

Phase 1 – Preparatory Phase

work package 2

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## **Striking Differences in Continuing Training in Enterprises across Europe**

**Comprehensive Overview of Key Results of CVTS 2**

**working paper**

**Country specific thematic analysis of  
continuing vocational training on the basis of CVTS2  
and modelling of CVT-structures  
(CVTS2 revisited)**

**Phase 1 / Work package 2**

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## **0. Abstract**

This paper has been elaborated in the context of the Leonardo-II project “Country specific thematic analysis of continuing vocational training on the basis of CVTS2 and modelling of CVT-structures (CVTS2 revisited)”. It describes and discusses the main quantitative indicators of continuing vocational training (training incidence, training access, training intensity, direct training costs) in enterprises. The concept of two different analytical levels - national level on the one hand, level of training enterprises on the other hand - is introduced, and two sets of indicators are established. Using the radar chart approach the paper provides a condensed and comprehensive description of the main features of CVT on both the national level and on the level of training enterprises. This approach enables a graphical, highly intuitive comparative presentation of CVTS2 results of 24 CVTS-countries. Furthermore, the paper presents a differentiation of the national averages by splitting these up in 21 economic sectors. Using e.g. the SPSS procedure “boxplot” the paper analyses striking similarities and differences of the quantitative indicators on the level of economic sectors. In the annexes to this paper detailed tables, graphs, results of analysis and other relevant material is presented.

## **1. Introduction**

This paper has been elaborated in the context of the Leonardo-II project “Country specific thematic analysis of continuing vocational training on the basis of CVTS2 and modelling of CVT-structures (CVTS2 revisited)”. In this partnership, we are working together with six partners, and our paper has to be seen in the context of the division of work between partners in this first (preparatory) phase of the project:

- Work package 1: **Compilation of available country specific studies of CVTS II results** (CESPIM Rome)
- Work package 3: **Preparation of a comprehensive overview of striking differences in the legal framework conditions of continuing vocational education** (NUOV Prague)
- Work package 4: **Comparative analysis of the organization and state financing of the continuing vocational training in the enterprises** (VDU Kaunas)
- Work package 5: **Preparation of a comprehensive overview of measures taken to foster continuing education between 1993 and 2004** (CARMA Aalborg)
- Work Package 6: **Compilation and meta-evaluation of available studies on effectiveness of available advancement measures for continuing vocational training** (BETA/Céreq Alsace, Strasbourg)
- Work package 7: **Training in enterprises: Reasons and influences – Developing a framework for explaining differences in performance of company based training in Europe** (3s research laboratory, Vienna)

In the first (preparatory) phase of the project the partnership focuses mainly on collecting and systemising information and data from different sources. The paper presented here – our main contribution to this first phase – is divided into 4 chapters, plus detailed tables, graphs and other relevant information in the annexes.

**Chapter 1** (this chapter) shortly introduces aims and contents of this paper and highlights some aspects of the results and outcomes.

**Chapter 2** describes and discusses the quantitative key indicators of continuing vocational training in enterprises (training incidence, training access, training intensity, direct training costs). The concept of two different analytical levels – national level on one hand, level of training enterprises on the other hand – is introduced here, and two sets of indicators are established. Of course, the quality and adequacy of indicators is contingent on the availability of the variables needed to construct them, and on relevant information being readily available at Eurostat (the outline questionnaire in Annex 1 informs on the information collected in CVTS2). Of equal importance is the quality of the process of collecting and recording this information, but relevant information concerning these aspects is more difficult to retrieve. One of the sources is the methods report of the Leonardo-II project “Assessment of CVTS2 results” (Eurostat 2004), elaborated by BIBB in close cooperation with 3s and CARMA, partners in the current project, too, together with The Economic and Social Research Institute, Wissenschaftszentrum Berlin für Sozialforschung and Laboratoire d’Economie et de Sociologie du Travail. In addition, BIBB conducted a profound analysis of the quality reports of 24 CVTS-countries<sup>1</sup>; ideally, these quality reports are providing full information on collection of data, editing, treatment of non-response, estimation and imputation. Unfortunately, the quality reports are far from being perfect, but they provide at least some information. Based on this we discuss some of the methodological problems of CVTS and their impact on the validity of indicators. The main conclusion is that the quality of information is high regarding training incidence, and good regarding training access. There are some limitations regarding training intensity, and problems regarding the validity of information on training costs.

**Chapter 3** provides a systematic overview on the patterns of CVTS results in 24 countries, based on the quantitative key indicators established and discussed in Chapter 2. We use the radar chart approach (Mosley/Mayer 1999) for a condensed and comprehensive description of the main features of CVT on both the national level and on the level of training enterprises. This approach enables a graphical, highly intuitive presentation. In addition, a composite performance indicator (“surface measure of overall performance” or “SMOP”) is used. In chapter 3.1 we discuss advantages and problems of the radar chart approach, explain in detail how the general approach is adapted for the purpose of this paper, and provide a guideline for a broader audience (“How do you read a radar chart?”). We provide radar charts for 24 CVTS countries (see Annex 2 for radar charts on national level and Annex 3 for radar charts on level of training enterprises). Chapter 3 contains a thorough description of the results. It is interesting to see that, as expected, results differ substantially according to the level of analysis (national vs. enterprise level; see chapter 3.2).

At national level, when ranking countries according to the SMOP, three groups emerge: The high performers, made up of Scandinavia and Western Europe, the good performers in Central Europe (including CZ), and low performing Southern and Eastern Europe. Although there are distinct clusters of countries along geographical, political and cultural criteria, significant differences between countries assigned to the same cluster exist (see Chapter 3.2.1 for more details). It is striking that the results on the level of training enterprises (chapter 3.2.2) are remarkably less dispersed than on the national level. This is at least partly due to the fact that non-training enterprises were excluded. Top performers at national level are mostly ranking high at level of training enterprises, too. It is medium and low performers where the different levels of indicators result in divergences. Furthermore, the shapes of the radar charts on the level of training enterprises are more homogenous than those on national level. It is not

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<sup>1</sup> The only quality report that is missing is the one of Estonia.

possible to cluster similar forms of radar charts according to geopolitical or cultural country groups.

**Chapter 4** contains an analysis of key indicators (on the level of training enterprises) of CVT, splitting national averages into 21 economic sectors.<sup>2</sup> Based on the matrix tables of the four key indicators by 21 economic sectors and 25 countries (see Annex 4) and their graphical representation (Annex 5), the results are discussed along the following lines:

- Differences between economic sectors in a country (spread of values across 21 economic sectors)
- Relative position of the weighted national average
- Grouping of countries according to the indicators for the single economic sectors
- Analysis of striking differences of the indicators, based on “Boxplot” procedure in SPSS.

The results obtained by this analysis are not lending themselves for straight away summarising. Despite all differences and divergences, “Banking and insurance”, “Electricity, gas and water supply”, and “Post and telecommunications” are the sectors with both high incidence and high access in the majority of countries. High incidence and high access in these sectors is not related to high intensity or high costs. Regarding intensity, “Real estate, renting, business activities” and “Machinery, electrical / optical equipment” are ranking top in many countries. The costs seem to be high in “Wholesale trade” and in “Financial intermediation (auxiliary)” in many countries. Looking at the low performing sectors in countries, it is prominent that “manufacturing” is enumerated more often: Costs are low for most manufacturing sectors (with the exception of “non-metallic products”). Access is low in most countries in manufacturing, with the exception of “Machinery, electrical / optical equipment” and “non-metallic products”, and it is low in “Textiles, clothing, leather”, in “Paper, publishing, printing”, and in “Wood, manufacturing n.e.c”. Far away from unravelling these results, we conclude by highlighting some findings concerning the home countries of our partners in this Leonardo project.

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<sup>2</sup> BIBB consented to the proposition of 3s of changing the content of WP2 (as compared to the original outline in the proposal). According to this proposition, providing an overview about relations between CVTS2 and other macro-economic and innovation data is now regarded as part of other work packages in a later phase of the project. Instead, we conducted the analysis presented in Chapter 4, as suggested by 3s.

## **2. Description and methodological discussion of the quantitative key indicators of CVT**

### **2.1 Introduction**

Quantitative indicators are a central element for describing and comparing the structures of continuing vocational training in Europe. Important for measuring the performance of CVT in countries are the following quantitative key indicators, which we are using:

- Training incidence
- Training access
- Training intensity
- Training costs

These indicators permit a first comparative interpretation of the CVT activities in the countries surveyed. However, these key CVT-indicators can only provide initial pointers at similarities or differences between the countries included in CVTS2.

In this chapter of the report, a description and discussion of the main quantitative CVT-indicators will be followed by a discussion of some of the methodological problems of the CVTS-survey impacting on these indicators - especially the data quality. Sources here are the methods report of the Leonardo-II project “Assessment of CVTS2 Results” and the CVTS2 quality reports prepared by the CVTS2-countries. Annex 7 provides a short summary table of methodological and statistical pitfalls, which is important to check when using the CVTS2 data.

### **2.2 Main quantitative key CVT-indicators**

In order to identify the comparative performance of CVT we will discuss two levels of analysis. This distinction makes it possible to screen the performance of CVT more specific. Firstly, we will analyse the key CVT indicators on national level. This gives us the opportunity to interpret the national performance of CVT. The analysis on the national level describes the performance of training and non-training-enterprises in total (see chapter 3.2.1 of this report). On this level, it is possible to analyse the overall access of employees in a country to continuing vocational training or to compare the total CVT costs as a share of total labour costs. The distinction of the two levels is important, because we have to use different performance indicators for both levels. From our experience with the interpretation of the CVTS2 data in the Leonardo-II project “Assessment of CVTS2 Results“, it seems to be important to state clearly the respective level of analysis, as they lead to different interpretations of the data.

The analytical levels are:

- **Level 1: Performance indicators of CVT on the national level**

The following 4 quantitative performance indicators describe in general the relevance of continuing vocational training on the national level.

1. Enterprises providing training courses in a given country and in a given year (**training incidence** = training enterprises providing training courses/all enterprises)
2. Access of employees to continuing vocational training provided by enterprises in a given country and in a given year (**training access** = all training participants/total of all employees of all enterprises)

3. Time-investment of enterprises in continuing vocational training in a given country in a given year (**training intensity** = total of training hours / total of working hours of all employees of all enterprises)
  4. Cost-investment of enterprises in continuing vocational training in a given country in a given year (**training costs** = total of direct CVT costs / total of labour costs of all enterprises)
- **Level 2: Performance indicators of CVT on the level of training enterprises**  
The following 4 quantitative indicators describe the training activities of training enterprises on the background and in the context of the CVT indicators of level 1.
    1. Enterprises providing training courses in a given country and in a given year (**training incidence** = training enterprises providing training courses/all enterprises)<sup>3</sup>
    2. Access of employees to continuing vocational training provided by enterprises on the level of training enterprises in a given country and in a given year (**training access** = training participants / all employees in training enterprises providing training courses)
    3. Average duration of continuing vocational training provided by training enterprises in continuing vocational training in a given country in a given year (**training intensity** = total of training hours / all participants in training enterprises providing training courses).
    4. Costs per hour in training enterprises in a given country in a given year (**training costs** = training costs / total of training hours in training enterprises providing training courses).

It is important to consider the relations between the individual key indicators we are using. The four indicators above allow comparison across countries of the performance of CVT on the national level and on the level of training enterprises. The experiences with analysing the CVTS2 data show that a separate assessment and presentation of results can lead to inadequate conclusions. An adequate assessment of the data should use an integrated approach, considering at least all the four quantitative indicators. **An assessment based on a single indicator is not sufficient for international comparison of continuing vocational training in countries.** For instance, the incidence indicator varies widely from country to country. If a country has an incidence indicator of 100%, it does not necessarily follow that the volume of CVT is high in this country. For example, it is possible that the proportion of employees taking part in CVT measures is very small and/or the majority of courses provided are of short duration. Furthermore, if costs are very high, then a high ranking on the cost indicator may not be evidence that the absolute volume of training is high. Examples supporting the above arguments (we are using here the key indicators of level 2) to use an integrated approach for the assessment of CVT can be drawn from the data gathered in CVTS1 and CVTS2.

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<sup>3</sup> On the level of training enterprises we are using the training incidence indicator, too. It can be argued that this is not an indicator describing the training activities of training enterprises as such, because this indicator also includes the non-training enterprises. However, interpreting the other three quantitative indicators (training access, training intensity, training costs) without having a background indicator for describing the relative importance of the training incidence in a country, the data (e.g. in a radar chart) cannot be analysed adequately. See also the insert on page 8.



**Romania** has the lowest ranking with regard to the incidence and access indicators but highest with regard to the average duration of CVT courses. This means that only a few Romanian enterprises offer their employees continuing vocational training and also that these measures are then only offered to a minority of the employees. However, for the few employees concerned these continuing vocational training courses are of comparatively long duration.

**Denmark** is ranking high regarding all four indicators. This means that a very large number of enterprises in this country offer a large share of their employees continuing vocational training courses of comparatively long duration. The costs of continuing vocational training are also very high in Denmark.

In **Germany**, on the other hand, different structures of continuing vocational training can be observed. The incidence indicator is rather low, at least compared to the other EU member states. The access indicator is average in Germany. Regarding the intensity, Germany is in last place among the EU countries. This means that German enterprises mainly focus on short-term adaptation measures in their continuing vocational training offered to their employees.

In the reports relating to the CVTS1 and CVTS2 results so far - especially the report the "Assessment-project" prepared for the European Commission (European Commission 2003) - we already presented a first description and diagrammes of the single key indicators using the above mentioned integrated interpretation of CVTS results. In chapter 3 of this report, we will use a more sophisticated approach - the so-called radar chart approach - to present the key indicators. This radar chart approach makes possible to analyse the data in a more comprehensive and condensed way. Existing similarities and differences between countries can be observed more clearly and this approach will help to support future comparative work in the field of continuing vocational training.

### **2.3 Data quality and interpretation of the key indicators of CVT used for international comparison**

In the following we will list some of the main features reported, which influenced the data quality of CVTS2.

Normally CVTS2 countries used a national sample of the enterprises. Only Poland used a regional sample - the results for Poland apply only to the Pomorskie region.

The method of data collection influences the quality of data. Methods used in CVTS2 were:

- Personally administered questionnaires,
- Telephone surveys,
- Self-administered mail questionnaires.

To examine the relationship between different data collection procedures and the quality of the data gathered, it would be necessary to undertake a detailed analysis of the micro data, which until now has not been possible for us. In CVTS2 countries used different modes of data collection, adapted to their specific national conditions and available resources. However, combining different types of contact, allowing respondent companies to review either the questionnaire, or explanatory documentation on the questionnaire, in advance of a personalised contact, either by phone or face-to-face, may be particularly successful to improve data quality. Three countries reported particular high problems with the rate and quality of response. Statistics Germany reported important problems with data-collection by self-administered mail questionnaires. The unit non-response was clearly higher than expected; so many post-survey telephone contacts were necessary. Denmark reported that 65% of the contacted enterprises refused to participate immediately when approached. Many enterprises, moreover, refused participation when they saw the rather time-consuming questionnaire. Ireland - also a country with a high unit non-response - reported that "survey

fatigue” is a common complaint and this influenced the survey results. The rate and quality of response to CVTS2 was rather poor in Ireland too.

For the interpretation of the quality of the variables, it is important to know the structure of non-response and how non-response was treated (imputation). Two types of data were collected in CVTS2, quantitative and qualitative, which were treated differently regarding imputation procedures. The rule in CVTS2 was to impute missing quantitative data (those for which a numerical response was required). However, from the quality reports it is in most cases not clear if qualitative variables were imputed or not. A comprehensive and exhaustive assessment of the treatment of non-response by CVTS2 countries is not possible, because EUROSTAT does not have a data file with the response rates before the imputation of the variables - CVTS2 countries did only send the imputed data sets to EUROSTAT. Information on item non-response is only based on the 24 quality reports of the CVTS2 countries and on some supplementary tables with information regarding imputation. However, the quality of the national quality reports and the extent of the information they provide is very different amongst CVTS2 countries. The information about non-response, imputation and the applied procedures differ substantially. Hence, data quality is difficult to assess across countries.

In the following, we will shortly describe the variables used for the 4 key indicators of CVT for the above mentioned levels - national level and level of training enterprises - and will give some indications of the quality of the data, the problems that were experienced to collect these variables and how to interpret the variables.

### **Training incidence**

The incidence indicator describes the ratio of the enterprises providing training courses of all enterprises.

The total of enterprises encompasses the training enterprises in the broad sense, providing any continuing vocational training in 1999, and non training enterprises, which did not provide CVT in that year.

Training in the broad sense encompasses also both training courses as well as continuing vocational training that is related to the workplace, the so-called “other” forms of CVT. It is almost impossible for the enterprises to clearly identify and distinguish the various “other” forms of CVT. In CVTS1 and CVTS2 the collection of these “other” forms was based on three basic assumptions:

1. The interpretation of the definitions of the “other” forms by the enterprises is more or less the same across countries and translation of the definitions into the respective languages of the participating countries is unproblematic.
2. It is possible to define and explain the terms of the “other” forms in such a way that the same measures in all CVTS2 countries are interpreted identically and that enterprises record information on these forms in a uniform way.
3. All the “other” forms which are collected and defined in the questionnaire can be uniquely and exhaustively identified and recorded.

The assessment of the results of CVTS1 and CVTS2 showed that all these three basic assumptions are questionable:

- Even within a country (e.g. Germany), enterprises defined “other” forms of training differently. This was particularly the case with “quality circles” where several different interpretations were found.

- The definitions of each of the “other” forms also differed from country to country, partly due to differing methods of data collection.
- In the German extra survey in the context of CVTS1 the question was asked if enterprises could assign the “other” forms of continuing vocational training to “learning” or to “work”. The results were illuminating. No one of the given “other” forms was assigned clearly to “learning”. It is even more important, however, that a relevant part of the enterprises did not associate the “other” forms of continuing vocational training, which were listed in the European questionnaire as a form of training offered by enterprises.

In consideration of the difficulties in collecting data on each of the six “other” forms of continuing vocational training and the impossibility to collect data on participants, training intensity and costs of these “other” forms we will focus our analysis on training courses. **When referring in this paper to training enterprises, this includes only training enterprises providing training courses.**

The incidence indicator we are using here is based on the variable “provision of continuing vocational training courses” (managed internally/externally) as nominator, with “all enterprises” as denominator.

The addresses of the enterprises are based on the business registers in the various countries and were used for sampling and data collection. We can observe differences in the quality of business registers across CVTS2 countries. Especially the coverage of smaller enterprises and enterprises with the NACE category K and O - the services sectors - is in some countries (e.g. Germany) problematic (Egner 2002, p. 23).

The variable training courses is one of the central questions of the questionnaire. Therefore, no missings were allowed for this question. If necessary, imputations had to be made. The concept of CVTS2 for this question was to ask enterprises to fill in the question separately for training courses managed internally and externally. Four countries (Norway, Poland, Slovenia and Sweden) reported that respondents often had difficulties to differentiate between internal and external training courses. Sometimes enterprises considered a training course external when the training took place outside the enterprise’s premises. It was reported here that numerous additional explanations were required.

### **Training access**

The access indicator describes the ratio of the number of participants in training courses in 1999 of the total number of employees in all enterprises (level 1) **and** the ratio of participants in training courses of the total number of employees in enterprises providing continuing vocational training courses (level 2).

In the CVTS2 questionnaire, the relating question to this key indicator deals with the total number of persons employed. This question belongs also to the obligatory questions on structural data of the enterprise - thus no missing values were allowed here. Some countries (Norway, Sweden, Austria) partially imported data for this question from other sources. As far as the information is available in the quality reports the question relating to the total number of persons employed in 1999 did not cause any major problems, reported non-response rates were not high. Some countries however (Finland, Norway) reported problems with non-response.

An important quantitative question in the CVTS questionnaire is the number of participants. Problems with this basic figure are repeated and magnified in our main key indicators (e.g. access indicator and intensity indicator). In CVTS, participants in training courses are defined as “persons employed who have taken part in one or more CVT courses at some time during the year.” Item non-response to this question was accepted. Reported non-response rates for the total of participants were not high.

However, some problems arise with the conversion of the participants events into participants. Usually enterprises collect data on the participation of individual employees. However, the CVTS1 and CVTS2 data shows (mainly from Germany) that, especially in bigger enterprises, only data on participant events is collected (Eurostat 2004, p. 68). It is likely that countries with a high proportion of smaller enterprises will have not as many problems with the conversion as countries with a high proportion of bigger enterprises.

### **Training intensity**

The training intensity describes the ratio of the total of training hours of the total of working hours of all employees of all enterprises (level 1) **and** the ratio of the total of training hours of all participants in training enterprises providing training courses (level 2).

The question asking for the **total number of hours worked** was obligatory, thus did not allow for item non-response. This question is difficult to answer because these figures are not always a part of the accounting systems of enterprises. Some countries pointed to problems (Czech Republic, Luxembourg, Norway, Poland, Portugal, Sweden), partly mentioning substantial non-response (Norway, Finland) for this question. Austria excluded the question from the survey, importing the information from other surveys, others (France, Netherlands) reconstructed answers from administrative sources and national accounts and Greece, Slovenia and Ireland used data from other sources for a check of coherence.

An important quantitative question in the CVTS questionnaire is also the **number of training hours**. This question, too, was obligatory, thus did not allow for item non-response. Problems with this basic figure are repeated and magnified in our main key indicators (e.g. intensity and cost indicator). The question relating to the total hours for training courses had high non-response rates in some countries (Germany, Norway, Austria). However, in the other countries the reported non-response rates ranges between 0% and 7,5%.

### **Training costs**

The training costs describe the total of direct CVT costs as a share of total labour costs of all enterprises (level 1) **and** direct training costs in relation to the total of training hours in training enterprises providing training courses (level 2).

A number of aspects have to be considered when interpreting data on the cost of continuing vocational training. In CVTS2, only the costs of training courses were collected. The concept of total costs of CVT, thus including the direct and indirect costs of training courses, cannot be used because of the uncertainty of indirect costs. In most countries, approximately half of the total costs are made up by the indirect costs. In contrast to CVTS1, in CVTS2 indirect costs were not surveyed through a global estimate, but were calculated ex post, specifically by multiplying the hours of training by the total sum of labour costs and dividing this by the total number of hours worked. Problems with the variables hours of training, total sum of labour costs and total hours worked influenced the calculation of the indirect costs. In addition, the

calculation itself causes some problems. In order to measure these costs accurately, it is necessary to adopt different approaches for different occupational groups. The central issue in terms of evaluating the indirect costs is that personnel absence costs do not necessarily constitute direct expenditures borne by the enterprises. Particularly in the case of measures of short duration and measures for managers and/or specialists, enterprises manage to transfer the cost burden to the employees. This is made possible firstly by convening training measures in employees' free time. Secondly, costs are also shifted when the enterprises expect participants in training measures to make up for the working time lost through continuing training by undertaking unpaid work in their free time or by short-term intensification of the employee's own work or that of the team of colleagues. Therefore, it is not clear which part of the personnel absence costs are real expenditures. Hence, we will not use the indirect costs for our cost indicators.

For an international comparison, it is useful to express CVT costs in relation to the annual labour costs because this relation takes the considerable differences between the average wage paid in the various countries into account. The ratio for the costs on national level is the total of direct costs of the total of labour costs of all enterprises. Collecting data on labour costs of persons employed seems to be one of the most problematic questions of the questionnaire. Results show substantial rates of non-response for the labour costs (direct and indirect labour costs). 10 countries (Belgium, Czech Republic, Finland, Ireland, Luxembourg, Norway, Poland, Portugal, Sweden, Slovenia) explicitly stated that the collecting of labour costs - especially the collecting of indirect labour costs - was very difficult and time-consuming to answer. Others pointed out that many enterprises refused to answer this question due to burden or confidentiality.

For CVTS2 many countries report substantial problems concerning collecting the direct costs of training courses. Countries mentioned high non-response rates. Especially Belgium, Germany, Italy Norway and Sweden report very high non-responses (figures for the total training costs range from 33% to 94%). The quality of the data seems to be connected to the individual countries. Enterprises were asked to provide estimates of the different sub-costs for CVT, if actual figures for any sub-costs were not available. The results show that estimations range from 0% to 100%. The results show that the training costs (the total training costs as well as sub-categories) were mostly estimated by the enterprises, which has of course implications for the quality of data. The British cost figures are exorbitantly high (almost twice as much as the second highest figure). The British data are taken from another survey. EUROSTAT indicates that these data are not comparable to the other CVTS2 data.

## **2.4 Summary**

The quality of the variables used for the quantitative key indicators of CVTS is varying. Some of the questions were obligatory, thus not allowing item non-response. In these cases there is not always extensive information in the quality reports about the structure of non-response available. The quality of the incidence indicator seems to be best of all key indicators. In addition, the quality of the access indicator is relatively high, especially if the problem participant/participant events are solved well. The problems related to the definition of working hours and training hours impact on the quality of the intensity indicator. The results show that especially the training costs had high non-response rates and were often only estimated by the enterprises. This of course has implications for the quality of training costs data.

### 3. *Providing an overview on specific patterns with CVTS results in all 25 CVTS2 countries*

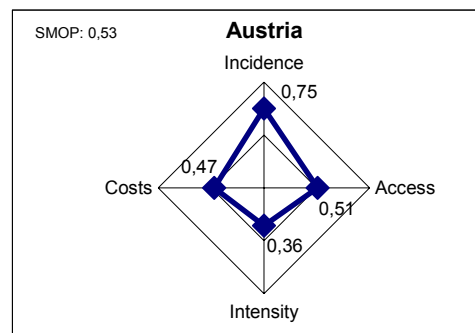
#### 3.1 Radar chart approach

##### 3.1.1 Why using radar charts?

In order to identify patterns in the results of CVTS we are using the so-called radar chart approach. This method will help us to present the key indicators of CVTS in a demonstrative way. Radar charts can be used for the identification of specific patterns of statistical data and as a benchmarking tool for comparative analysis. It is one of a number of special analytical tools that have been developed in connection with benchmarking in the private and public sectors. The main feature in our context is to make possible a condensed and comprehensive description of the main features of CVTS on the national level and on the level of training enterprises. Two features of the radar chart approach are important in our context: First, it provides a simplified presentation of multiple performance indicators, which is highly intuitive even to non-experts. Second, the surface area, formed by the four axes, can also be used as a composite performance indicator (“surface measure of overall performance” or “SMOP”).

##### 3.1.2 How do you read a radar chart?

Our radar charts are making use of four indicators on two levels: Incidence, access, intensity and costs (for a description of the indicators see chapter 2). These four indicators are on the four axes of the diagram. Each axis ranges from “0” to “1”. “1” means the best value, “0” the worst value. In our charts the value “1” is taken by the best national result for this indicator. For example, Denmark has the best incidence rate of 96%, which means that 96% of all Danish enterprises are offering CVT courses. These 96% are represented by the value “1” for Incidence in the radar charts. The results of all other countries are measured relative to these 96%. For example, Austria has an incidence rate of 72%. An incidence of 72% equals 75% of the Danish result and is represented as 0.75 in the radar chart (see chart below):



Example

Similar calculations are done for every axis. Denmark sets three times the benchmark (for costs jointly with the Netherlands), while Sweden sets the benchmark for access on the national level. For each indicator the highest performance realised in a country was thus defined as benchmark. It is important to note that we did **not** normatively define benchmarks as goals (e.g. we could have defined the benchmarks for incidence and access with 100%). The values on the axes are graphical expressions of the relationships between the country in the diagram and the best performer for each axis.

The "SMOP" (Mosley/Mayer 1999, p. 9) is calculated on the basis of the mathematical formula for the area of a polygon (the results can be seen as four triangles with angles of 90

degrees).<sup>4</sup> SMOP values range between the minimum of “0” and the maximum of “2”. The SMOP is a quantitative indicator of the overall performance of a countries’ enterprises regarding CVT, relative to other countries.

### **3.1.3 Which figures did we use and where did we get them?**

All figures we obtained from the databank NewCronos.<sup>5</sup> As already said in chapter 2 we developed radar charts on two levels. On the national level indicators are based on all enterprises, including non-training enterprises. On the level of enterprises the indicators are based only on training enterprises.<sup>6</sup> It was important for us to use data on costs that are sensitive to economic differences between the CVTS countries. Thus training costs are relative to labour costs on the national level and based on “pps” or “purchasing power standards” on the level of training enterprises. The British figures for costs are exorbitantly high (almost twice as much as the second highest figure), because of the British use of data from another survey. EUROSTAT indicates that these data are not comparable to the other CVTS data. Thus the British data was not used for our analysis based on radar charts.

### **3.1.4 Which problems are connected to our radar charts?**

There are some theoretical and practical problems that should be taken into consideration when looking at the radar charts:

#### **1. The importance of the four chosen indicators**

The selection of the indicators is very important and it can be debated if our selection is suitable. We decided to make our radar charts on two levels, because of the fundamental differences between the national level (training and non-training enterprises) and the level of the training enterprises. Due to problems with the estimation of indirect costs (personnel absence costs, see chapter 2) we restricted the cost indicator to direct costs. The so-called “other forms” of CVT are not included in the indicators used for the radar charts, because of the difficulties to measure them quantitatively.

#### **2. The equal weighting of the four indicators**

The importance of the single indicators is likely to vary according to the issues tackled. Hence, it is debatable if it is adequate to treat all indicators as having the same importance. Furthermore, it is very likely that indicators are inter-related (e.g. costs and intensity). The radar charts are thus perhaps inflating the differences between the countries. It can be argued is questionable for costs and intensity if a higher value for these indicators is really good (e.g. high costs can be caused by an ineffective training system or a monopolistic provider structure). We decided that in principle a higher investment of time and finances is better than a lower investment.

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<sup>4</sup> The mathematical formula for the SMOP is for four axes:

$SMOP = ((P1*P2) + (P2*P3) + (P3*P4) + (P4*P1)) * \sin 90^\circ/2$ , or for more or less than four axes:

$SMOP = (P1*P2)+(P2*P3)+( P3*P4)+( P4*P5)+( P5*P6) +....+( Pn*P1)) * \sin (360/n)/2$ .

It was part of the calculation of the SMOP to calculate an average SMOP, because slightly different SMOPs are possible, contingent on the chosen position of the axes (see also Mosley/Mayer 1999, pp 49-55).

<sup>5</sup> The data were extracted between 16<sup>th</sup> and 22<sup>nd</sup> of December 2004. The data were saved and archived, because of the fact that NewCronos is a dynamic databank which means that data are sometimes changed and updated after corrections (<http://europa.eu.int/comm/eurostat/newcronos>).

<sup>6</sup> Only the incidence indicator is the same for both levels. It is debatable if it should be included in the analysis on enterprise level.

### 3. The importance of the chosen benchmarking approach

Our benchmarking approach makes it possible to compare the CVTS results of different countries<sup>7</sup>. It would have been difficult, but perhaps possible to define normative goals on the basis of political or scientific perspectives. Based on this approach countries defining the benchmark (e.g. Denmark) or being close to it can get the impression that their system is optimal, while the radar charts are only expressing that the countries enterprises are performing better than others.

We consider the radar charts as very useful for giving a comprehensive and condensed overview despite these problems. The radar charts themselves explain nothing. They help to illustrate selected parts of the results and looking at the radar charts can perhaps inspire developing hypothesis for further research, which in the future, might help to explain the existing differences between the CVTS countries.

### 3.2 Describing the radar charts of CVTS<sup>8</sup>

#### 3.2.1 Level 1: Performance indicators on the national level

The first set of indicators describes the performance of training **and** non-training enterprises (e.g. access is measured by all training participants / total of all employees of **all** enterprises), while the second set of indicators concentrates mainly on the training enterprises (e.g. access is measured as training participants / all employees of **training** enterprises). The first set of indicators tells something about the structure of CVT when looking at the national level, while the second set of indicators tells something about the structure of CVT only in the training enterprises (with incidence being the only exemption, as mentioned before).

Based on their SMOP countries can be ranked according to their overall performance:

<b>SMOP above 1</b>		<b>SMOP between 0.5 and 1</b>		<b>SMOP below 0.5</b>	
Denmark (DK)	1.87	Czech Republic (CZ)	0.80	Estonia (EE)	0.47
Sweden (SE)	1.75	Luxembourg (LU)	0.77	Slovenia (SI)	0.39
Netherlands (NL)	1.42	Belgium (BE)	0.66	Italy (IT)	0.35
Finland (FI)	1.30	Germany (DE)	0.59	Spain (ES)	0.28
Norway (NO)	1.30	Austria (AT)	0.53	Latvia (LV)	0.23
Ireland (IE)	1.14			Bulgaria (BG)	0.18
France (FR)	1.01			Portugal (PT)	0.18
				Hungary (HU)	0.15
				Poland (PL)	0.15
				Lithuania (LT)	0.13
				Greece (GR)	0.10
				Romania (RO)	0.04

It is very important to note that this kind of ranking by the SMOP gives only a first impression of the country-specific enterprise performance. It is important to peer at the results in more detail.

When looking at the radar charts it is obvious that there are groupings or “clusters” of countries displaying rather similar results. These clusters are not identical but in mayor parts

<sup>7</sup> It is important to note that the benchmarks can not be used to compare single enterprises with each other. The values are related to national averages. These national averages are compared.

<sup>8</sup> All radar charts of both levels can be found in the Annex of this document.



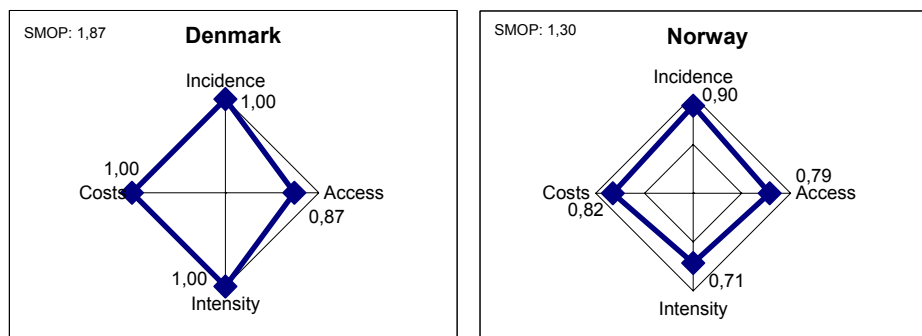
similar to existing theoretical models of regional affinities (e.g. Esping-Andersen 1990 for welfare systems, Stein Rokkan 2000 for the geo-politics of state systems or Leney et al 2004 on European Integration). For CVTS2 the following geo-political groups can be roughly distinguished:

- a) The Scandinavian enterprises (DK, FI, NO, SE)
- b) The Central European enterprises (AT, BE, CZ, DE, LU, PL)
- c) The Southern European (IT, PT, ES, GR) and East-European enterprises (BG, EE, HU, LT, LV, RO, SI)
- d) The Western European enterprises (FR, NL and IE)

Although there are distinct clusters of countries along geographical, political and cultural criteria, significant differences between countries assigned to the same cluster exist. The regional similarities are great but should not be overestimated.

#### a) *Enterprises in Scandinavian countries: Best performers*

The Scandinavian countries display the best results in CVTS. Their SMOP ranges between 1.87 in Denmark, 1.75 in Sweden and 1.30 in both Finland and Norway. Only the Netherlands (SMOP of 1.42) are situated between the Scandinavian countries, in particular with the highest investment of enterprises in CVT. There are good arguments that the Netherlands belong to the Scandinavian group (e.g. Esping-Andersen (1990) groups the Scandinavian and Dutch *welfare systems* in one group), but compared to the Scandinavian countries access and intensity are rather low. Thus the Dutch enterprises are situated in group d). The radar charts of the Scandinavian countries cover almost evenly the square of the diagram. Denmark performs best with maxima in three categories, while only the performance in access is not optimal. Access is best in Sweden.

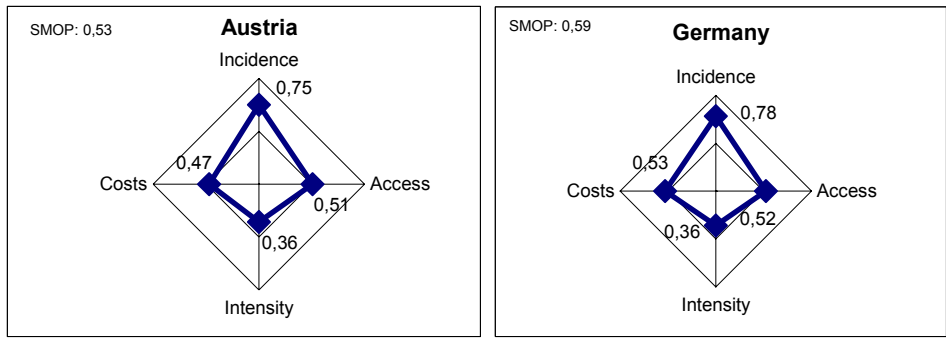


Radar charts of Denmark and Norway (national level)

Finland and Norway perform not as good as Sweden and Denmark, but they are still performing better than all other Non-Scandinavian countries, with the Netherlands being the only exception. As for Denmark and Sweden, the CVTS results of Finland and Norway are depicted in rather homogeneous radar charts with high results on every axis, but somewhat lower than in Denmark and Sweden. The enterprises of this group can be characterised by the term *'square performer'*. They display almost everywhere evenly large surfaces with very good results for all four indicators (incidence, access, intensity and costs).

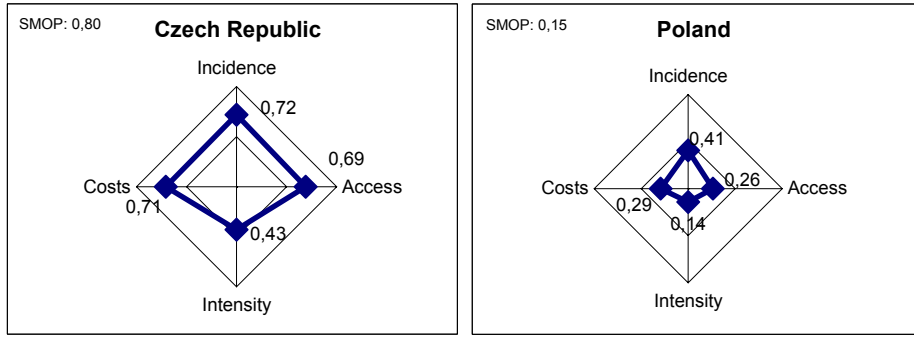
#### b) *Enterprises in Central European countries: Average Performers*

Germany and Austria (partly also Luxembourg) are united by an almost identical *'diamond structure'* (high incidence, very low intensity and access and costs in-between). CVT is offered in most of the enterprises in Germany, Austria and Luxembourg, while access, intensity and costs are rather low:



**Radar charts of Austria and Germany (national level)**

Luxembourg’s radar chart has about the same shape, but access (0.59), costs (0.59) and especially intensity (0.57) are higher while incidence (0.74) is similar to Austria and Germany. Poland and the Czech Republic belong to the group of central European countries, too, despite distinctively different levels of performance. Like in Austria, Germany and Luxembourg the intensity is very low, but incidence and costs are higher in the Czech Republic. The level of performance is in Poland less good than in Austria and in Germany, while the Czech level of performance is even better than in Austria and in Germany. The Czech Republic is the only East-European country which displays a good performance.

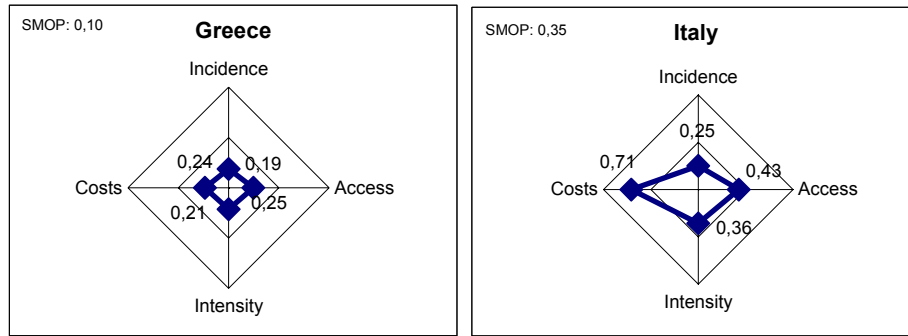


**Radar chart of the Czech Republic and Poland (national level)**

Austria, the Czech Republic, Germany and Poland are all displaying a ‘**diamond structure**’ (high incidence, very low intensity and access and costs in-between). Belgium does not match completely with this group, because costs are considerably lower (0.35) while the other three indicators indicate the structure of a diamond (incidence: 0.73, access: 0.67, intensity: 0.57).

**c) Enterprises in Southern and Eastern European countries: Low performers**

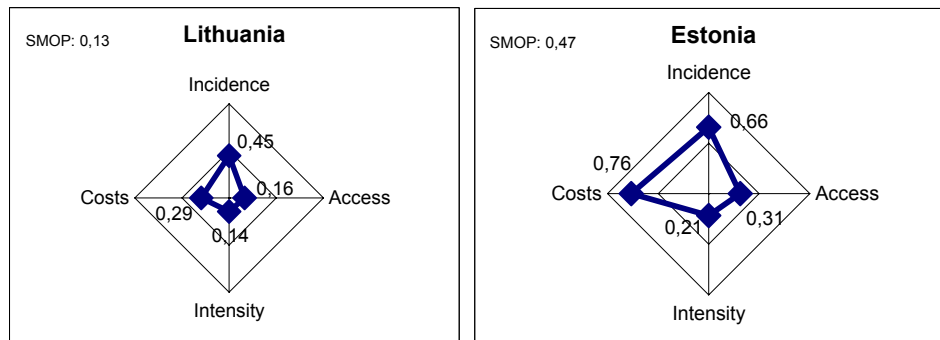
The enterprises in Southern European countries have a low level of CVT without any exception. Their SMOP ranges between 0.35 (Italy) and 0.10 (Greece). The Greek results are uniquely low for every indicator. Portugal and Italy have low levels on three axes while only the costs are rather high:



Radar charts of Greece and Italy (national level)

For Spain the opposite holds true, with very low costs (0.29), while incidence (0.38), access (0.41) and intensity (0.43) tend toward the value 0.5.

Romania (incidence: 0.11, access: 0.13, intensity: 0.14, costs: 0.18) displays similar low level results like Greece. The Lithuanian results are quite typical for a group of countries (Estonia, Hungary, Latvia). The performance of enterprises in these countries is characterised by a similar located *'trapezoid structure'*. This term means that incidence and costs are rather high, while access and intensity are rather low. There is a certain imbalance between the indicator pair incidence-costs and the indicator pair access-intensity. The influence of geopolitical and/or cultural factors is once again marked by a great similarity of the results in the Baltic states, although the Estonian enterprises perform better:



Radar charts of Lithuania and Estonia (national level)

Bulgaria's radar chart resembles that of Portugal and Italy, with a lower attainment in general (especially lower levels for costs).

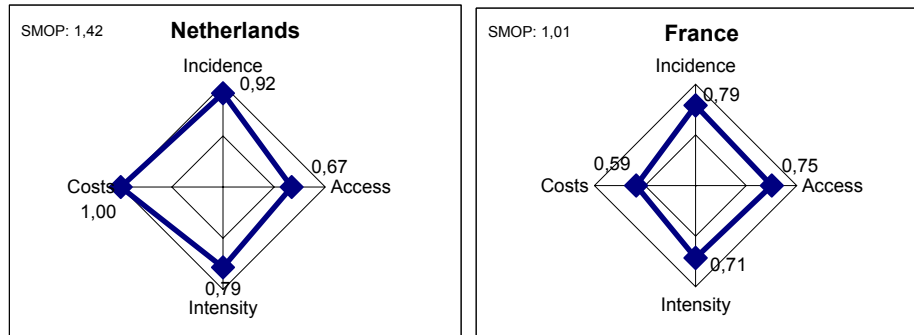
Summarising, on the national level the group of Southern and Eastern European enterprises can roughly be differentiated in three subgroups. *'Rudimental square performers'* are Greece and Romania. They achieve low results for every indicator. *'To the left falling diamond performers'* are Bulgaria, Italy and Portugal. They have higher values on the cost indicator and less good results for the other indicators. *'Trapezoid performers'* are Estonia, Latvia, Lithuania and Hungary. They have good results for costs and incidence while access and intensity are low.

Slovenia and Spain cannot be allocated to the other countries, because they show remarkable distinct forms. Spain is characterised by very low costs (0.29) and higher values for incidence (0.38), access (0.41) and intensity (0.43). Slovenia displays a performance (incidence: 0.50, access: 0.52, intensity: 0.47, costs: 0.29), which reminds partly on the *'standing diamond'*

**performance** of Austria, Germany and Luxembourg. But access is in Slovenia slightly higher than the incidence with almost similar costs.

**d) Enterprises in Western European countries: Performers close to the best performer**

Enterprises in Western European countries (FR, IE, NL) perform almost as good as the Scandinavian enterprises with mostly only one indicator which is less good:



Radar charts of the Netherlands and France (national level)

As already said, the Netherlands could also be located in the group of the Scandinavian states, with only the lower access and intensity rates distinguishing Dutch from Scandinavian enterprises. France displays a lower value on the Cost indicator that might be influenced by the French funding system, as well by the fact that cost information was reconstructed from administrative sources. Ireland, too, is in the group of good performers. It can be characterised as a **‘trapezoid performer’** on a high level (incidence: 0.82, access: 0.67, intensity: 0.64, costs: 0.88).

### 3.2.2 Summary

The composite performance indicator of CVT varies greatly between countries. When ranking countries according to the SMOP, 3 groups emerge: The high performers, made up of Scandinavia and Western Europe, the good performers in Central Europe (including CZ), and low performing Southern and Eastern Europe. These clusters are similar - though not identical - to clusters according to welfare systems or geo-politics of state systems. Although there are distinct clusters of countries along geographical, political and cultural criteria, significant differences between countries assigned to the same cluster exist:

- Enterprises in Scandinavia are best performers, with high results on every axis, with Denmark, Sweden, Finland and Norway ranking in descending order.
- Enterprises in Central European countries may be characterised by predominantly displaying high incidence, very low intensity and access and costs in-between. The Czech Republic belongs to this group, being the only former communist country performing at good level, even ahead of all central European countries. Poland shows a similar form on the axes despite a much lower level of achievement. All countries of this group – with the exception of Belgium with a very low cost indicator – have the lowest results for the intensity indicator.
- Enterprises in Eastern and Southern European countries may roughly be differentiated in three subgroups: First, Greece and Romania are very similar to one another, with low results on every indicator. Second, Bulgaria, Italy and Portugal have higher values on the cost indicator and less good results on the other indicators. These countries display similar forms, while the level of performance is divergent between them. Third, the three Baltic states and Hungary are grouped together, with high values on costs and incidence, but low values regarding access and intensity. The remaining two countries -

Slovenia and Spain - display radar charts that are too different from other countries to be included in one group.

- Overall, enterprises in three Western European countries are displaying performances close to the best performers in Scandinavia, but they are not forming a homogeneous group. The Netherlands are rather similar to the Scandinavian states, but with lower access and intensity. Ireland has an overall level that is somewhat lower than that of the Netherlands, but the shape of the radar chart is rather similar. In France, incidence, access and intensity are at almost the same high level, with only the value of the cost indicator being rather low. This might be related to the French levy system, as well as to the way cost information was reconstructed from French administrative information.

### 3.2.3 Level 2: Performance indicators of CVT on the level of training enterprises

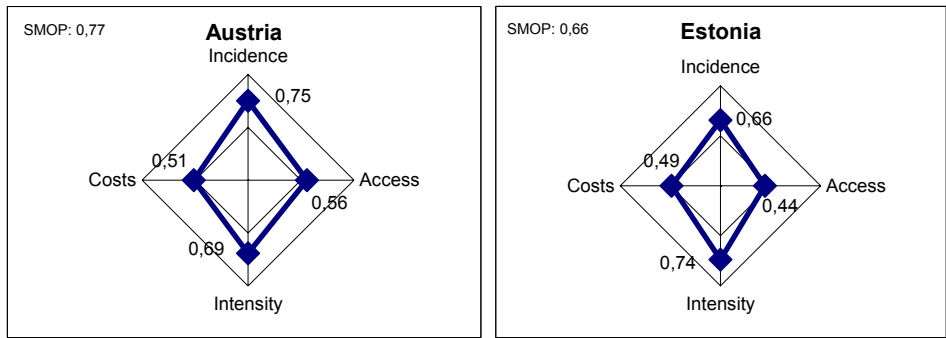
The second set of indicators concentrates mainly on the training enterprises (e.g. access is measured by training participants / all employees of **training** enterprises). This set of indicators tells something about the structure of CVT in the training enterprises, while non-training enterprises are disregarded except their incorporation in the incidence indicator. The results of the SMOPs on this level of the training enterprises are displayed here:

SMOP above 1		SMOP between 0.5 and 1		SMOP below 0.5	
Denmark (DK)	1.48	France (FR)	0.99	Greece (GR)	0.48
Norway (NO)	1.35	Belgium (BE)	0.95	Hungary (HU)	0.45
Sweden (SE)	1.31	Germany (DE)	0.91	Lithuania (LT)	0.39
Netherlands (NL)	1.28	Italy (IT)	0.88	Romania (RO)	0.26
Ireland (IE)	1.16	Austria (AT)	0.77		
Finland (FI)	1.13	Czech Republic (CZ)	0.71		
Luxembourg (LU)	1.02	Spain (ES)	0.68		
		Estonia (EE)	0.66		
		Bulgaria (BG)	0.57		
		Portugal (PT)	0.57		
		Slovenia (SI)	0.53		
		Latvia (LV)	0.50		
		Poland (PL)	0.50		

The table shows that the SMOP results on the level of training enterprises are less dispersed than on the national level. Much more countries are situated between 0.5 and 1. The best value is 1.48 (on the national level 1.87) and the worst value is 0.26 (on the national level 0.04). There are rather few changes in the national positions within the ranking. The only major change constitutes the Czech Republic which drops from 8<sup>th</sup> to the 13<sup>th</sup>. The other changes are rather little (maximum four places like Slovenia, Italia or Norway).

On the level of training enterprises three forms of radar charts can be found: *rhombi, to the right falling diamonds, top down diamonds*.

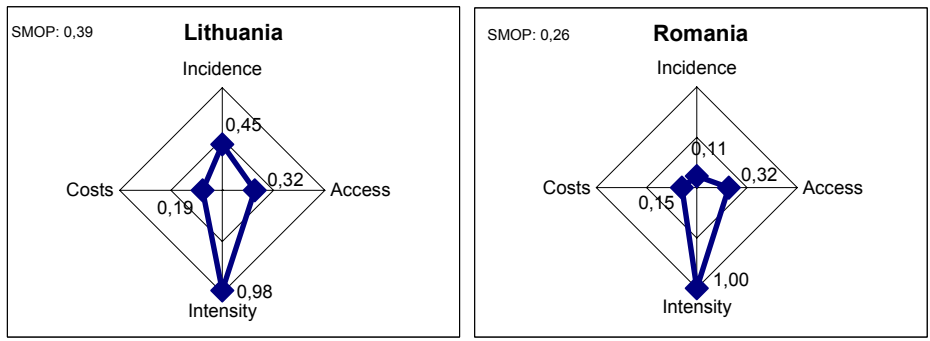
The *rhombus* is characterised by rather high indicators for incidence and intensity, while access and costs are rather low:



Radar charts of Austria and Estonia (level of the training enterprises)

The radar charts for training enterprises in Austria, Estonia, the Netherlands and Latvia display this *rhombus* form. It means that there are many training enterprises which offer rather long courses, while not so many employees of these enterprises participate and the financial investment is rather low. The Netherlands belong to this group because of the form of the radar chart, but the performance of the Dutch training enterprises is much better than in the other countries of this group. The Latvian form is very close to a top down diamond (in contrast to the diamond form mentioned in the chapter before, see below for details), but reminds more on a rhombus and less on that top down diamond.

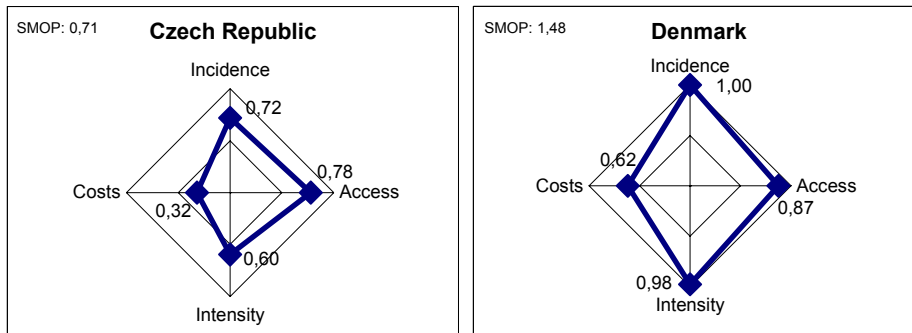
A new *top down diamond* form can be found in Bulgaria, Greece, Hungary, Lithuania, Poland, Portugal and Romania despite some level differences within this group (e.g. the intensity is not so high in Poland (0.67) while access is comparably high with 0.52). *Top down diamonds* display an extraordinarily high level for the indicator intensity, while access, incidence and costs are rather low:



Radar charts of Lithuania and Romania (level of the training enterprises)

Big differences exist between intensity and the other indicators in this group. Only few employees in few enterprises receive here very long trainings.

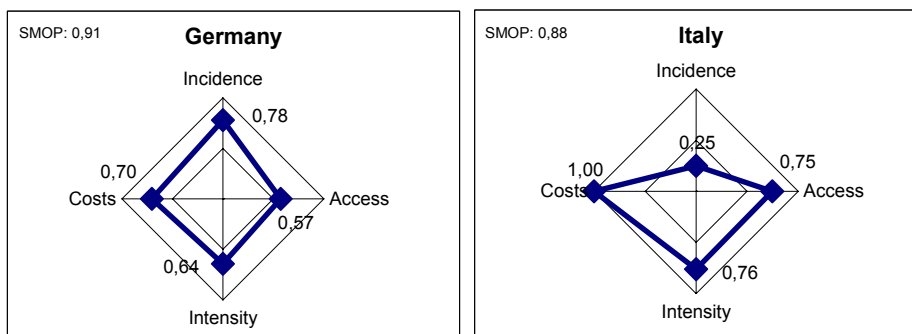
*To the right falling diamonds* display good results for access, incidence and intensity, while the costs are rather low:



**Radar charts of the Czech Republic and Denmark (level of the training enterprises)**

Countries of this group (Belgium, Czech Republic, Denmark, Finland, France, Ireland and Luxembourg) display good results for every indicator except the Cost indicator. As has been mentioned before, the cost indicator is in some degree ambiguous. In the group of countries displaying similar forms of radar charts at enterprise level differences of the achieved level of overall performance exist. In particular Denmark, but also Ireland and Finland display much better results than the other countries of this group.

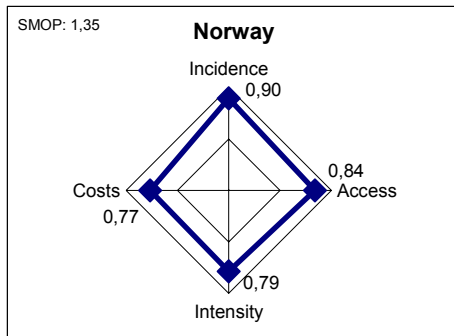
Some countries are characterised by rather unique forms which can not be assigned to any other group. For example Germany displays a rather low access indicator indicating a rather limited participation rate. Apparently, there is an imbalance between Access and the other indicators in the German training enterprises. Rather few employees participate in training while financial and time investment is rather high in comparison to other countries:



**Radar charts of Germany and Italy (level of the training enterprises)**

The Italian diagram is very different from all other charts. Very high costs are accompanied by a low share of enterprises offering training. Access and intensity are rather high. Only a small proportion of enterprises is engaged in training, but when Italian enterprises are offering training they are very active.

Norway is the only country which shows a rather homogenous picture for all indicators on the level of training enterprises:



Radar chart of Norway (level of the training enterprises)

### 3.2.4 Summary

It is striking that the overall performance results on the level of training enterprises are remarkably less dispersed than on the national level. This is at least partly due to the fact that non-training enterprises were excluded. More countries are displaying a middle range value of the SMOP when using the enterprise level than the national level. Both the maximum and minimum are less extreme.

Overall, the ranking of countries according to their SMOP leads to similar results regarding the position of countries, with some exceptions: The relative position of Estonia and the Czech Republic, is notably higher when analysing at national level, whereas the relative position of Norway, Italy, Portugal and Greece at enterprise level is better than at national level. Top performers at national level are mostly ranking high at enterprise level, too. It is medium and low performers where the different levels of indicators result in divergences.

The shapes of the radar charts of training enterprises are more homogenous than those on national level. It is not possible to cluster similar forms of radar charts according to geopolitical or cultural country groups. There are mainly three forms to be found: *To the right falling diamonds, top down diamonds and rhombi*. Some countries, like Germany, Italy and Norway, are again difficult to assign to any group.



## **4. Overview of the main quantitative indicators of training enterprises in 21 economic sectors<sup>9</sup>**

### **4.1 Introduction**

In chapter 3 of this report the weighted national averages of the quantitative key indicators of CVT of the 25 CVTS-countries were used for the radar charts. In the following, we will differentiate these weighted national averages by analysing the values of the CVT key indicators, splitting up the weighted national averages in 21 economic sectors. In this way, it should be possible to analyse striking **similarities** and **differences** of training enterprises between economic sectors across countries. We will use the basic data from the matrix tables displayed in annex 4. We will analyse the activities of training-enterprises, thus we will use the indicators on the level of training enterprises (see page 7 for the definition of the four key-indicators on the level of training enterprises).

### **4.2 Sectors covered by CVTS 2 and classification of economic sectors**

In compliance with the NACE Rev. 1 nomenclature the enterprises surveyed in CVTS2 were classified into six main economic sectors in accordance with their principal economic activity:

- NACE D - Processing industry
- NACE G - Trade; maintenance and repair of motor vehicles and consumer goods
- NACE J - Credit and insurance industry
- NACE K - Real estate activities, renting of movable property, provision of services predominantly for enterprises
- NACE O - Provision of other public and personal services
- NACE C, E, F, H, I - Mining and extraction of stone and earth, supply of energy and water, construction, hotel and restaurant, transport and communication.

The following NACE Rev. 1 activities were excluded from the CVTS:

- NACE A and B: Agriculture and forestry, fishing
- NACE L, M and N: Public administration, health and education
- NACE P: Private households with employed persons
- NACE Q: Extra-territorial organisations and bodies

In the following, we will discuss results from our analysis on the level of training enterprises for a total of 21 NACE subcategories. The following 21 NACE subcategories will be used:

- Mining and quarrying
- Food, beverages and tobacco
- Textiles, clothing, leather
- Wood, manufacturing n.e.c.
- Paper, publishing, printing
- Non-metallic products
- Metals, metallic products
- Machinery, electrical/optical equipment
- Transport equipment
- Electricity, gas and water supply
- Construction

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<sup>9</sup> The data for Luxembourg are confidential with exception of the NACE categories K and O, the data for training costs for Norway are not available and the training costs data for the United Kingdom are questionable.

- Sale and repair of motor vehicles
- Wholesale trade
- Retail trade, repair of personal goods
- Hotels and restaurants
- Transport, supporting activities
- Post and telecommunications
- Banking and insurance
- Financial intermediation (auxiliary)
- Real estate, renting, business activities
- Other personal service activities

### 4.3 Discussion of the matrixes for training incidence, training access, training intensity and training costs (level 2 - training enterprises)

In this chapter we will discuss the data for the 21 NACE subcategories in more detail in order to identify similarities and differences of CVT in the training enterprises of a given NACE category across countries. In Annex 4, you will find the matrixes of the four key indicators and in annex 5 you will find the figures of the key indicators by 21 economic sectors and 25 countries.

We are using a four-step-explanation of assessing the values of the indicators for the 21 economic sectors across countries:

1. *The range of values across the 21 economic sectors.* This is a measure of the differences between the economic sectors across countries. The wider the range, the more differences between the economic sectors in a country can be observed. With a narrow range, most economic sectors in a country have the similar or same level of indicator values for economic sectors.
2. *The relative position of the weighted national average.* Using the weighted national average of 25 countries, we are dividing the results for the four training indicators of these countries into three groups of countries: e.g. countries with general high, average and low results.
3. *Grouping of countries.* We are using the single results of the economic sectors for grouping the results of the resp. indicators across countries.
4. *Analysis of economic sectors with extreme CVT-results.* Using the SPSS procedure boxplot, similarities and exceptional differences between the sectoral key indicators can be identified. The procedure boxplot calculates and displays summary statistics for the distribution. However, more interesting for our analysis is the determination of the so called “outlying values” - these are the observed indicator values of the economic sectors, which are not distributed around the median. The boxplot includes two categories of values with outlying factors. Outlying values, which are nearer to the box-edges, are called **extreme values** and cases, which are positioned farther away, are called **outliers**. An overview of the extreme values and outliers for the four indicators is displayed in annex 6.

The following figures 4.3.1/4.3.2/4.3.3/4.3.4 show the weighted national average (the total indicator for all economic sectors in a given country) and the range of the values of the quantitative key indicators (level 2) across countries. The combination of the weighted national average (black dot) and range (line) show the differences between economic sectors in countries. The position of the weighted national average within the range is of interest, too. If the weighted national average is positioned in the upper part of the range most economic sectors perform high. The skewness of the distribution shows also, that some of the economic

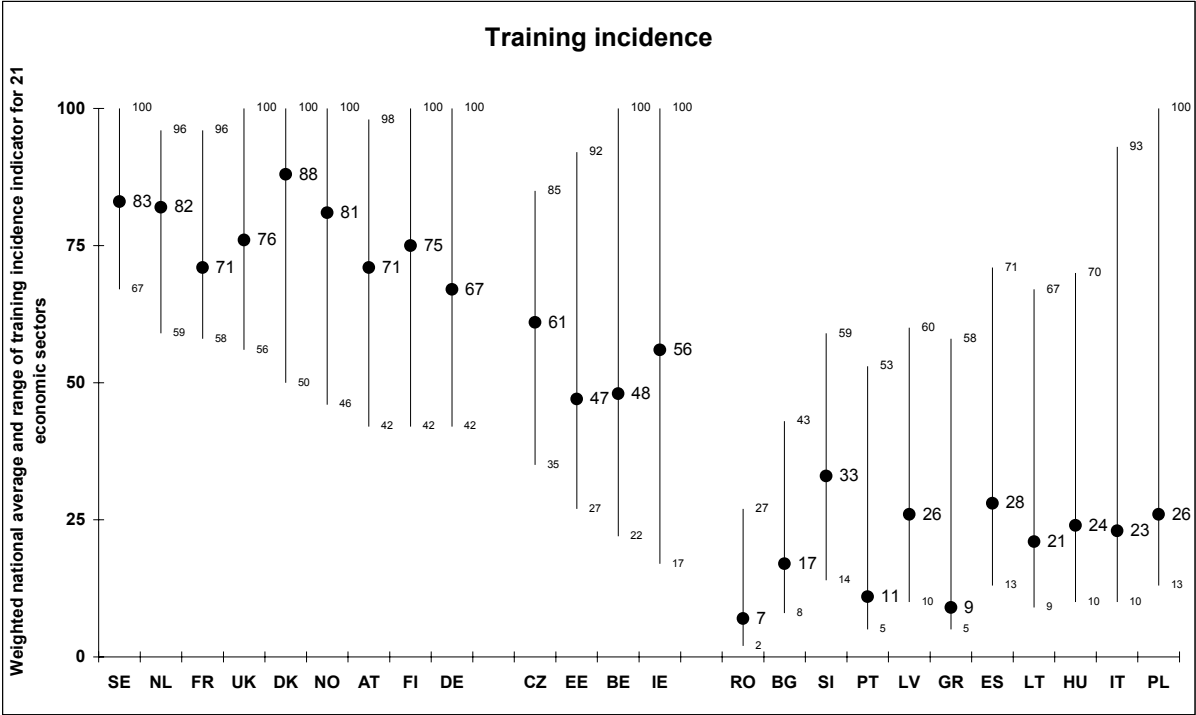
sectors perform (clearly) lower. If the weighted national average is positioned in the lower part of the range most economic sectors will be positioned in the lower section. The skewness of the distribution shows also that some of the economic sectors perform (clearly) higher.

**Training incidence**

The weighted national average for the training incidence indicator is 53% for the 25 CVTS countries. The range between the weighted national average is widespread: Romania has the lowest value with 7 % of enterprises offering training and the highest weighted average of training incidence can be found in Denmark, where 88% of the enterprises offer training. Thus the spread of the weighted national averages of the training incidence indicator between countries is 81 percentage points.

If the weighted national averages of countries are separated in three equal parts according to the value levels (see the Figure 4.3.1 below), we find three groups of countries. A general observation is that within each group of countries the spread of the weighted economic sector averages across countries is very different.

Figure 4.3.1. Weighted national average and range of training incidence indicator for 21 economic sectors in CVTS2-countries



- High performers.** For a group of 9 countries (Sweden, Netherlands, France, United Kingdom, Denmark Norway, Austria, Finland, Germany) the training incidence on average is high. The spread of the maximum and the minimum values within this group of countries varies considerably – from 33 percentage points in Sweden to 58 percentage points in Germany. In most countries the weighted national averages are positioned in the middle section of the range. The weighted national average of France lies in the lower part of the range. Only the weighted average of Norway and Denmark is positioned in the upper section of the range.

- **Medium performers.** A group of 4 countries (Czech Republic, Estonia, Belgium and Ireland) have an average training incidence. The spread of the values differs – from 50 percentage points in Romania to 83 percentage points in Ireland. The weighted national averages of the Czech Republic and Ireland are positioned in the middle section of the range and the weighted national averages of Estonia and Belgium in the lower section of the range.
- **Low performers.** A group of 11 countries (Romania, Bulgaria, Slovenia, Portugal, Latvia, Greece, Spain, Lithuania, Hungary, Italy, Poland), with weighted national averages below the average of 25 CVTS-countries. The spread of the values also differs here considerably – from 25 percentage points for Romania to 87 percentage points for Poland. It is interesting to note that the national average in all countries lies in the lower section of the range

For the training incidence indicator we can identify and separate four main groups of countries. The main observations are:

1. **Countries with high values for training incidence** in most of the economic sectors with only a few exceptions: In 8 countries (Denmark, Sweden, Netherlands, Norway, United Kingdom, Finland, France and Austria) for most of the 21 economic sectors the training incidence value exceeds 60%. In Sweden all the economic sectors, in Denmark all the economic sectors except “mining and quarrying”, in the Netherlands except “post and telecommunications” and in France except “construction” have a training incidence higher than 60%.

Country	Exceptions: Sectors below 60%
Sweden	-
Denmark	1 (mining and quarrying)
Netherlands	1 (post and telecommunications)
France	1 (construction)
United Kingdom	2 (textiles, clothing and leather, wood and manufacturing n.e.c.)
Austria	2 (retail trade, hotels and restaurants)
Norway	2 (textiles, clothing and leather, hotels and restaurants)
Finland	4 (textiles, clothing and leather, wood and manufacturing n.e.c, hotels and restaurants, mining and quarrying)

2. A group of **5 countries** (Germany, Czech Republic, Ireland, Belgium and Estonia) with a **profile of differing values** between sectors. In some economic sectors high training incidence values can be observed. Overall, this group of countries show in general relatively high training incidence values.

Countries	Sectors with high values (70 % or more)	Sectors between 50-70%	Sectors with low values (50 % or less)
Germany	6 over 80% 10 over 70%	9	2 under 50% (Textiles, clothing and leather, mining and quarrying)
Czech Republic	3 over 80% (Transport equipment, banking and insurance, electricity, gas and water supply, 8 over 70%	16	2 under 50% (Wood and manufacturing n.e.c., hotels and restaurants)
Ireland	7 over 80% 11 over 70%	3 (Metals, metallic products, wholesale trade, textiles, clothing and leather)	7 under 50% 5 under 30%
Belgium	4 over 80% (all with 100%) 6 over 70%	6	9 under 50% 3 under 30% (Transport, supporting activities, wood manufacturing n.e.c., textiles, clothing and leather)
Estonia	3 over 80% (Financial intermediation (auxiliary), banking and insurance, post and telecommunications) 4 over 70%	7	10 under 50% 1 under 30% (Other personal services activities)

3. A group of **6 - mostly eastern European - countries** - (Slovenia, Spain, Latvia, Poland, Hungary and Lithuania) with lower training incidence (around 40 %) for all sectors.

Country	Sectors with 40% or more
Slovenia	7
Spain	6
Latvia	3 (Electricity, gas and water supply, banking and insurance, financial intermediation (auxiliary))
Poland	3 (Post and telecommunication, banking and insurance, electricity, gas and water supply)
Hungary	3 (Post and telecommunication, banking and insurance, electricity, gas and water supply)
Lithuania	3 (Post and telecommunication, banking and insurance, electricity, gas and water supply)

4. A group of **5 countries** (Italy, Bulgaria, Portugal, Greece and Romania) with mostly training incidence values below 30 %.

Country	Sectors with 30% or more
Italy	5
Bulgaria	3 (Electricity, gas and water supply, banking and insurance, mining and quarrying)
Portugal	3 (Post and telecommunication, banking and insurance, electricity, gas and water supply)
Greece	1 (Banking and insurance)
Romania	-

In about half of the countries, training incidence **exceeds 50 %**. For “banking and insurance”, in most countries it exceeds 50%, only in 3 countries (Portugal, Bulgaria, Romania) it is below 50 %. 13 countries indicate for this sector a training incidence value over 80 %. In 6

countries, the sector “electricity, gas and water supply” scores below 50 %, but in 11 countries above 90 % (the latter is the case in all the Scandinavian and West-European countries). In 16 countries the training incidence of the sector “post and telecommunications” is higher than 50 %.

In 16 countries, the sector “textiles, clothing and leather“ scores clearly **below the 50 % value**. This is also the case for the sector “hotels and restaurants” in 15 countries, and for the sectors “transport, supporting activities” and “retail trade, repair of personal goods” in 14 countries. In the case of “textiles, clothing and leather“ (10 countries), “wood and manufacturing n.e.c” (9 countries), “hotels and restaurants”(10 countries), mostly eastern European and southern European countries show values clearly below 20 %.

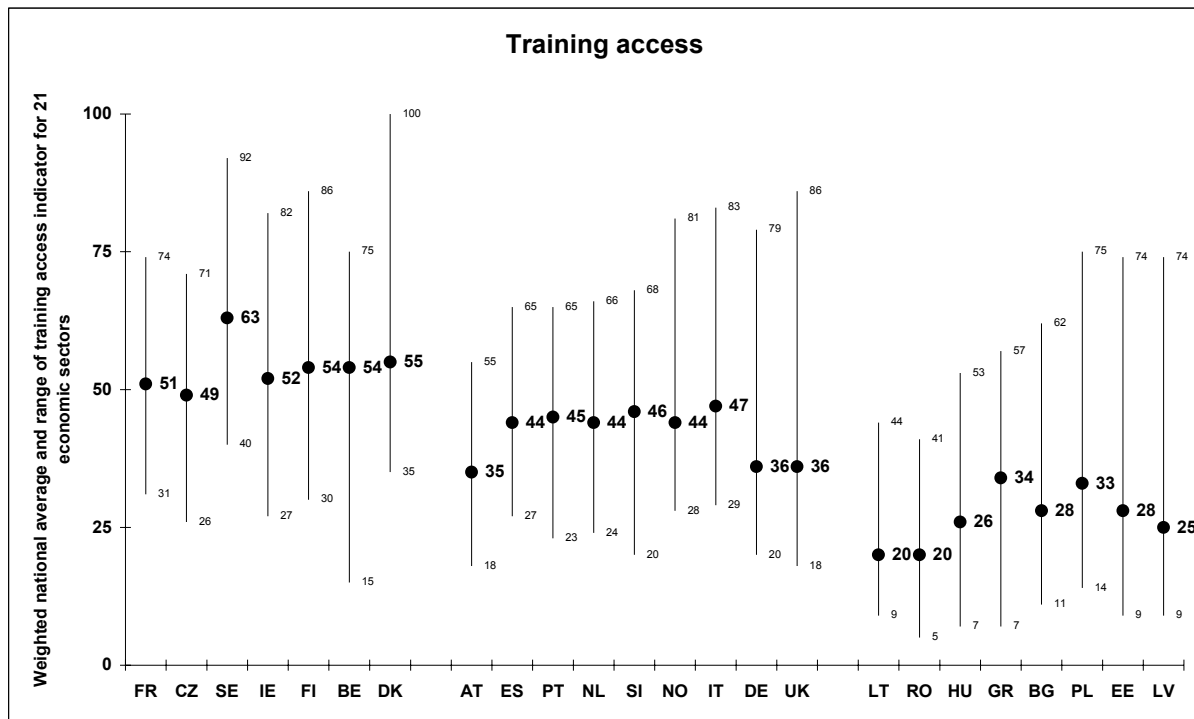
The results of the SPSS procedure “boxplot” show, that especially the economic sectors “banking and insurance” in 7 countries and “electricity, gas and water supply” in 6 countries have positive extreme values (see annex 6). An explanation of the differences between the economic sectors is far beyond the scope of this work package.

### **Training access**

The weighted national average for the training access indicator is 54% for the 25 CVTS countries. This indicates that in training enterprises more than every second employed undertook some continuing vocational training offered by the enterprise. The range of the weighted national average of training access is smaller than the range of training incidence: Romania has the lowest value, where 20% of the employees in training enterprises are offered training, and the highest weighted average value of training access can be found in Sweden, with 63% of employees participating in training. Thus the spread of the weighted national averages of the training access indicator between countries is 43 percentage points.

Three groups of countries may be distinguished , according to the level of the weighted national averages of countries (see figure 4.3.2 below), we find three groups of countries.

Figure 4.3.2.: Weighted national average and range of training access indicator for 21 economic sectors in CVTS2-countries



- **High performers.** A group of 7 countries (France, Czech Republic, Sweden, Ireland, Finland, Belgium, Denmark) with high training access values may be identified. The spread of the values within this group varies between 43 percentage points in France and 65 percentage points in Denmark. In most countries, the weighted national average is positioned in the middle section of the range. Only the weighted national average of Denmark is positioned in the lower section of the range.
- **Medium performers.** A group of 9 countries (Austria, Spain, Portugal, Netherlands, Slovenia, Norway, Italy, Germany, United Kingdom) is positioned in the middle section. The spread of the values differs from 37 percentage points in Austria to 68 percentage points in the United Kingdom. The weighted national averages of Austria, Spain, Portugal, the Netherlands and Slovenia are positioned in the middle section of the range and the weighted national averages of Norway, Italy, Germany and the United Kingdom in the lower section of the range.
- **Low performers.** A group of 8 countries (Lithuania, Romania, Hungary, Greece Bulgaria, Poland, Estonia, Latvia) has lower weighted national averages of training access. The spread of the values differs between 35 percentage points for Lithuania to 65 percentage points for Latvia. It is interesting to note here that the weighted national averages in most countries – except for Greece - are located in the lower section of the range.

For the training access indicator we also can identify and separate four main groups of countries.

1. A group of countries with a **training access value higher than 45%** in nearly all economic sectors.

Country	Sectors with 45% or less	Sectors with 60% or more
Sweden	1 (Wood and manufacturing n.e.c.)	12
Denmark	4	8
Finland	5	4
Norway	7	5
Ireland	7	5
Belgium	7	4

2. In some countries, one can observe **many economic sectors with a high training access value, in combination with sectors with a much lower training access value.** In the Czech Republic, Slovenia and Italy all sectors are situated between 31 – 74 %. No sector has an extremely low figure. Also in Portugal there is no sector with an extremely low figure.

Country	Sectors with 45% or less	Sectors with 60% or more
France	9	4
Czech Republic	9	3 (Banking and insurance, Transport, supporting activities, transport equipment)
Slovenia	10	4
United Kingdom	11	4
Italy	11	3 (Post and telecommunication, mining and quarrying, electricity, gas and water supply)
Portugal	11	3 (Financial intermediation (auxiliary), retail trade, repair of personal goods, machinery, electrical / optical equipment)
Netherlands	12	4

3. Only **Spain** is a country where sectors overall show an **average level of training access**, mostly between 30 % und 45 %. Only two sectors (textiles, clothing and leather, wood and manufacturing n.e.c.) score slightly below 30 %.
4. In 10 countries, there is a generally **low level of training access for most of the economic sectors.**



Country	Sectors with 45 % or more	Sectors with 30 % or less
Poland	5	8 4 with 20 % or less
Austria	5	9 1 with 20 % or less (Textiles, clothing and leather)
Estonia	4	12 6 with 20 % or less
Germany	3 (Post and telecommunication, financial intermediation (auxiliary), electricity, gas and water supply)	8 2 with 20 % or less (Textiles, clothing and leather, hotels and restaurant)
Latvia	3 (Financial intermediation (auxiliary), non-metallic-products, banking and insurance)	13 8 with 20 % or less
Hungary	2 (Banking and insurance, post and telecommunication)	13 7 with 20 % or less
Bulgaria	2 (Electricity, gas and water supply, banking and insurance)	14 7 with 20 % or less
Greece	1 (Banking and insurance)	12 5 with 20 % or less
Lithuania	-	17 10 with 20 % or less
Romania	-	18 10 with 20 % or less

Economic sectors with a high of the training access indicator are in most countries the sectors „banking and insurance”, “electricity, gas and water supply”, “post and telecommunications” and “financial intermediation (auxiliary)”.

The trade sector (NACE G) has rather similar training access values in many countries. In addition, no great differences between the three sub-sectors exist. In 15 countries the sector “sale and repair of motor vehicles” shows a value of 40% and higher. This is also the case in 15 countries for the sector “wholesale trade”. However, the sector “retail trade, repair of personal goods” only in 8 countries has a value higher than 40 %.

It strikes that in most manufacturing sectors (NACE category manufacturing) in most countries the training access indicator is rather low. Exceptions here are the sectors “non-metallic products” and the sector “machinery, electrical/optical equipment”. One can observe that especially the sectors “textiles, clothing and leather”, “paper/publishing/printing” and “wood and manufacturing n.e.c.” in most countries show rather low training access values. Also the “construction industry” and “other community, social, personal service activities” have rather low training access values.

The results of the SPSS procedure “boxplot” show, that especially the economic sectors “post and telecommunications” in 5 countries and “banking and insurance” as well as “electricity, gas and water supply” in 4 countries have positive extreme values (see annex 6).

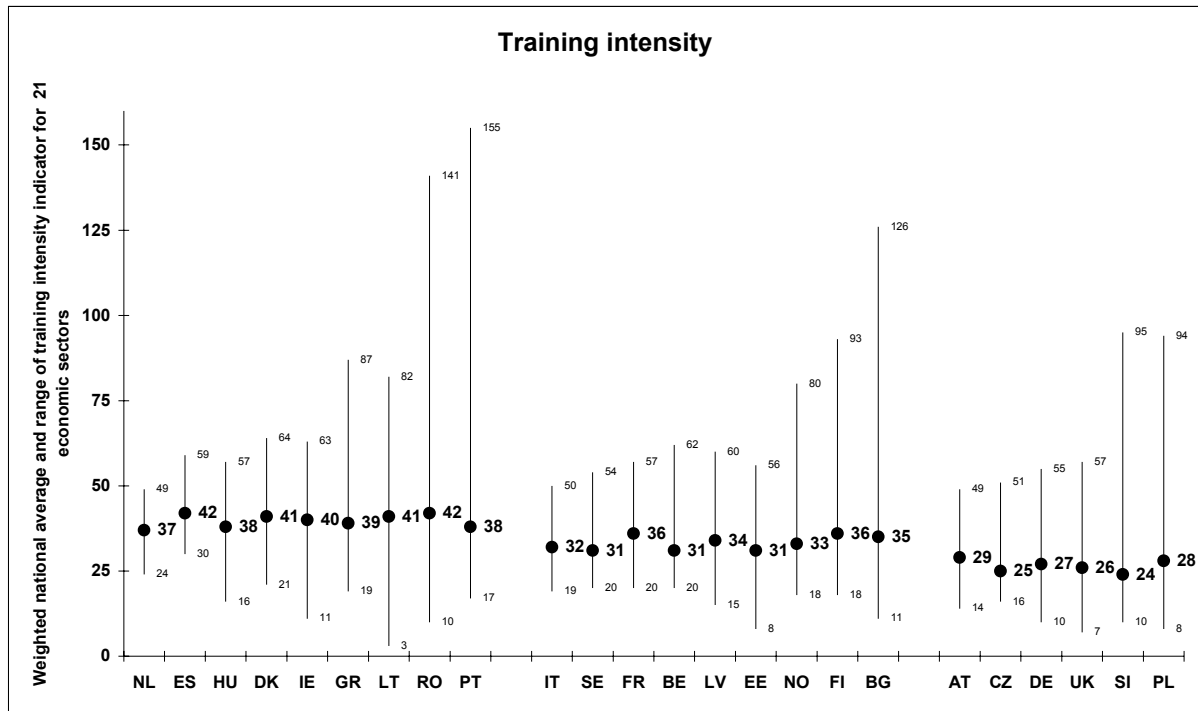
### Training intensity

The weighted national average for the training intensity indicator is 30 training hours per participant for the 25 CVTS countries. The range of the weighted national averages is rather small: Slovenia has the lowest value for the training intensity (24), and the highest weighted average value for training intensity (42) can be found in Spain and Romania. Thus, the spread

of the weighted national averages of the training intensity indicator between countries is only 18 training hours per participant.

If the weighted national averages of countries are separated in three equal parts according to the value levels (see the figure 4.3.3 below), we find three groups of countries. A general observation is that within each group of countries the national spread of the training intensity indicator varies considerably across countries.

Figure 4.3.3.: Weighted national average and range of training intensity indicator for 21 economic sectors in CVTS2-countries



- **High performers.** A group of 9 countries (Netherlands, Spain, Hungary, Denmark, Ireland, Greece, Lithuania, Romania, Portugal) have high training intensity values. The spread of the values within this group differs considerably - from 25 in the Netherlands to 138 training hours per participant in Portugal. In most countries the weighted national average is positioned in the middle section of the range. Only the weighted national averages of Greece, Romania and Portugal are located in the lower section of the range.
- **Medium performers.** A group of 9 countries (Italy, Sweden, France, Belgium, Latvia, Estonia, Norway, Finland, Bulgaria), which are positioned in the middle section. The spread of the values differs considerably – from 31 in Italy to 115 training hours per participant in Bulgaria. The weighted national averages of Italy, France and Estonia are positioned in the middle section of the range and the weighted national averages of Sweden, Belgium, Latvia, Norway, Finland and Bulgaria in the lower section of the range.
- **Low performers.** A group of 6 countries (Austria, Czech Republic, Germany, United Kingdom, Slovenia, Poland), which national averages are positioned in the lower section of the range. The spread of the values differs between 35 for Austria to 86 training hours per participants for Poland. It is interesting to note here that the

weighted national averages in most countries – except for Austria - are positioned in the lower section of the range.

For the training intensity indicator we also can identify and separate four main groups of countries.

1. A group of **3 countries** (Denmark, Estonia, Greece) with a **high training intensity value** across economic sectors, and only a few economic sectors with lower intensity values.

Country	Sectors with 40 hours or more	Sectors with 30 hours or less
Spain	16 4 with 50 hours or more	2 (Retail trade, post and telecommunication)
Greece	11 7 with 50 hours or more	4
Denmark	11 4 with 50 hours or more	4

2. A group of **4 countries** (Netherlands, Finland, France, Italy) with economic sectors with relative **even training intensity values** on the average level.

Country	Range of most of the sectors	Sectors with 30 hours or less
Netherlands	All sectors between 24 – 49 hours	4
Finland	13 sectors between 30 – 50 hours 3 with more than 50 hours	5
France	15 sectors between 30 – 50 hours 1 with more than 50 hours (Transport, supporting activities)	6
Italy	14 sectors between 30 – 50 hours 1 with 50 hours (sale and repair of motor vehicles)	8

3. A group of **7 countries** with a diverse profile of **training intensity values - partly high and partly low values.**

Country	Sectors with 45 hours or more	Sectors with 30 hours or less	Average level
Romania	11 8 with 50 or more hours	6	High (42 hours)
Portugal	6 (all with 50 or more hours)	5	Relatively high (38 hours)
Lithuania	7 5 with 50 or more hours	7	High (41 hours)
Ireland	6 4 with 50 or more hours	8	High (40 hours)
Hungary	6 2 with 50 or more hours	9	Relatively high (38 hours)
Bulgaria	5 (all with 50 or more hours)	12	Medium (35 hours)
United Kingdom	5 4 with 50 or more hours	10	Low level (26 hours)

4. A group of **10 countries** with mostly **low intensity values**.

Country	Sectors with 30 hours or less	Sectors with 20 hours or less	Sectors with 45 or more hours
Belgium	10	1 (Electricity, gas and water supply)	2 (Financial intermediation (auxiliary), post and telecommunication)
Norway	11	1 (Hotels and restaurants)	2 (Post and telecommunication, real estate, renting, business activities)
Estonia	12	9	4
Sweden	13	3 (Banking and insurance, Retail trade, hotels and restaurants)	2 (Financial intermediation (auxiliary), transport equipment)
Poland	13	7	1 (Paper, publishing, printing)
Latvia	14	5	3 (Non-metallic products, real estate, renting, business activities, post and telecommunication)
Austria	15	4	1 (Banking and insurance)
Germany	15	9	1 (Transport equipment)
Slovenia	15	10	2 (Electricity, gas and water supply, real estate, renting, business activities)
Czech Republic	17	5	2 (Financial intermediation (auxiliary), real estate, renting, business activities)

On the level of the economic sectors, especially the sector „real estate, renting and business activities“ has high training intensity in most countries. The sector “machinery, electrical/optical equipment”, too, has high intensity values.

In the sectors “textiles, clothing and leather”, “transport equipment”, “electricity, gas and water supply” and “post and telecommunications” one can observe no unified profiles for the training intensity values. Here we find countries with high and low intensity values.

Surprisingly, the training intensity value in the sector “banking and insurance” is not that high across countries. This is also the case for the sector “activities auxiliary to financial intermediation”.

In many countries the sectors “food, beverages and tobacco”, “construction”, “sale and repair of motor vehicles”, “retail trade, repair of personal goods” and “hotels and restaurants” have low training intensity values.

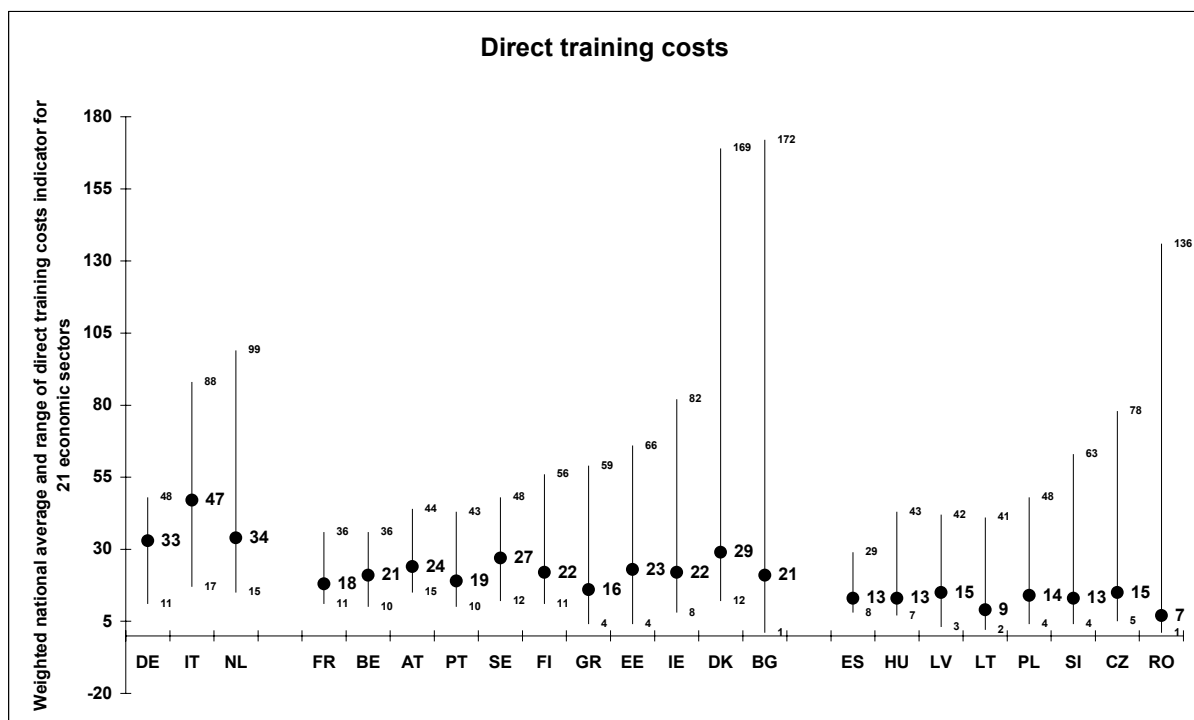
The results of the SPSS procedure “boxplot” show, that especially the economic sectors “mining” in 4 countries and “banking and insurance”, “post and telecommunications”, “transport” and „real estate, renting and business activities“ in 3 countries have positive extreme values (see annex 6).

## Direct training costs

The weighted national average for the direct training costs indicator (direct training costs per training hours) is 30 PPS<sup>10</sup> for the 25 CVTS countries. The range between the weighted national average is relatively widespread: Romania has the lowest value for the direct training costs (7 PPS), and the highest weighted national average for the direct training costs (47 PPS) can be found in Italy. Thus, the spread of the weighted national averages of the direct training costs indicator between countries is 40 PPS.

If the weighted national averages of countries are separated in three equal parts, according to the level of the weighted national averages (see the figure 4.3.4 below), we find three groups of countries. A general observation is, that within each group of countries the spread of the weighted economic sector averages across countries is very different.

Figure 4.3.4.: Weighted national average and range of direct training cost indicator for 21 economic sectors in CVTS2-countries



- **High costs per training hour.** A group of 3 countries (Germany, Italy and Netherlands), which have high values for the direct training costs. The spread of the values within this group differs between 37 PPS in Germany to 84 PPS in the Netherlands. In all countries, the weighted national average is positioned in the lower section of the range.
- **Medium costs per training hour.** A group of 11 countries (France, Belgium, Austria, Portugal, Sweden, Finland, Greece, Estonia, Ireland, Denmark, Bulgaria), which are positioned in the middle section. The spread of the values differs considerably – from 25 PPS in France to 171 PPS in Bulgaria. The weighted national averages of Belgium and Sweden are positioned in the middle section of the range and the weighted

<sup>10</sup> PPS (purchasing-power standards): Costs are indicated in PPS to allow for price differences between the individual countries. The PPS conversion factors indicate how many national currency units the same quantity of goods and services would cost in the individual countries).

national averages of France, Austria, Portugal, Finland, Greece, Estonia, Ireland, Denmark, Bulgaria) in the lower section of the range.

- **Low costs per training hour.** A group of 8 countries (Spain, Hungary, Latvia, Lithuania, Poland, Slovenia, Czech Republic, Romania) with weighted national averages positioned in the lower section of the range. The spread of the values differs considerably - between 21 PPS in Spain to 135 points in Romania. It is interesting to note here that the weighted national averages in all countries lies in the lower section of the range.

For the direct training cost indicator we also can identify and separate four main groups of countries. The grouping of countries for the training cost indicator is:

1. Italy is a special case with **high training cost values** for most economic sectors.

Country	Sectors with 40 PPS or more	Sectors with 30 PPS or less
Italy	14 10 with 50 PPS or more	3 (Electricity, gas and water supply, mining and quarrying, post and telecommunication)

2. A group of 4 **countries** (Denmark, Netherlands, Ireland Estonia) with a mix of some sectors with **high training costs** and others with **low training cost values**.

Country	Sectors with 40 PPS or more	Sectors with 30 PPS or less
Denmark	5 2 with 50 PPS or more (Mining and quarrying, post and telecommunication)	10 6 with 20 PPS or less
Netherlands	4 2 with 50 PPS or more (Post and telecommunication, mining and quarrying)	7
Estonia	3 (all with 50 PPS or more: Financial intermediation (auxiliary), sale and repair of motor vehicles, wholesale trade)	14 8 with 20 PPS or less
Ireland	3 2 with 50 PPS or more (Financial intermediation (auxiliary), sale and repair of motor vehicles)	16 8 with 20 PPS or less

3. A group of **5 countries** (Sweden, Finland, Austria, Germany and Belgium) with **training cost values on average level**.

Country	Sectors with 40 PPS or more	Sectors with 30 PPS or less	Sectors with 20 PPS or less
Austria	3 (Post and telecommunication, financial intermediation (auxiliary), mining and quarrying)	16	4
Germany	1 (Banking and insurance)	12	2 (Transport equipment, mining and quarrying)
Sweden	1 (Electricity, gas and water supply)	12	4
Finland	1 (Financial intermediation (auxiliary))	17	12
Belgium	-	19	9

4. A group of 12 countries with mostly **low training cost values** across the economic sectors

Country	Sectors with 30 PPS or more	Sectors with 20 PPS or less
Greece	3 (Wholesale trade, financial intermediation (auxiliary), construction)	13
France	2 (Financial intermediation (auxiliary), electricity, gas and water supply)	14
Portugal	2 (Real estate, renting, business activities, transport, supporting activities)	14
Hungary	2 (Post and telecommunication, banking and insurance)	16
Poland	2 (Sale and repair of motor vehicles, post and telecommunication)	16
Czech Republic	1 (Electricity, gas and water supply)	17
Slovenia	1 (Financial intermediation (auxiliary))	17
Bulgaria	2 (Electricity, gas and water supply, sale and repair of motor vehicles)	18
Romania	2 (Wholesale trade, banking and insurance)	18
Spain	-	18
Latvia	1 (Wholesale trade)	19
Lithuania	1 (Transport equipment)	20

The economic sectors with high cost values in most countries are the sector „wholesale trade“ and „activities auxiliary to financial intermediation“.

It strikes that in most manufacturing sectors (NACE category manufacturing) in most countries the training cost indicator is rather low, with the exception of the sector “non-metallic products”. One can observe that especially the manufacturing sectors “textiles, clothing and leather”, “paper/publishing/printing” and “machinery, electrical/optical equipment” and “wood and manufacturing n.e.c. ” in most countries show rather low training cost values. Also the “construction industry”, the “retail trade, repair of personal goods”, “hotels and restaurants”, “transport and supporting activities” and “other community, social, personal service activities” show rather low training cost values.

The results of the SPSS procedure “boxplot” show (see annex 6), that especially the economic sectors “financial intermediation (auxiliary)” in 8 countries and “post and telecommunications” in 5 countries, “electricity, gas and water supply” as well as “wholesale trade” in 4 countries show positive extreme values.

#### 4.4 Summary

In general, one can observe great differences between the profiles of the 21 economic sectors across the 25 countries. The ranges of the respective indicators of the economic sectors across countries are very different. Also the position of the economic sectors within the range is very different across the countries. However, one can observe some similarities for economic sectors across countries for the single indicators. The results of the SPSS procedure “boxplot” - screening the exceptional values of the four indicators - show that most observed values for economic sectors for the four key indicators are positioned around the weighted national averages.

Instead of a summary, we highlight some findings concerning the countries participating in this Leonardo-project. In **Denmark**, the sector “mining, and quarrying” plays an exceptional role. The training incidence here is clearly lower than the median; training access and training costs are clearly higher than the median. In **Austria** the sector “banking and insurance” show both high training incidence and training intensity values. “Electricity, gas and water supply” and “hotels and restaurants” have a high training incidence. “Post and telecommunications” and “financial intermediation (auxiliary)” show high values for the direct training costs. In the **Czech Republic**, the sectors “financial intermediation (auxiliary)”, “real estate, renting, business activities” and “banking and insurance” have higher training intensity. The training costs for the sector “electricity, gas and water supply” are clearly higher in this country, in comparison to other sectors. In **France**, only the sectors “electricity, gas and water supply” and “transport equipment” show outlying values. In **Germany**, the sector “post and telecommunications” shows a higher training access value. The training costs in the sector “banking and insurance” are clearly higher and in the sector “mining and quarrying” clearly lower than the median. In **Italy**, the sectors “banking and insurance”, “electricity, gas and water supply”, “post and telecommunications”, “sales and repair of motor vehicles” show exceptional values for some key indicators. In **Lithuania**, the economic sectors “banking and insurance” (training access), “textiles, clothing, leather” (training intensity) and “transport equipment” (training costs) show higher values.



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