, yes… It is normal, you know, because of the Ecodesign Directive and all the ErP-related reglementations, ventilation is… I do not know if the most, but one of the most important electricity consumers in buildings, so it is normal that the European Union develops standards to improve the efficiency. But, it adds up on this scenario of complication.

Interviewer: Yes. Because the directives of course leave a lot of room for national bodies to transpose it in different ways, and then we are often talking about minimum requirements of course. I heard from some people that, let us say the Northern European countries are mostly stricter in their legislation than the Southern European countries. Do you think that is true?

Interviewee: Not in this way. I mean, what I do accept is that most of the ventilation developments are always coming from the northern countries. Why? It is very

normal, because they have to live in closed houses. And in the south, I am living here in C2, in most of the – my main ventilation means is the window. I have wonderful weather, you know, today, we have here maybe 25 degrees, if I could - they do not have windows in my office, but if we did – that would be better. But this is not possible in Sweden or Norway. They have closed buildings, so they have the need to ventilate. And they have been on this for many years, and most of the ventilation development, the […] et cetera, is developed in the Northern countries and then applied in the southern countries. But for instance, in the main topic we discuss – residential ventilation, Spain will have mandatory rules, developing the directive, since four, five years ago. So now, any new construction and a new residential construction have to meet new mechanical ventilation requirements. But, as another example, when this regulation came into force, we were hoping, as a manufacturer, that Spain would come up with similar legislation as France that is well-advanced and those countries, but no, they decided to change the airflow in the regulation, so, we need to have a curve for Spain and a different one for France. Different capacities. That means now, in January next year, we need to ensure that the Spanish model meets the ErP, and the French model meets the ErP, so it is two times. Okay?

Interviewer: Yes.

Interviewee: So this is why we always have to work in parallel. And this is not good. But, yes, I do not think it is straight. As a general statement, I would say that in general in residential ventilation the problem is a lack of market surveillance with regards to the ErP directive and the Ecodesign requirements. In that sense, the third-party approvals are good. Because Ecodesign labelling, for instance, for residential, is something that I can do, I have to do by myself as manufacturer. So I can put a wonderful label, put them as AAA, or AA+++, but, nobody checks! Nothing. If this product is third-party approved, at least once per year, I have to mandatorily go

through an audit, and they would detect if I am lying, you know.

Interviewer: Yes.

Interviewee: So it is not bad to have third-party, the problem is that in every big country you have a different requirement so different parties.

Interviewer: Yes. And you have to pay for all this annual testing as well, I think?

Interviewee: For maintaining, yes. And also you have the problem that these residential products normally also go through same electrics-safety third-party approval, because this is opposed to domestic applications and as manufacturers you don't want to run into an increase. So you have to keep electrical safety performance approvals, so it is quite a lot of fun.

Interviewer: Yes. But, so, do you really produce different products for different countries? Or the same product but with minor changes?

Interviewee: Basically, it depends. For the French market, for instance, where we are quite strong, we produce specific products, and the products we use for France cannot be sold outside. Then, we have other products, that with small changes, can be sold for instance in England, Holland and Spain. But basically, the product for Spain is different, meets a different software, different capacities, is not totally different at itself, but is a different touch. And of course, different approvals, and different everything.

Interviewer: And S1 products are also Eurovent certified, right?

Interviewee: No, we do not have any Eurovent certified, no. No Eurovent is, as far as I know, more for commercial ventilation and refrigeration, and at the moment, we do not have any Eurovent approval in these ranges.

Interviewer: Okay. So it is really the national certificates that you obtain for your products?

Interviewee: Yes, that is correct.

Interviewer: And do you think it would be better to have one European system and certification system and not directives and directions for the products, but really product

standards on a European level?

Interviewee: That would be our dream come true. But not only for S1, I think for most of the big manufacturers. Again, probably, all of the smaller manufacturers, that are only producing in one market, for them, it could be a threat. Because the access to the markets would be easier for companies from outside. But it goes to the fact, do we want a Single European Market or not?

Interviewer: Yes, because if there is, for example, one Danish company very big in Denmark, and then suddenly manufacturers from all other countries come in, they have higher competition?

Interviewee: Of course. At the moment, we are doing some things similar but it is not the priority for the moment, but they have their own approvals, but if you do not have them, it is almost impossible to sell. If it is not a huge market, then, for a company like us, we can consider, well, let us focus on the bigger markets or the places where we have bigger opportunities. So, it will be for us a second priority. If our product could be sold by the way in Denmark, of course it would be time to sell it. Also for the small companies, they would also have a chance to open the markets. Because in this world, for ventilation, it is more, let us say medium-sized is not that bad, not about figure itself, it can be a specialized company and of a very good profile.

Interviewer: And regarding administrative barriers, I understood also that the tax system is different in every country, and all the manuals need to be translated in different languages? Is that also a problem you are facing? Or do you think that because you are a big company, it is not really a problem?

Interviewee: I missed the point, I did not hear well, can you repeat please?

Interviewer: I am sorry. In terms of administrative barriers, I understood that the tax system is also very different in every country and it involves a lot of administration?

Interviewee: No, not effective, we do not have official barriers in our products in different countries. the tax is not different per country, but we find technical barriers, as

discussed before, but we do not have any problems to go through customs, or… no, not at all.

Interviewer: No, I understand, but in that country, to pay tax over… the taxes that you pay over the selling of the product, and all the documentation that you need to fill in, et cetera et cetera, that is what I meant.

Interviewee: That is something that is done by… it will have some subsidiary, they do, but if not, our department in the country, they solve this. In any case, that would be the same by them, for the company they market, so they do not make a difference to products from outside or not.

Interviewer: Yes, that is true, yes. But going back to European standardisation, centralization of standards, are you pro completing the internal market? Do you think that is the only way or do you think it is better to go back to how it was before?

Interviewee: Well, definitely, as an internationalized company, we would prefer to work towards a unified market, so that the market becomes wider, the companies can sell in more markets in Europe so that the companies are bigger, and that makes all European companies stronger to be stronger outside, because Europe, you know that, is not so big all around the world at this moment. Especially in our market, for us, ventilation, it is important to mark that the European main players are also important outside of Europe. I mean, a big part of the ventilation market out of Europe, in Africa, Middle-East, parts of Asia and in America, are also, the European manufacturers also have an important part. So, but anyway, always, the stronger you are in your home market, the stronger you are outside. Okay? So, if our home makes us even stronger, I am sure we can be then stronger outside. To name an example, I am sure that if Mercedes or BMW would not be able to sell cars in Germany, they will not have ground, they will not have achieved the status to be strong in another state. And on a much, much smaller scale, this is the same for fans and ventilations systems. You need big players to also play big around the world.

Interviewer: But for [...], that is not really…

Interviewee: This is our goal, yes.

Interviewer: Okay. Well I think we have covered most of the issues. Do you have anything else you want to… you would like to add?

Interviewee: No, I think this was it. Of course, I will send you all the E2 documents about this matter, the unification of reglementations et cetera, for you have as a reference, and of course if anytime you want to contact me again, by phone or by mail, feel free. I am also involved in E2, as a matter of fact, I am a member of the Steering Committee of E2, I am quite involved in the Brussels issues as well, in the ventilation market, so if I can be of any help, you are very welcome.

Interviewer: Okay. That is very kind of you, thank you very much. Yes, I think that was it otherwise, so I will stop the recording.

Appendix XV Transcript of interview with Mr. Juan Lopez

Background information

Mr. Juan Lopez has since three years been Chief Executive Officer (CEO) of a Spanish manufacturer of industrial and tertiary air-conditioning systems, further referred to as S2. With almost 250 employees and an annual turnover over 2014 of 30 million euros (Lopez, personal e-mail, May 18, 2015), the company is categorised as medium-sized. Mr. Lopez has been CEO of S2 for three years.

Transcript

Date: 12 May 2015

Location: Skype – interviewer from Belgium, interviewee from Spain

Length: 00:31:43

Interviewee: Mr. Juan Lopez, Chief Executive Officer at a medium-sized Spanish manufacturer of industrial and tertiary air-conditioning systems

Interviewer: Ms. Kirsten Vreede, fourth-year student European Studies at The Hague University of Applied Sciences and Junior Communications Advisor at Eurovent

Transcriber: Ms. Kirsten Vreede

Interviewer: Yes, so you have been working for S2 now, and before that, have you also worked in the ventilation industry?

Interviewee: No, I come from a different industry.

Interviewer: Okay. So this is now for… three years?

Interviewee: Three years now.

Interviewer: And so S2 is basically in industrial ventilation, right?

Interviewee: Industrial and tertiary. It is not really ventilation, it is air-conditioning.

Interviewer: Okay. And I have seen that it is quite dispersed over Europe; but would you consider it a large company or more a small…

Interviewee: No, it is a small company. Let us see, until July of last year, it was 85% Spanish market sales, and maybe about 15% export. But last year, with the acquisition of F1 in France, as a group our mix changed completely, and it is more or less a third in Iberia, a third in France, and a third in other countries.

Interviewer: Okay, I see.

Interviewee: Between the two companies together.

Interviewer: Yes, I understand. And so you are the CEO of the Spanish department? Or the whole, the entire group?

Interviewee: Yes, of the group.

Interviewer: Okay. And are you also involved with the export on a daily basis?

Interviewee: Yes, quite a bit.

Interviewer: And, then, so you said a third to other countries, is that all in… a bit Southern, Western Europe or also in other parts of Europe?

Interviewee: There is also Northern Africa, and Middle-East and so forth, but I would say that the large majority is in Eastern Europe, Central Europe and a little bit in Southern Europe.

Interviewer: Okay. So very diverse.

Interviewee: Yes.

Interviewer: And, so the countries that you choose to export to, is this also based on the national situation regarding legislation and product standards and certification systems?

Interviewee: Not really, it is really a very opportunistic decision, based on where we find the right partner to help us, where we have opportunities, where we have a history, and obviously the political and economic situation of the country has a lot to do with the opportunities.

Interviewer: Yes, that is true.

Interviewee: That is basically it. Certification and all of that is something that we have to do, and we do it as we need it.

Interviewer: Yes, okay. Because I heard from other people that sometimes it can be some sort of a burden as certification in different countries is a different system, and it is also very costly to acquire these certificates.

Interviewee: It is, it is.

Interviewer: So do you think it would be more of a problem then for smaller companies than large companies?

Interviewee: Absolutely, you know in the end, to give you an example which you are familiar with, which is Eurovent; Eurovent, if you certify a range or a category, it costs the same whether you are a very small company or you are a very large company. So obviously, for a small company like us, it is a big burden, I mean it is a significant line in our budgets. And then you have the large multinationals and for them, it is just something very small.

Interviewer: Yes, exactly.

Interviewee: So it is a big burden.

Interviewer: So how do you see the difference between different European countries?

Interviewee: In what sense?

Interviewer: In the sense that, do you think it is, some countries are stricter or have more national systems and standards than others?

Interviewee: Absolutely, I think that there is a general European guideline that, as far as I know, all countries follow, more or less, and… but then, each country has its own specific demands. Perfect example is France, which is much more demanding than Spain, for example. So, that is also a problem, but in the end we want the equipment and the things we manufacture to be at the top

standard so for us, it is just something we have to deal with. We realize that, with time, and we invest a lot of, a significant part of our budget in R&D and developing our ranges, to stay up to date as much as we can.

Interviewer: Yes. And do you also need to adapt your products to the different markets?

Interviewee: To an extent, we do. It is kind of… it is a little bit messy sometimes. Because we have… you know, we try, from an industrial point of view, we try and standardize as much as we can. But then you face different markets and you have for example France, which is very demanding, and at the end of the day, to meet standards, it just makes the product more costly. Because you have to have more efficient… whatever, compressors, components, design, et cetera. And so you go to these markets where you need, let us say a very efficient high-standard product, and you have other markets that are very much price-driven, where if you have these high-standard products, you cannot sell anything. So it is kind of a battle, a daily battle, what should we do with our product development?

Interviewer: Yes. So do you really have to have different factories producing different products?

Interviewee: No, we do not have different factories; we have different factories, but they produce different ranges. And we cannot afford to really have the same range in two versions, let us say the low-cost and the high-cost.

Interviewer: Yes, exactly.

Interviewee: So we try and find the best possible balance so that we can try and attack both markets. What ends up happening is that we do not get as much sales in low-cost countries, and probably in the end, we do not get as much sales as possible in the high-cost countries either. We are kind of in the middle. But we have, you know, we spend a lot of our time and our research on trying to come up with cost-efficient solutions to high standards that are demanded in the high- standard countries, so… at some point, we hope to give the high standards at a low cost. That is definitely the goal.

Interviewer: Yes. And, well, more and more legislation is also coming from a European level of course, now sometimes only with the minimum requirements causing these different product standards, but do you also find a gap in legislation from certain product types or components?

Interviewee: I am not sure exactly what you mean by the question, but we are always the sense that it is something that you write down, then you have to develop the products to meet that, and we spend a lot of time and energy doing that, but by the time we are catching up, we are already facing the next evolution, so it is… it is hard to say whether we have gaps or not, we are always trying to play catch-up, you know.

Interviewer: Yes, I understand. No what I meant is that there are for example a certain

product type, which is not yet regulated on a European level in your industry. That is what I meant.

Guilllermo: To us, I mean the products that we sell mostly, are quite regulated, so I would not say that that is an issue for us.

Interviewer: Okay. And these national standards and the certification systems, many people call it a way of protectionism, protecting the domestic market, do you think that it mainly comes from the national governments, or more from lobbying from the companies within those countries?

Interviewee: I am not sure if it is lobbying by the companies. I doubt that it comes from the government, because, to be very honest, the ones in the government that I know are not so well-informed of the technical side of any of this. Governments and politicians, they sometimes are not so knowledgeable. So they are usually supported significantly by the associations. And the associations may or may not have some interest in the certification, and at the end, the associations also want to have a role, and so it is important for them to keep any certifications or any role they have, as it gives them power, so… I would say that the differentiation comes more from the local associations trying to keep a place in the system.

Interviewer: Yes. Okay. And, well you said, S2 is not one of the large multinationals; are you also facing difficulties when it comes to administrative and language barriers in other countries? So for all the documentation and tax documentation?

Interviewee: Yes. Absolutely, that is part of our… the more countries we go to, the more we have to spend on translations, and… and it is not just simple translations, you need translations that is done by people who understand technical language, so it is sometimes a problem, and it is one of our biggest headaches.

Interviewer: So do you have a special department for that as well?

Interviewee: Yes, we have some people doing it, limited to some languages, then we have to go out and get help outside. Usually we do get support from our partners that we find in different countries, but, you know, we cannot really control the quality of what is done there, or what they do for us, so…

Interviewer: And how is this for the tax systems? Do you think… yes, how do you see that, do you think there are still big differences in different countries? Not, of course, tax barriers, but…

Interviewee: The EU has not really a lot of tax barriers, it is not really an issue.

Interviewer: No, but I mean more how it is arranged on a national level, and how do you have to fill in all the forms, and whether it is understandable for you.

Interviewee: No, I think, maybe it is because I have experience in international business, but I think the European system is relatively simple, it is a little bit

bureaucratic, but it is not so bad.

Interviewer: Okay, that is good. How do you feel that it is regulated in Spain compared to Northern European countries, when you look at product requirements?

Interviewee: I think it really depends on the end customer. The regulation is demanded more or less by the end customer or the installer or the installation firm or whoever is doing it. Some are more demanding and some are less. At the end, as long as the products are certified by the local authorities, most people are fine, but some are more demanding, and I guess… the example is, we have customers that ask for Eurovent certification, we have other that do not. Or, in France, we have customers that demand local certification, others that demand Eurovent certification, others that do not demand anything. So I really depends in the end on the end customer.

Interviewer: Okay, so not really per country, necessarily?

Interviewee: In the country, in theory, you are supposed to meet all the standards, but as far as I know I do not think, in Spain I do not think anybody really checks. Of course, in any case, most of the companies are, at least the serious ones, are Eurovent certified, so there is some certification process. Most have ISO or some kind of other certification, which is not directly related to the product, but at least… in theory, if I am Eurovent certified, ISO 9000 says that I do it the same all the time and in theory I am certified, but there is no auditing or anything like that. So let us put it that way.

Interviewer: Okay. And do you think that there is a cultural difference? If you go to other parts of Europe, that it is more strict?

Interviewee: No, I do not think so, I think at the end, it is kind of the same.

Interviewer: And do you think that for the future,… do you see more integration as the future? Or less integration, if you take for example certification? Do you think it would be better to state for example Eurovent certification as a general standard?

Interviewee: To me, the more standardisation of everything there is, is better. Because at the end, you do things one time, and it is a one-time cost, not only money-wise, but also effort-wise, you know, every time you do a certification, it takes hours and hours of preparation, and paperwork, and bureaucracy… and obviously, there is a financial cost to it.. So, the more standardisation, the better. So… and it could be Eurovent, it could be anybody else, it does not matter, it is just one certification role, it would be… and one standard, would be ideal.

Interviewer: Yes. So then, the protectionist system would be changed, of course?

Interviewee: Yes.

Interviewer: The markets would be more open, and the competition would change as well.

Interviewee: Yes, that is true. At the end, there is not that much difference in the certifications, it is just a question of having them. But it would make it much easier, it would make it… I mean, then the barriers would be the individual company's ability to speak the language, and to get the documentation and the right culture accurate and do, you know, do it in the colour that people want in that country. But that is, it is a commercial decision and not a certification problem.

Interviewer: Yes. So where do you see the competition now coming from? If you export to other countries, is it always the domestic companies? Or does that vary?

Interviewee: Obviously some international players that are everywhere, the typical big ones, and then each country has local competition. And it depends… you know, we make different ranges of products, and some products, we have a lot of local competition. Since you are focussed more on ventilation, that is probably where you see the most local competition; air handling and that kind of business. in Air-conditioning, you have some local competition but maybe not as much as you have in ventilation and air handling.

Interviewer: And that is because it is mostly larger companies, you mean?

Interviewee: Well, no, it is probably because the technology is not so easy to produce locally, and… in that sense. So, then, the competition is always the big ones - or sometimes the local players.

Interviewer: Yes, okay. And then, this is something that you are probably dealing with a lot: public procurement, so the contracts from the governmental institutions. Now, there have been some initiatives since the 90's to encourage the member states to focus more on opening up the tenders, sorry the contracts, and to look more at the quality than at the origin of the product. Do you feel that the governments are open to this? That you could basically, that you could get contracts also in other countries?

Interviewee: To be honest, we do not deal directly with the governments. S2 and F1 both, we usually sell to contractors or engineering firms, or construction companies and so forth. So the contracts are usually done by those companies. And, as far as I know, because we have been in a lot of these projects, you know, I do not think there is any limitation to on who can… what equipment they can put in or not. My understanding is that each contractor has his project, his engineering and his recommendations, - that is adjusting of equipment. And then, when the project is closed, that is what goes into the project, and I have not come across anywhere where they say oh no, we only want German equipment or French equipment or only… Spanish equipment. So I do not think it is really an issue, I think it is quite open. As long as the quality and the characteristics of what they want are met… I guess you are asking from a protectionism point of view, I have not

come across that.

Interviewer: Yes, that is what I meant, yes.

Interviewee: And also, I have not come across it officially; I do not know if under the table or, you know, it is a secret. Or when the decision is made, oh look, we have similar options, one is French, one is German, I go for German, I do not know if that happens or not. But we feel that we competed fairly in most of the projects that we have been in. Always through our contractors, so it is…

Interviewer: Not directly, yes. And then one last thing, that I am coming across, that seems to become more an issue, is double regulation. So the European Union tries to cover more and more products, and product components, and what manufacturers are facing nowadays, is that, well in another case a ventilation unit of course, but in this case air-conditioning, in their entirety are regulated, but also all the different components. So then they have to comply to different energy-efficiency levels and so on. Are you also facing that already?

Interviewee: Yes, we face it, and it is part of our development. Every year, we have to, you know, there is a new regulation for ventilation, so we have to either get different fans or whatever from our supplier, or change supplier. And that means usually redesigning our equipment as well. So it is a bit of a problem, and it is also a significant part of our expenses in product development. Every next two or three years we have to start changing components and so on, so it is a problem, because changing a component is usually not just changing a component, it means different efficiency curves, different performance, you have to kind of change… either change the design or change the documentation because the output changes. So at the end, you have a different product.

Interviewer: So would you prefer more that the legislation would be only for the entire end product? Or do you think it is good that all the different components are being regulated?

Interviewee: It is not so easy, because, I mean from my point of view, it would be perfect if it was just the end product. But I also understand that it is not so easy, because what for me is a component, perhaps for others is an end product.

Interviewer: Yes, that is true, yes.

Interviewee: So take the typical example of a fan. A fan for me is a little piece of metal that goes in a big machine. But in many cases, it is the end product, it is actually blowing air into something. So it is not so easy and I understand that. I do not know what the solution is, to be honest.

Interviewer: No, yes, that is what I am trying to figure out a bit, of course, because there is no legislation yet against double regulation, and the question is of course, yes,

what is an end product, and when do you start then by regulating, where do you end…

Interviewee: Exactly. It is all end product. But I understand that a lot of my components, that are not end products for me, for others it is end products, so… it is not so simple.

Interviewer: Okay. So, if you look at the European Single Market in its entirety, well you already said about certification that it would be better and easier if everything would come from the European level, but if you look at it in general, do you think… yes, what do you think that should be the future? Are you pro more integration? Or do you think it was better the way before?

Interviewee: From an economic and industrial point of view, the more integration, the more standardisation, the better. Is it going to happen? I do not know, because culture and politics and all these other things going… I live in C3, I am not from C3, and Catalonia tries to be independent, so… you tell me what that does to the EU. It does not make any sense from my point of view, but… but there is always going to be cultural differences, political differences, struggles for power, and this and that, so… I do not know, I think it is going to be difficult to make it more and more… And also, the European Union, it is also very difficult to implement. Because you try and put the same rules in a very industrial country like Germany, as in a tourism and agricultural country without any industry like Greece. And obviously, they cannot have the same rules and regulations. Because it is a different industry. And how do you regulate the type of equipment that goes in very cold weather compared to the equipment that goes in very hot weather? It should also have different standards because it has a different purpose. So it is, you know, I think it is very hard to unify. Obviously, for a manufacturer, the more unification the better.

Interviewer: Yes. But, as you said with the climate differences, do you think it is actually possible then to centralise everything?

Interviewee: I do not know. Probably not. Probably not, because if you have a standard that works in the north, it might not work in the south. It might make the equipment not functional. Or vice versa, so… you know, even further, you go into the desert or into the Middle-East, and you have to have tropicalized units, and those units would be completely overstake in the north, so… And in the end, you have to have regulation that somehow has some common sense in it.

Interviewer: Yes. And also, like you said, there is not that much auditing yet… Well, I think that that is maybe more a common problem in the EU. Of course, with auditing and checking everything, the same with the situation with Greece now of course, that they did not really check their financial situation. Do you

think that it would be a solution to integrate a more stringent auditing system? Do you think it would be doable, let us say, feasible?

Interviewee: I think, if you are able to go to one single certification process, then it might be easier to implement. It is impossible to implement when you have different… who is going to come and audit me? Is it ISO, is it Eurovent, is it the French authority, I sell to Russia, is it the Russians? I mean, who is going to come and audit me? But if you have one centralised, then you can organise it, you know. The system can say the we audit you X times a year, or we are going to ask you to send equipment so many times a year, or… it could be done, I guess.

Interviewer: And then also with one centralised testing system, laboratory?

Interviewee: Yes. One centralised system, I would say, not centralised laboratory.

Interviewer: No, that might not be very practical.

Interviewee: I mean, you would have other issues with who gets the laboratory, you know.

Interviewer: Yes, that is true.

Interviewee: But if you have one centralised system, then even if you implement it regionally, but it is the same system, then it is all okay.

Interviewer: But do you think that these laboratories that you said, what kind of influence do they have then?

Interviewee: No, it is not the influence of the laboratories, I am just thinking of the battle that there would be if there was one centralised laboratory for all of Europe, to have, if you have a laboratory, you want to have that contract. So I just think it would be a big corruption nest. And also, it is also unfair, because the local players would have less transportation, you know, so it has to somehow be implemented more regionally. I think the important thing is that there is one system and one testing procedure and one standard for everybody. It has to be practical.

Interviewer: So for example one certification body, but taking into account some different standards for different climates et cetera?

Interviewee: It has to have logic, yes. It has to have logic. It is not only the climate, it is the end use, you know, also. Imagine if you are building cars and you had one standard. Well, it is not the same to build a race car as it is to build a van for a family. Probably the standards should be somewhat different also. And it is kind of that. That is why it has to have some common sense.

Interviewer: Yes. But…

Interviewee: Perhaps, and I am just thinking out loud, you know, perhaps the regulation should be more focussed on the end use than on the type of equipment. Am I selling to a big shopping mall? Or am I selling to a private home? Or am I selling to a private industry? You know, it is not… also not the same.

Interviewer: Yes, that is true, yes. But this is… yes, so not necessarily only looking at the

size or the starting product but more the end use?

Interviewee: The use, exactly.

Interviewer: That is a good one, yes. Okay, well I do not really have any more questions from my side, I do not know if you have anything else to add?

Interviewee: No, not really.

Interviewer: I was curious… because we were talking about different end use, do you think there is already enough differentiation in the legislation regarding residential and non-residential use?

Interviewee: They try to do some differentiation, but in the end, it is down to size. It is down to the size of the machine, it is not really based on use. Because a typical small machine, that is used in a home, could be used in other applications, so it is really based at the end use. Size, they try to do it to make it residential versus non, but it is really size only.

Interviewer: So that is how the legislation is at the moment, you mean?

Interviewee: Yes.

Interviewer: Okay. Well, I will stop the recording then.

Appendix XVI Transcript of interview with Mr. Hjalmar Nielsen

Background information

Mr. Hjalmar Nielsen (pseudonym) is Project Manager Development of System Solutions at a Danish medium-to-large manufacturer of both residential and non-residential ventilation products, further referred to as D2. The company's annual turnover over 2014 was about 65 million Euros[55], the number of employees is currently 320 (Nielsen, personal e-mail, May 19, 2015), and its main export area is in Northern and Western European countries. In his function, Mr. Nielsen has for almost 30 years been responsible for the development of ventilation systems specifically designed for specific markets or purposes.

Transcript

Date: 19 May 2015

Location: Skype – interviewer from Delft, the Netherlands, interviewee from Denmark

Length: 00:49:39, transcribed up to 42:39

Interviewee: Mr. Hjalmar Nielsen, Project Manager Development of System Solutions at a medium-to-large-sized Danish manufacturer of ventilation products

Interviewer: Ms. Kirsten Vreede, fourth-year student European Studies at The Hague University of Applied Sciences and Junior Communications Advisor at Eurovent

Transcriber: Ms. Kirsten Vreede

Interviewer: Yes, so firstly I had some general questions… it said on your business card Project Manager and then… is it Development of Technology?

Interviewee: Yes, you could say… Development of System Solutions for the customers.

Interviewer: Development of System Solutions, okay.

Interviewee: Yes, you could call it so, yes.

Interviewer: So you develop new ventilation systems?

Interviewee: Yes, exactly. I try to put on our main components into systems and showing the customers how they can use our products for different solutions. And the solution, that could be a school, that could be a dwelling, that could be an office, and so on.

Interviewer: Okay. And also for residential ventilation?

Interviewee: Absolutely, that is one of the main targets for us, yes.

Interviewer: Okay. And for how long have you been working in the ventilation?

Interviewee: Since '86.

Interviewer: Wow, that is quite some time.

[55] Calculating from DDK to EUR with the exchange rate of 19 May 2015

Interviewee: Yes, that is right.
Interviewer: And always for D2?
Interviewee: Yes, that is also right.
Interviewer: Very good, very loyal employee. And then, D2, could you tell me more about the size, because I could not find it immediately online… like the number of employees?
Interviewee: Yes, I cannot remember for sure but I think we are something to three, four hundred.
Interviewer: Okay, between three and four hundred. Yes, that is just because I have to decide on the… define the size of the company.
Interviewee: Yes, yes. And, I can tell a little bit more about the company. I think four years ago, we were a family-owned company until four, five years ago. And then, the company was in total sold to the fund F1, who owns W1, for instance.
Interviewer: Sorry, who owned? Oh, W1, aha.
Interviewee: Yes, the window manufacturer, yes. And this fund then, after two years, sold 60% of the shares to a capital fund. I am not quite sure if it is Danish, I think it is, it is called F2.
Interviewer: Yes, I have seen that, yes.
Interviewee: Yes. So now, we are 60% owned by this and they make all the decisions in the company. And the family is completely out, they just own the buildings and we rent the buildings, today. And, I think also about four, five years ago, we bought a Norwegian company making very big, large air handling units. And we still own this company, and I think there are about sixty, seventy employees in total in Norway. But it is a part of the three, four hundred. And we just manufacture anything at these two plants. In Denmark and in Norway.
Interviewer: Okay. So D2 does not operate independently anymore, then? It is just a brand name?
Interviewee: I am not quite sure I understand your question.
Interviewer: Well, you said, because 60% was sold to F2, and they make all the… big decisions…
Interviewee: Yes, that is correct, yes.
Interviewer: So, that is then part of a larger company?
Interviewee: Yes, you could say so, but it is only a fund that just deals with money.
Interviewer: Okay, I see, I see. So you still operate as D2?
Interviewee: Exactly. And the company in Norway, we have changed their name, or are on the way to change the name, so there is only D2 left. And we bought a part of the former big Danish company in C4; all what they made were air handling units for ground, not ships, only for ground, we bought that part of

the company and have integrated it into D2 as well. So today, we… basically, when we started the company, we just made units up to 5000 cubic meters an hour, but today, we can make up to 50,000 cubic meters an hour.

Interviewer: That is quite some difference.

Interviewee: Yes, it was a big difference for us.

Interviewer: And then, the annual turnover also rose, I guess?

Interviewee: Yes, the turnover, yes, that is correct, I can find the right figures for you, but I think it is around 500 million Danish Kroner today.

Interviewer: Okay.

Interviewee: What is that, 80, 90 million Euros, or something like that.

Interviewer: Okay. Yes, I would not know from the top of my head. Okay, and then, so to which countries do you mainly export?

Interviewee: No, not mainly. I think the turnover in Denmark is about… some place between 30 and 40% of the turnover, and the rest is export.

Interviewer: Yes, no but I mean, to which countries do you mainly export?

Interviewee: Ah, okay. Yes, we have some daughter companies, in C5 in Norway, as I mentioned this company, and in Sweden, and then Germany. And then in C6 in Denmark, you could say, so that is our main areas. And we do not call that export. But, in principle, that is of course also export. And then, we export to, yes, a lot of countries; Russia, has risen up, Finland is a small country for us, Poland is very small at the moment; United Kingdom, we had tried several times, but it has… not been a success, you could say. And then, we export to… Holland has been a big market for us, years ago, we have exported to Holland in, I would say, the last twenty years at least; and then Belgium and a little bit in France… Switzerland, Austria, is, in our point of view, is a part of Germany. But we also export to these countries… I think, now we have covered 95% of our market or something like that.

Interviewer: Okay. So all within Europe?

Interviewee: Yes, very, very seldom we sell anywhere else. Earlier, before we were sold, we also made chimney fans. But the holding would not like to buy that, so the former family owns these chimney fans, still. And they are exported to another lot of countries, for instance United States of America. But it is… sometimes, we are selling them what we call a box fan, which they use in United States for exhaust from, what you call it, dryers, multi-dryers, no… tumblers.

Interviewer: Yes, yes. And you said that you see Germany, Switzerland and Austria all as Germany. Why is that?

Interviewee: No, not much in East-Germany. Yes, of course East-Germany, yes, of course.

Interviewer: No, that you see the three countries, Switzerland, Austria and Germany, all as Germany together?

Interviewee: In our company, yes, it is working in that way, yes.
Interviewer: So does it have to do with the market or with the legal system?
Interviewee: I am not quite sure I understand what you are trying to ask me.
Interviewer: Do you consider it one market because of how the country works, the countries work, or is it more because of the market position?
Interviewee: No, it is because of language. It is easier for our German company to… you could say to adapt, they have often the same questions, they speak almost the same language, and therefore we decided some years ago that they should be a part of our German daughter company. So, the Swiss staffs are educated in Germany and are working in exactly the same way as… the sales guys in Germany.
Interviewer: Okay, I see. You said that UK proved difficult to export to. Is that because of the legislative system there or is it more just the market and market penetration?
Interviewee: I am not quite sure, but my personal opinion is that very often, United Kingdom is… you could say, if they renovate something, it is terrible old building they got, and often, it is not worth it to put in ventilation. But that is my personal opinion. If they are building new, I believe they have to put in ventilation, of course. And we have had, we have tried for many, many years, we have had a daughter company there, and… but now, we have just agents over there, but still, it is not going very well.
Interviewer: Okay. And, when you are exporting to other EU-countries, where do you see the biggest competition coming from? Is that from the domestic manufacturers or from multinationals?
Interviewee: I would say, almost everybody is multinational now today, and… of course, there is… the very largest amount of competitors, that is Germany.
Interviewer: Also outside Germany?
Interviewee: No, not everywhere. You could say, a lot of competition is also coming from Sweden. I believe also that in Scandinavia, we have learned almost everything about ventilation from the Swedish. They were the head of delegation for many years, making good ventilation. So there are some, what could we say, three, four big multinational companies in Sweden making ventilation systems.
Interviewer: Okay. And when you are exporting to other countries, are you facing difficulties with different legislation in different countries, concerning product standards and requirements?
Interviewee: I have been thinking about that. I am not quite sure. I do not think that… the big problem is not the legislation. If there is a big problem, and I would sometimes think there is, it is more like habit, or more like “we are used to do so”. So for instance, just as an example so you understand what I mean: in

Germany, often when you rent a flat dwelling, there is no kitchen inside it. So when you rent a flat, you need to buy your own kitchen cooker hoods and put it in. And therefore also, of course, you are coming with your own cooker hood. But in Denmark, or you could say in the rest of Scandinavia it is very normal when you rent a flat, there is a kitchen inside, and there is of course also a cooker hood. So, in Scandinavia, a cooker hood is normally part of the ventilation system in a multi-stores house. But then in Germany, we cannot use the same kind of system, because the cooker hood is private-owned often. So that is a big difference in behaviour, you could say, or yes, behaviour; how you are normally used to do it. And another thing, which I think is probably also a big… you could say problem; it is, if you have convinced the customers in the country that you have… for instance, an air handling unit needs to be RLT-certified, or needs a TÜV-certificate, it is not legislation, and it is not a demand. But if the customer asks for it, you need to have it.

Interviewer: Yes, that is true, yes.

Interviewee: And that is also behaviour, or whatever you call it correct.

Interviewer: Yes, more culturally-bound, you would say?

Interviewee: Yes, yes. So, I think that is the main problem, according to your job. That is Germany, and RLT, and TÜV. I think.

Interviewer: And then, you say the customers are convinced that they would… need products with a certain certificate, or that complies to certain standards; does this influence come more from the private-owned companies or merely from the government?

Interviewee: I am not sure I can tell; I think that, of course, it is coming from private companies. But you could also say that TÜV has been displayed in Germany for many, many years, making tests on everything, and also making tests on the cars, every year or every two years. So they are part of the culture, you could say, and to make sure, as a private customer, make sure that what you are buying is okay, you will say it should have a TÜV-label. So you could also say, today TÜV is so big, they market, they are branding themselves.

Interviewer: Yes. And that is mainly in Germany? Or also in other countries?

Interviewee: In my point of view, it is mainly in Germany. But do you know the RLT-certificate in Germany?

Interviewer: Well, I have heard of it, but I have not really gone into it, honestly.

Interviewee: Okay, I think you need to do it a little bit. Because that is the… that is the parallel to Eurovent.

Interviewer: And that is RLT, right?

Interviewee: RLT Haumlufttechnische Geräte. And today, we have also that certificate, to make sure that we can sell in Germany.

Interviewer: So that is really a national certification system?

Interviewee: That is only national, Germany, yes.
Interviewer: So this is also not of any use when you export to other countries?
Interviewee: No, they do not know it. No, in other countries, we just use the Eurovent Certification.
Interviewer: Okay, and that suffices, normally?
Interviewee: I did not understand all the words you were saying?
Interviewer: I am sorry, that suffices, that is enough to penetrate the market, let us say?
Interviewee: Yes, yes. If you need something, it is enough. But sometimes, customers do not understand the value of Eurovent, and then you have to try to explain to them that they are… it is their personal security for… my data, or something like that.
Interviewer: Yes, because from Germany, I heard of the Passive-House Certificate, but that is then… something different, I guess?
Interviewee: Yes, you could say, but it is only on very small units, so… yes, you could say until now, it is only for small units, or… for one-family houses. But you are correct, it is working up, or it is more and more used, the idea at least about Passive-House, but I think the building regulations in… perhaps more Scandinavian countries, or at least in Denmark, is in 2020, we have… the building regulation is… parallel to Passive-House. So we do not talk a lot about Passive-House in Denmark.
Interviewer: Okay, I see. So it is more… all integrated in one regulation?
Interviewee: Yes, something like that, you could say, yes.
Interviewer: Okay. And…
Interviewee: I have forgotten one other German certificate. That is hygienic tests. I cannot remember when, but five, seven years ago or something like that, there was a lot of discussion about hygienics and how to clean the units and make sure the condensing water was running away from the tray, et cetera et cetera, and an institute in Berlin… I think it was ILH or something like that… There was a professor, and he sold the idea very good – in Germany at least – and therefore, we needed to make a lot of tests on our units. We bought a lot of tests at this institute in Berlin, according to VDI6022, and… I would say, today it is in a more normal situation, because nowadays, we just have an internal checklist making sure there are no sharp edges in the unit – that is a good idea – and something about the condensing tray; the water needs to run out instead of staying inside the units – also a good idea – and then, there is something a little bit about material and corrosion, and then, there are some tests on all gaskets.
Interviewer: I am sorry, gas…?
Interviewee: Gaskets, the material between doors, you know, to make sure it is air-tight.
Interviewer: Ah, yes.

Interviewee: And these tests, we still are making at the laboratory today. Every time we use a new material as casket in the unit, we are sending it for tests to make sure that it cannot absorb water. Because if it can absorb water, it… there could come some mould and more growth and so on it, and that is very bad for an air handling unit. So that is another German idea, you could say.

Interviewer: Yes. And then this testing, that is being done by a third party?

Interviewee: That was also a third party, yes, that was the institute in Berlin.

Interviewer: No, but you said nowadays, you always have a checklist, and you test your materials?

Interviewee: We have a checklist when we develop something new, and we still send all the materials to test, yes.

Interviewer: And that is in Germany or that is just in, in Denmark?

Interviewee: That is in Germany, at the same institute, yes.

Interviewer: Oh, okay, they are still the same.

Interviewee: Yes. I think it is a university called ILH.

Interviewer: Okay, so we are talking a lot about… about a lot of specified regulation on the national level, but of course there are minimum requirements for the products from a European level; do you feel that all products and components have already been legislated? Or do you see any gaps in legislation?

Interviewee: I think it is okay, we have two very important standards for big air handling units; I think it is 13053 and 1886. These two standards are developed by the manufacturers in Europe and they are used as basic test criteria according to Eurovent Certification, and we are using something, for instance like temperature efficiency is very important according to the national legislation. And SFP-value we call it, Specific Fan Power, is also very important. But there are some differences in developing the formula in Europe. We are still very different. Especially Germany is different; at least different according to Scandinavia. Because in Scandinavia, we agree about these, this way to calculate or pronounce things, but in Germany, they often have another view on that. And therefore, it has been a problem to develop the formulas to calculate the energy use in air handling units, for instance.

Interviewer: So it is not even the, let us say, the requirement itself, but it is already the formula to calculate it, that provides problems, or difficulties?

Interviewee: Yes, basically it is of course because we do not… we do not have the same idea about result. That is basically the difference. We have a very simple formula, because we think that, it is a little bit difficult to explain, but in Germany, the thing… if they are making an air handling unit which can produce a lot of pressure, that should be okay, they think, and if the customer needs to use it, he has to develop the ducting system according to what is left for pressure laws and the ducting system. A German manufacturer, he would

like to also pronounce a unit making very big pressure as a very good unit. We think a unit making big pressure is a very big unit, because it… you do not need all that pressure. You just need to make another kind of ducting system. So therefore, we are not… you could say, we do not agree about the result. And the German manufacturers would like that to be developed into the formula. And therefore, we… there have been a lot of troubles developing the calculation formula. I hope I have understood it correctly and I hope you understand a little bit of what I am saying?

Interviewer: Yes, yes. But then the… do you think the requirements in different Scandinavian countries are harmonized, let us say?

Interviewee: You could say in a way, because twenty, thirty years ago, there was what we call a Nordic Committee, where the legislators had a meeting and helped each other to make good building regulations. So, the building regulation in Norway, Sweden and Denmark are very much alike. And I think that is why we often can agree. So you could say, in principle, we had the internal market in Scandinavia long before Europe. And therefore, we have had some kind of, what could you say, the legislation in different countries were changed into more homogeneous kind of legislation, so I think, perhaps 60 or 70% of the building regulations are more or less the same in these three countries. Or at least the way to think is the same.

Interviewer: Yes. Same… direction?

Interviewee: Yes. And how is that compared to the other countries you export to? Like France and Belgium?

Interviewee: I do not know if I can answer that, because my knowledge on export to Belgium, for instance, and France, are very little. But from earlier, yes, in other branches, there often were problems with France. They are… I am not quite sure what the difference is, but they are thinking in another way. So…

Interviewer: In general, you mean?

Interviewee: Yes, and in a soft way I am trying to say that they are protecting their market.

Interviewer: Yes, that I heard before, yes.

Interviewee: Holland, I think Holland is… it is not a good export market for us today, but it has been, and I think Holland and Denmark are very much alike. We are very different, you could say, and talking different languages, but still, we understand very good each other, and at least the company that we have cooperated with were very good. And we often needed the same kind of product, the same kind of systems, and so… I think Holland, I never felt some kind of protectionism there, at least. And in other countries… sometimes Switzerland could be different. They have some… they have had at least some special demands on saying maximal air speed flual unit ,or something like that. In my opinion, it is a stupid idea, because it is better to put a demand

on the motor, or the electrical use, or something like that. But just to say a demand on air speed flual unit, that is a stupid idea in my opinion. So, that is what I remember from Switzerland, at least.

Interviewer: Okay. And then in Denmark, you do not have a separate certification system, right? It is all according to Eurovent Certification?

Interviewee: Yes, we are going very much in direction of European standards, you could say. And every time it is possible, we are using European standards, and we make, you could say, in the legislation, in the building regulations, we put in demands according to European standards, if possible. But fire legislation is, that is perhaps a big problem, in all countries, I would say. It is very national; the way to protect your building and ventilation system according to fire. So, it is very difficult to read how to make a good system according to the national legislation in the different countries. Very difficult. I believe that is my biggest problem today.

Interviewer: Okay, so that is to… let us say meet the safety requirements according to the national legislation?

Interviewee: Yes, but often, I think it is not written. It is more like a national… no, not national, a local fire inspector, he could have special demands, and I cannot read anywhere what the demands are in the different areas, and they could be different. So I think that is the biggest problem today; how to make sure, how can I make a system solution and be sure that it is according to the national fire legislation? That is a problem.

Interviewer: So in what part of the process then do you discover that it does not comply to the local requirements? Did you experience that, let us say, that you already installed it, and then a fire inspector comes and checks it and says, I am sorry, this unit is not good?

Interviewee: Yes, not exactly this unit, then we are talking more about the system. So, no, I think the unit is okay. If we make the unit according to European standards, they will not comply on the unit itself, but how the unit should react in a fire situation. And how the demands are for the supply and exhaust valves in the system, insulation of the ducts, putting the ducts in a shaft, and… a lot of those things, which are more system things, it is not unit things. That is the problem.

Interviewer: Yes, okay. And then, do you also experience difficulties with other types of documentation? So for example documentation that you have to deliver as a company with your product, or the tax documentation that you have to fill in in a certain country?

Interviewee: At least I would not say that it is a problem. You could say, as I remember it, in Sweden they are more keen on the environment. And sometimes, we need to make a specification on how many percent of a unit is recyclable, how

many percent is made of plastic and metal and so on. But that is the only thing I remember at this moment. Perhaps sometimes, there are some things like it in Germany. But I think, today, the daughter company takes more and more care of it, so therefore, perhaps I do not know the newest status on that problem.

Interviewer: Yes, exactly, then it is taken care of by the German section, subsidiary.

Interviewee: Yes, exactly.

Interviewee: Okay. And when we talk about the system, the legal system and the requirements within Denmark, that is quite focussed on development and green ventilation as I understood, do you feel that that mainly comes from the government or more from the companies?

Interviewee: I think you need to say it once more, I am not quite sure I understood what you are asking me.

Interviewer: Okay, well, the policy and the product requirements from the Danish government, as I understood they are quite developed, well-developed, and quite in a green ventilation direction. Do you think that that mainly comes from the government, because the government wants that, or because companies are influencing this?

Interviewee: I think both. The government are trying to get green and get rid of fossil fuel. So therefore, they are trying to strengthen the demands on energy use, for instance. But also manufacturers which are making good units, try to influence the government to strengthen it and to get in a better position, when they are making good units, so I think that is both. I think we have a very good cooperation with the government, or the employee, you could say, in the state, making the demands and the building regulations. We, I think we feel that every time they look in the building regulation to renew it, we are asked what our opinion is, if we have some demands, or we want some change, so I think that is in a good cooperation.

Interviewer: That sounds good. And if you say ‘we’, do you talk then about companies individually or through the association, the national association?

Interviewee: Both. If the company are, as big as we are, we are often asked directly. But basically, they would like to talk to unions. But we are asked personally to come with information.

Interviewer: Okay. And then, considering public procurement, I do not know if you are.. dealing with that, but I guess so?

Interviewee: Yes.

Interviewer: Do you feel that governments prefer contracts with domestic manufacturers or that they just prioritize the quality or the price over the product of origin? The origin of the product, sorry.

Interviewee: I think sometimes the problem is that they are favouring low price, and they

do not care whether it comes from Denmark or Latvia or France; they do not care.

Interviewer: But then more the low price than the quality of the product, also?

Interviewee: Yes, I think they should be more keen on getting good quality, or you could say more keen on discussing life-cycle cost. I know they have been trying to develop a life-cycle cost programme to initiate more focus on it. And I think that is a good idea. I think it is better to buy a unit which gives you a good cost in the life-time of 15, 20 years, than it is to but a very cheap unit today. Because a lot of money for ventilation and air-conditioning is the cost over the years of energy and service. So I think they should talk more about life-cycle cost. That is a good way to try to get rid of the idea of just getting the cheapest product.

Interviewer: Yes. And also setting an example.

Interviewee: Yes. But I think, up till now, the idea with making a software programme to make some calculations is a good idea. But I think we need to talk more about it. Because it is a good idea.

Interviewer: And you are talking then about the Danish government, or other governments? Or more in general?

Interviewee: At this moment, it was the Danish government. There is a commissioning standard as well, do you know that, have you heard about it? Commissioning standard, for the time being I cannot remember the standard number, but…

Interviewer: On life-cycle cost, you mean?

Interviewee: No, that is a little bit older. It is not life-cycle, commissioning is more a way to make sure there is cooperation between all the different engineers, architects, manufacturers, during the time period where you build a new building. So you have some more cooperation during the building of the house, and make sure that when you finish up, the building is not using more energy, for instance, as you have planned. So it is a way to cooperate more, and make the right decisions during the time where you are building a new house.

Interviewer: Okay, yes. No, I have not heard of that yet. And that is national or European?

Interviewee: I think it is European, if it is not worldwide, but I will try to find the number for you.

Interviewer: Okay, thank you. But also, if you are exporting to other countries, do you feel the same way, that the governments seem to prioritize cost-efficiency over other factors? Or you do not do public contracts in other countries?

Interviewee: I am not sure, it is not something which I discussed, so I do not think it is a problem. I do not think they favour their own companies over other, no, I do not think so. That is at least not the feeling I have, except of France, perhaps.

Interviewer: Yes, well, I heard a lot of… special stories about France already, I must say.

Interviewee: Yes. But it is many years ago since I heard the stories, but… so… I hope it is just from the past.

Interviewer: Yes, it is a bit the reputation as well, in general, I think.

Interviewee: Yes, yes.

Interviewer: Well, and then, lastly, actually, I… wanted to ask you, if we talk about all this product standardisation, and regulation, do you feel… what is your feeling towards the European Union? Do you feel that more integration and more unification of regulation is the way forward? Or do you feel that it was better the way before?

Interviewee: I think I have two answers. I have an answer as an employee in this company, and one as a private person. And from the company point of view, I think this union making standards which we all have to deal with, that is the only right solution. That is… absolutely the only way to make a common market. And I am not sure I can say anything more about that.*

*Hereafter, the conversation took a personal direction and was no longer related to the research purposes. Therefore, the interview has been transcribed only to this point in the interview.