Indicators for the Information Society in the Baltic Region

Action line 6

Northern *e*Dimension
Action Plan

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ISBN 87-501-1355-0 (printed)
ISBN 87-501-1356-9 (internet)

Circulation 800

Printed by
Statistics Denmark
July 2003

The publication is available on: www.riso.ee/nordic

Price: DKK 137.00 inclusive of VAT

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Sejrøgade 11
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0. Preface

This report outlines the achievements of the Northern *e*Dimension Action Plan (N*e*DAP) since its start in June 2002 as far as statistical Indicators are concerned.

The N*e*DAP initiative was taken at the Council of Baltic Sea States meeting in April 2000 requesting " *initiatives with the aim to develop and strengthen the Baltic Sea Region's already leading position in the IT sector".*

N*e*DAP has identified 7 action lines in total, i.e. high speed research networks and advanced broadband applications; ICT security; *e*Skills; *e*Commerce; *e*Government; *e*Environment; Indicators. Each action line has been chaired by one or two of the participating countries.

The report on Indicators summarises the results based on data compiled from the 11 participating countries – Denmark, Estonia, Finland, Germany, Iceland, Latvia, Lithuania, Norway, Poland, Russia and Sweden.

Without the active support and commitment of the countries it would not have been possible to produce this report. The report should be considered as a first and important source for comparable indicators related to the Information Society for the countries of the Baltic Sea area. In particular I would like to thank the national coordinators for their efforts to provide the data and commenting on the draft report. A list of names can be found overleaf.

Being a kind of benchmark the report also shows that statistical indicators are not fully developed in all countries. There is room for further improvement and a more comprehensive coverage. It has therefore been agreed that a new update of the Indicators should be made by April 2004.

Finally, I would like to thank Mrs. Helle Månsson, Statistics Denmark, for coordinating the data collection and preparing the report in a most efficient way.

Copenhagen, 25 June 2003

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Contents

1. Introduction

Action line 6 of the Northern e-Dimension Action Plan has as its primary objective the establishment of a set of indicators related to the measurement of the Information Society in the Baltic Sea Region, consisting of Denmark, Estonia, Finland, Germany, Iceland, Latvia, Lithuania, Norway, Poland, Russia and Sweden.

Data for this publication were collected from the national statistical offices of the Baltic region during spring 2003[1]. The statistical material covers 40 indicators ranging from ICT[2] infrastructure over the use of ICT by households and enterprises to indicators on the ICT sector, i.e. production and foreign trade with ICT goods, research & development expenditures in the ICT sector and demographic variables on the persons employed in the ICT sector.

The figures clearly show that each country has its strengths in relation to the Information Society: some countries have a strong position in the production of ICT goods, others a highly educated workforce in the ICT sector, others have a widespread network enabling the population, enterprises and the public sector to access the Internet etc. But the figures also show that there is still room for improvement.

The main part of the publication is the text part, followed by two annexes: Annex 1, which contains the definitions related to the statistical material and Annex 2 with the statistical tables.

The introduction for each chapter highlights the indicators analysed, i.e.:

- *Per cent of population with access to ICT (mobile phone, computer, Internet)*
- *Per cent of population using the Internet for different types of purposes*

The data presented in this publication are mainly collected and provided by national statistical institutes, but also other public institutions collect data relevant for the analyses of the Information Society. This mainly applies to data concerning the ICT infrastructure, which are typically provided by national telecommunications institutions. When statistical material is provided by other institutions than the national statistical offices, this will appear from the notes.

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[1] The model for the data collection is based upon the model established by the Nordic Statistical Institutes in connection with the common publication *Nordic Information Society Statistics 2002*, Helsinki 2002, cf. www.dst.dk/ict.

[2] Information and Communication Technology.

Data definitions are based on the SBS regulation[3] where applicable. Deviations are mentioned in notes.

As some of the data have only been collected in the most recent years, typically conc. the use of ICT, it is clear that not all countries have been able to supply all the data requested. Generally the publication only includes data, which could be supplied by at least one more country than the Nordic ones. This is due to the fact that most of the statistical material concerning the Nordic countries has already been published in *Nordic Information Society Statistics*[4].

As a result of the increased importance of the Information Society, and the several countries either have been or will be establishing new statistics on this subject in the near future. These statistics will mainly concern the use of ICT by the population and enterprises. These new statistics will be included in the foreseen update in spring 2004 as far as possible.

The national statistical institutes have supplied a large range of tables for this publication. It is outside the scope of this publication to present all these tables, but they will be made available on the homepage of The Northern e-Dimension Action Plan on www.riso.ee/nordic.

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[3] Council Regulation (EC, EURATOM) No. 58/97 of 20 December 1996 Concerning structural business statistics..

[4] Statistics Denmark, Statistics Finland, Statistics Iceland, Statistics Norway, Statistics Sweden: *Nordic Information Society Statistics 2002*. Helsinki 2002.

2. ICT infrastructure

2.0 Introduction

The telecommunications networks are rapidly expanding, providing increasing possibilities to inhabitants as well as enterprises to make use of the new technologies.

OECD figures[5] indicate that by the end of 1999 OECD countries had more than one access channel for every two inhabitants, and that several countries had more than one access channel per inhabitant. Taking into account the rapid expansion rate, the figures by 2003 are likely to have increased substantially.

This chapter analyses the ICT infrastructure in the Baltic area by the following indicators:

- *Number of fixed telephone lines per 100 capita*
- *Number of ISDN subscriptions per 100 capita*
- *Number of xDSL subscriptions per 100 capita*
- *Number of cable modem subscriptions per 100 capita*
- *Number of mobile phone subscriptions per 100 capita*

Data for this chapter is typically provided by national telecommunications authorities[6].

The population in the Baltic area consists of 299.5 mill. people, of whom half are inhabitants in Russia, 28 per cent in Germany, and another 13 per cent in Poland. Estonia, Latvia, Lithuania and the Nordic countries together represent 10 per cent, and none of these countries represent more than 3 per cent of the total population of the region.

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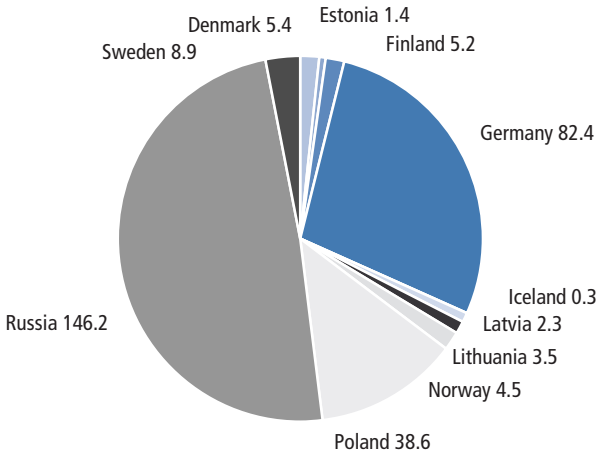
[5] *Measuring the information economy 2002*. OECD 2002.

[6] Denmark: National IT and Telecom Agency, Finland: Telecommunication Statistics 2002, Ministry of Transport and Communication, Germany: Office for Regulation in Telecommunication and Post, Iceland: Icelandic Post and Telecommunication Administration, Latvia: CSB of Latvia, Norway: Norwegian Post and Telecom Agency, Poland: data from GUS and Ministry of Infrastructure, Sweden: Swedish National Post and Telecom Agency.

Figure 2.1 **Population in the Baltic region (million inhabitants)[7]. 2001**



2.1 Network

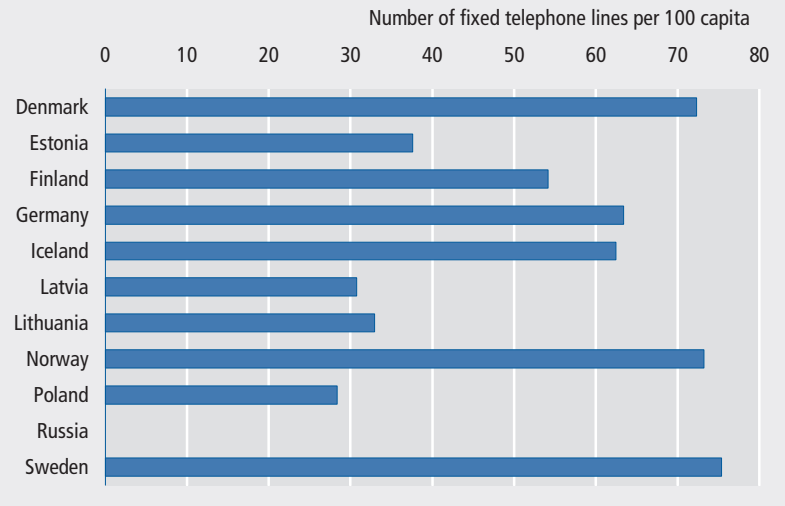
By the end of 2001 the number of fixed telephone lines in the Baltic region reached 82.5 mill., corresponding to a total of 54 lines per 100 inhabitants[8].

The highest penetration rates are found in Denmark, Norway and Sweden where the number of fixed lines per 100 inhabitants were 72 or more. Latvia, Lithuania and Poland all had a penetration rate of app. 30, cf. figure 2.2.

[7] Denmark: 1.1.2002. Russia: 1999

[8] Russia not included.

Figure 2.2 **Number of fixed telephone lines per 100 inhabitants. 2001**



2.2 Subscriptions

2.2.1 Subscriptions to ISDN

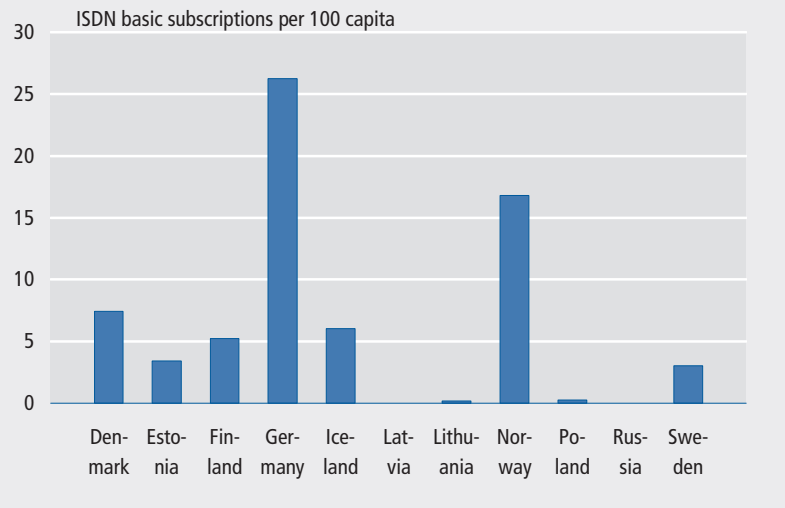
In the Baltic area there is more than 23 mill.[9] basic ISDN subscriptions[10], corresponding to 15.7 lines per 100 capita. Germany has by far the highest rate of ISDN penetration with a total of 26 ISDN subscriptions per 100 capita, followed by Norway (17 subscriptions per 100 capita).

Denmark, Finland and Iceland have a penetration rate of around 5-8 subscriptions per 100 capita, whereas the corresponding figure for Estonia and Sweden is 3. The penetration rate in Lithuania and Poland is 0.2 and 0.3, respectively.

[9] Latvia and Russia not included.

[10] ISDN: Integrated Services Digital Network. Digital network which integrates several types of services i.e. voice, text, video images, accessible to the subscriber through conventional telephone network.

Figure 2.3 **Number of ISDN basic subscriptions[11] per 100 capita. 2001**



2.2.2 Broadband access[12]

The number of subscriptions to xDSL[13] in the Baltic region amounts to more than 2.6 mill. in 2001[14], corresponding to a mean penetration rate of 1.7 subscriptions per 100 capita. Penetration rates vary from 3.7 in Iceland to 2.8 in Denmark, 2.7 in Sweden and 2.5 in Germany as the highest, to 0.2 or less in Poland, Lithuania and Latvia, cf. figure 2.4.

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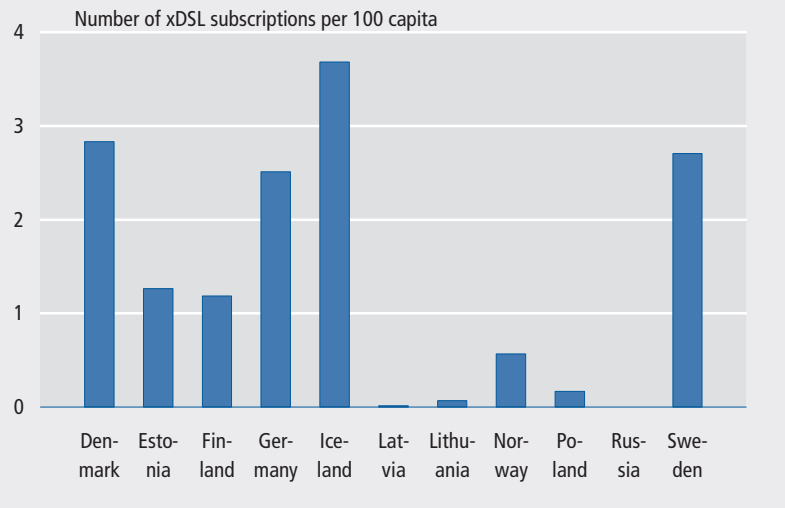
[11] For number of primary ISDN subscriptions: see Annex 2 Statistical tables, table 2.2.

[12] The term "broadband" is not uniquely defined, but by the International Telecommunication Union's recommendation it refers to transmission capacities faster than ISDN. In this context the term will refer to different types of DSL (Digital Subscriber Lines) and cable modem.

[13] All types of DSL: ADSL (Assymetric Digital Subscriber Line), SDSL (Symmetric Digital Subscriber Line), HDSL (High Speed Digital Subscriber Line) etc.

[14] Russia not included.

Figure 2.4 **Number of xDSL subscriptions per 100 capita. 2001**



There is a substantial variation in the number of cable modem subscriptions relative to the population in each of the countries of the Baltic region, cf. table 2.1[15].

Table 2.1 **Number of cable modem subscriptions. 2001**

	Number of cable modem subscriptions	Population 2001	Cable modems per 100 capita
Denmark	88,000	5.368.354	1.6
Estonia	137,000	1.361.242	10.1
Finland	25,000	5.195.000	0.5
Germany	30,000,000	82.440.309	36.4
Iceland	n.a.	288.201	n.a.
Latvia	n.a.	2.345.768	n.a.
Lithuania	n.a.	3.476.000	n.a.
Norway	20,764	4.525.000	0.5
Poland	1,156,600	38.600.000	3.0
Russia	n.a.	146.200.000	n.a.
Sweden	115,500	8.909.128	1.3

Compared to the other countries of the region, Germany has an extremely high penetration of cable modems, corresponding to more than one per 3 inhabitants.

[15] According to OECD high-speed access to the Internet via cable modem was available in 21 OECD countries by 2000, cf. *Measuring the Information Economy 2002*. OECD 2002, p. 38.

Also Estonia has a relatively high penetration rate, with a number of cable modem subscriptions corresponding to one out of ten inhabitants. In the other countries represented there is a maximum of three out of 100 inhabitants subscribing to cable modem access.

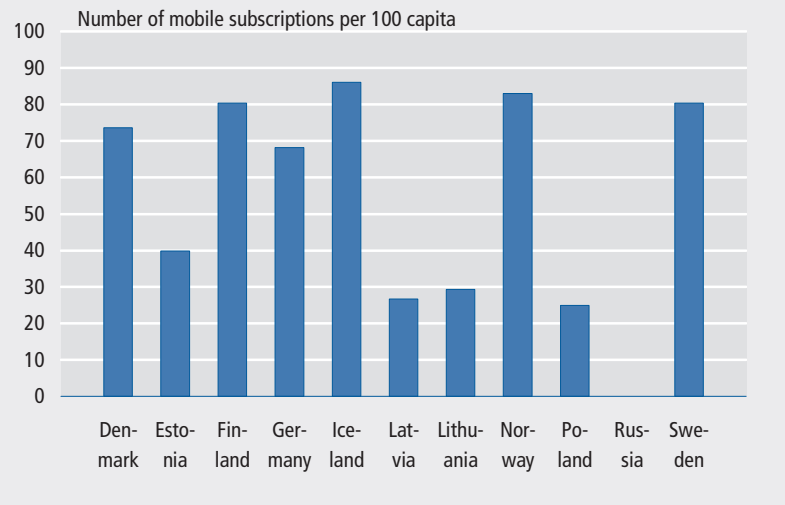
2.2.3 Subscriptions to mobile (cellular) phones

The number of mobile telephone subscriptions in the Baltic area[16] amounted to more than 87 mill. in 2001, corresponding totally to 57 subscriptions per 100 capita.

Not surprisingly the penetration rate is highest in the Nordic countries, especially in Iceland, where the number of subscriptions per 100 capita amounts to 87. Latvia, Lithuania and Poland have a penetration rate of app. 27, Estonia 40 and Germany 68[17].

When interpreting the number of mobile subscriptions it should be noted, that the number of pre-paid connections has increased, and are quite common at least in most of the Nordic countries[18].

Figure 2.5 **Number of mobile phone subscriptions per 100 inhabitants. 2001**



16 Russia not included.

17 The mobile phone is frequently used for SMS'es: In 2001 the number of SMS'es in Denmark, Finland, Germany, Norway and Sweden totally amounted to 21,125 mio., of which 76 per cent in Germany. For the other countries of the region no data is available.

18 The share of pre-paid connections is 31 per cent in Denmark, 35 per cent in Iceland, 45 per cent in Norway and 49 per cent in Sweden. In Finland pre-paid connections only represent a few per cent of the total number of mobile phone connections, c.f. Nordic Information Society Statistics, p. 55.

3. ICT use by the population

3.0 Introduction

A large part of the population in the Baltic region is acquainted with the use of ICT – either through their work or in their private lives. This chapter attempts to shed light on the ICT usage.

Access to ICT (mobile phone, computer, Internet) is a precondition of the possibility of getting acquainted with the use of these technologies, whether this access is possible at home or at work. But the possibility of access itself does not imply that the technology is actually being used.

The frequency of computer and Internet use supplied by information on the purposes for which ICT is used, gives a more clear indication of the actual extent of the use of the technology, and thereby of the e-readiness of the population.

The e-readiness of the population is measured by the following indicators:

- *Per cent of population with access to ICT (mobile phone, computer, Internet)*
- *Per cent of population using computer distributed be frequency*
- *Per cent of population using the Internet distributed be frequency*
- *Per cent of population using the Internet for different types of purposes*

3.1 Access to ICT at home[1]

Access to mobile phone is widespread in the Nordic countries where more than 4 out of every five inhabitants in the age of 16-74 years have a mobile phone, cf. figure 3.1.

In Germany, for which there are no figures available for the total of the population, the share of persons in families with children is 80 per cent, and in families without children the figure is 56 per cent, indicating a high frequency of mobile phone access in general. This is supplied by the fact that 63 per cent of the population has actually used a computer within the last three months (see also chapter 3.2). In Poland, one out of four inhabitants has access to mobile phone.

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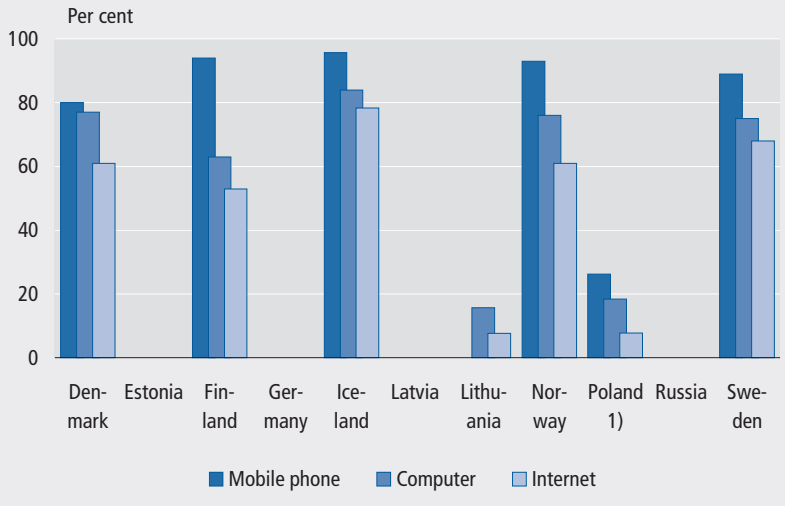
[1] Data are not available for Estonia, Latvia and Russia. For some of the others countries, data are only partly available. Statistics Lithuania is carrying out the ICT use by population survey according to Eurostat recommendations in 2003, including almost all questions from the list of questions for Eurostat household surveys in ICT usage in 2003.

Computer access is not quite as widespread, but still 3 quarters of the population in Denmark, Norway and Sweden have access to a computer at home. In Finland the share is 63 per cent, and the corresponding figures for Lithuania and Poland are 18 per cent and 16 per cent, respectively.

Figure 3.1 **Access to ICT at home, per cent of population 16-74 years. 1st quarter 2002[2]**



1) Poland: rate of access to ICT in households for 2001

A precondition of Internet access is the existence of an infrastructure supporting such access. As described in chapter 2 the penetration rates of different types of ICT related infrastructure differs widely among the countries of the Baltic region.

In most of the countries for which data are available, a large part of those, who have access to computer at home, also have access to the Internet: In general the share of the population having Internet access is app. 10 percentage points lower than the share having access to a computer, cf. figure 3.1[3].

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[2] For Iceland the reference period is 4th quarter 2002.

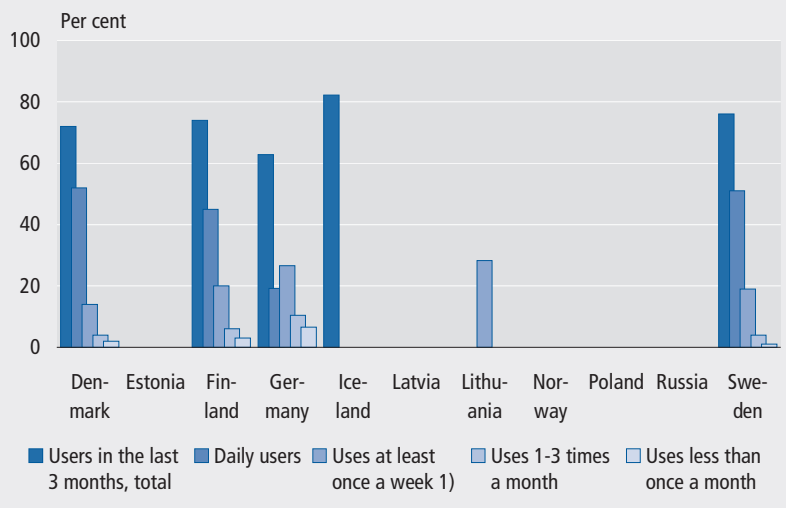
[3] According to OECD overall Internet access are highest in Northern Europe and North America with penetration rates between 40 per cent and 60 per cent in 2001. Penetration rates were lower in continental and Southern Europe, mostly below 30 per cent. Cf. *Measuring the Information Economy 2002*, OECD 2002, p. 44.

3.2 Frequency of computer use[4]

The figures on frequency of computer use indicate that those, who have access to a computer either at home, at work or at other places, often make use of the access possibility, cf. figure 3.2.

The share of frequent users, i.e. the share of persons who use the computer daily or at least once a week, is as high as 65 per cent or more in Denmark, Finland and Sweden, 46 per cent in Germany and 28 per cent in Lithuania. In Denmark and Sweden more than half of those, who have access to a computer use it daily.

Figure 3.2 **Frequency of computer use, per cent of population 16-74 years. 1st quarter 2002[5]**



1) Uses at least once a week: i.e. not daily. For Lithuania daily users included.

3.3 Frequency of Internet use[6]

In Denmark, Finland and Sweden app. two thirds of those, who have Internet access at home, work or other places, are using it within a period of three months, cf. figure 3.3, and in Iceland the share is 80 per cent. In Germany and Lithuania the corresponding figures are 49 per cent and 18 per cent, respectively.

The share of daily users in the countries represented in figure 3.3 varies from 45 per cent in Iceland as the highest share, to 10 per cent in Germany as the lowest share.

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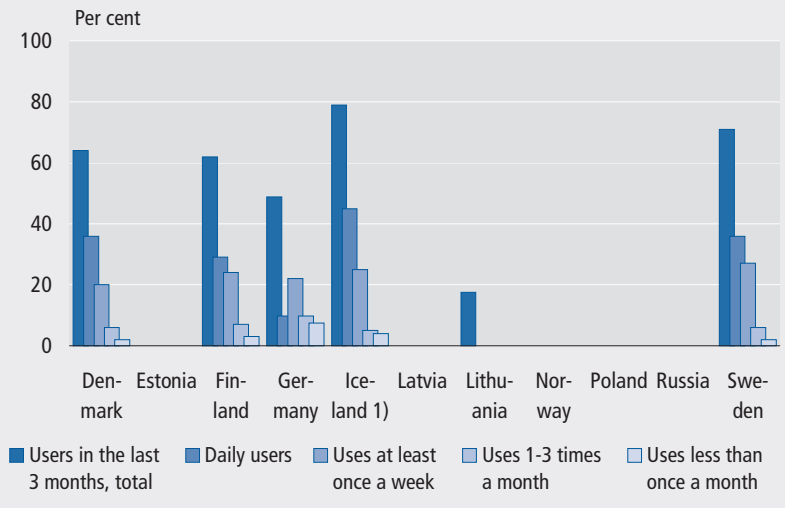
[4] Data are only available for Denmark, Finland, Germany, Iceland (partly), Lithuania (partly) and Sweden.

[5] For Iceland the reference period is 4th quarter 2002.

[6] Data are not available for Estonia, Latvia, Norway, Poland and Russia.

The Icelandic population are the most frequent users of the Internet, as 70 per cent uses the Internet at least once a week. The Swedes are the second most frequent users: nearly two thirds of the population uses the Internet at least weekly, followed by the Danes (56 per cent), the Finns (53 per cent) and the Germans (32 per cent).

Figure 3.3 **Frequency of Internet usage, per cent of population 16-74 years. 1st quarter 2002**



1) Iceland: figures for 2001

3.4 Purpose of Internet use[7]

Many things may influence the use of Internet for different purposes. Among these the Internet services provided, the prices for these services, the general evaluation of the security conc. financial transactions the number of services provided by public authorities. Also the concentration of the population and the distances are likely to influence the use. As these things differ considerably among the countries of the Baltic region, the figures should be interpreted accordingly.

Generally the Icelandic people are the most frequent users of the Internet for different purposes, also when it comes to the two most common purposes of Internet use: to send or receive e-mails and to find information about goods and services cf. figure 3.4.

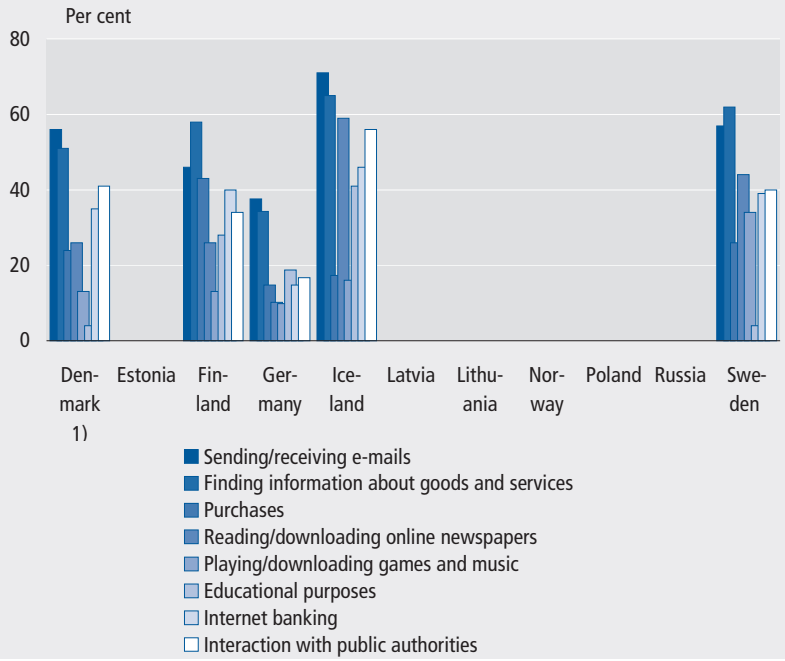
In the period measured a share of the population varying from 38 per cent (in Germany) to 71 per cent (in Iceland) had used the Internet for e-mailing. In Iceland the Internet is most frequently used for seeking information on goods and services: two thirds of the population used the Internet for this purpose. The corresponding figures in the other

[7] Data are only available for Denmark, Finland, Germany, Iceland and Sweden.

countries presented in figure 3.4 vary from 62 per cent in Sweden to 34 per cent in Germany.

Purchasing goods or services via the Internet is common in Finland, where 43 per cent of the population had used the Internet for purchases. The lowest share of purchases is found in Germany, where only 15 per cent had used this opportunity. In the other countries the shares of the population using the Internet for purchases were 24 per cent (Denmark), 17 per cent (Iceland) and 26 per cent (Sweden)[8]

Figure 3.4 **Purpose of Internet usage by the population 16-74 years. 1st quarter 2002[9]**



1) Internet banking interpreted as financial services. Figures relate to the year 2002.

Reading and downloading newspapers is very common in Iceland, as it was used by three quarters of the population, followed by Sweden with a share of 44 per cent. In Denmark and Finland the corresponding figure was 26 per cent, and in Germany 10 per cent.

Sweden and Iceland are those countries where most people use the Internet for playing or downloading games and music: 34 per cent and

[8] In the Nordic countries the figures relate to the term 'financial transactions' which may include other services than Internet banking, such as stock trading etc.

[9] For Iceland the reference period is 4th quarter 2002.

21 per cent of the population, respectively, used the Internet for this purpose within a period of three months.

41 per cent of the Icelandic people used the Internet for educational purposes, and this is a much larger share than in the other countries, where the highest share was found in Finland (28 per cent) and the lowest in Denmark and Sweden (4 per cent in both countries).

The share of the population using the Internet for banking purposes is highest in Iceland (46 per cent), but also in the other countries the Internet is used by many people for this purpose. In Finland and Sweden the share is app. 40 per cent, in Denmark 35 per cent, and in Germany 15 per cent.

In the Nordic countries interaction with public authorities via the Internet is common, and is used by two thirds or more of the population. In Germany only half as many (17 per cent) used the Internet for this purpose. [10]

[10] The possibility of interacting with public authorities via the Internet is – at least for some services - likely to be closely connected with or even directly dependent on the unique identification of an individual. In the Nordic countries this identification is ensured by a unique code for each individual, which is generally used in communication with public authorities. In Germany such a coding system does not exist, and this may be one reason that interaction with public authorities is not as widespread as in the Nordic countries.

4. ICT use by enterprises

4.0 Introduction

E-readiness is considered a precondition for efficiency and productivity in many sectors of the economy, and as such it is an important factor in future competition on the market.

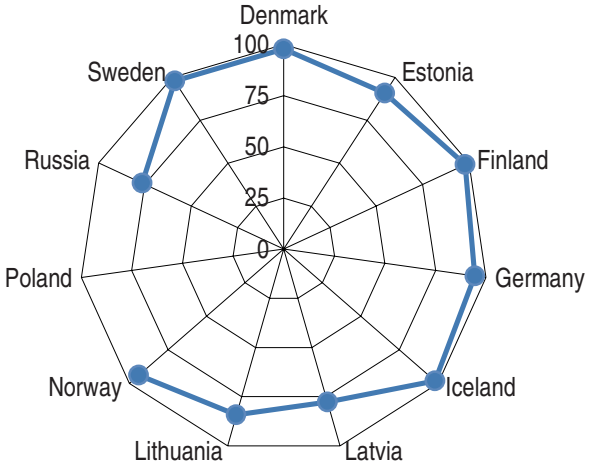
In this chapter e-readiness of enterprises is analysed by the following indicators:

- *Share of enterprises using computers*
- *Share of enterprises with access to the Internet*
- *Share of enterprises with own homepage*
- *Share of enterprises with high-speed connection to the Internet*
- *Share of enterprises having submitted or received orders via the Internet*

4.1 Computer use

The e-readiness of the enterprises of the Baltic region is generally high, measured by share of enterprises using computers and having access to the Internet. The overall rate of enterprises using computers in their activities is at least 95 per cent or more. The share of enterprises using computers does not differ much from one country to another in the region, but the largest shares of computer-using enterprises are found in the Nordic countries.

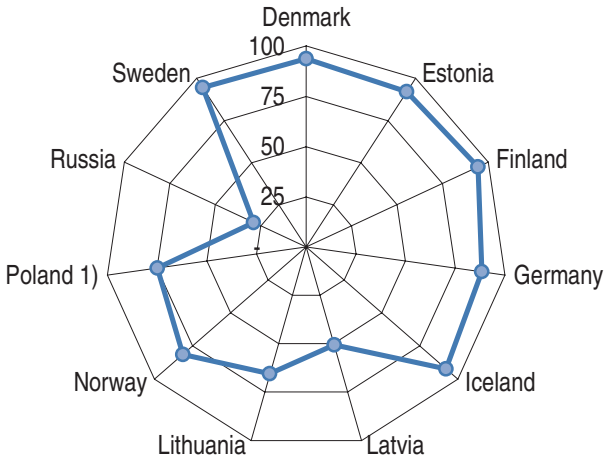
Figure 4.1 **Share of enterprises with 10(+) employees using computer. 2001**



4.2 Internet access

Also the share of enterprises having access to the Internet is high, as general nearly 9 out of 10 enterprises have access. Internet access is more unevenly distributed than the computer use in the region: In Sweden, Finland, Denmark and Iceland enterprises have access shares varying from 92 per cent to 95 per cent, whereas in Lithuania two thirds of the enterprises have access. Between these, countries like Norway and Germany are found with shares of enterprises having Internet access of 81 per cent and 88 per cent, respectively.

Figure 4.2 **Share of enterprises with 10(+) employees with Internet access. 2001**



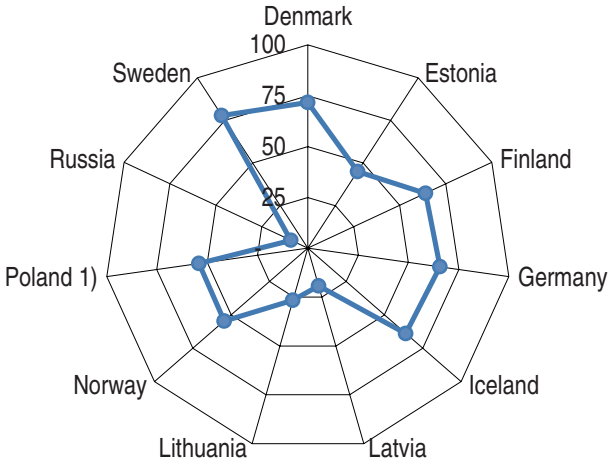
1) Enterprises with 50+ persons employed; Divisions 10-41 NACE Rev.1.

4.3 Homepages

When it comes to the more actual use of ICT in the form of enterprises having i.e. own homepage, there is a considerable variation among the countries: In Germany and most of the Nordic countries two out of three enterprises generally have their own homepage, and in Sweden the share is as high as 78 per cent.

In Latvia and Lithuania the shares are 19 per cent and 27 per cent, and in Estonia nearly half of the enterprises have their own homepage. In the countries, where the share of enterprises having own homepages is relatively low, figures indicate a growth even from 2000 to 2001, and it seems reasonable to foresee a further growth in the coming years.

Figure 4.3 **Share of enterprises with 10(+) employees with own homepage. 2001**



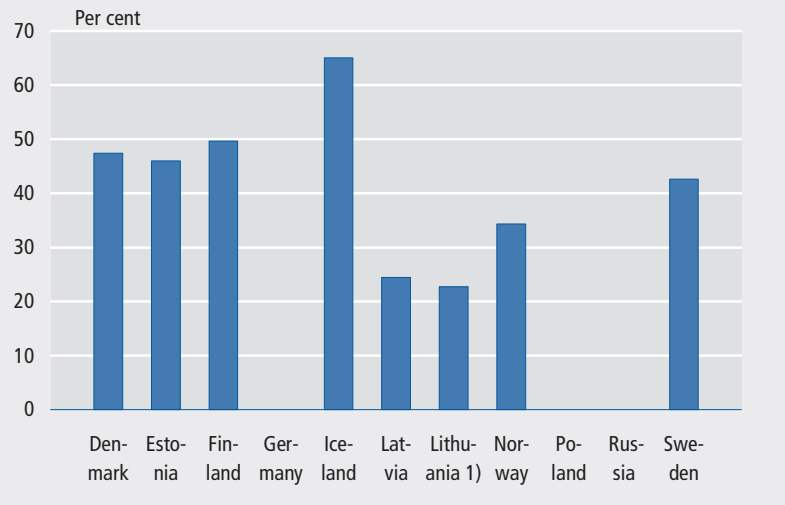
1) Enterprises with 50+ persons employed; Divisions 10-41 NACE Rev.1.

4.4 High-speed connections to the Internet[1]

High-speed connection to the Internet, which is the basis of more efficient use, is generally less widespread among enterprises than homepages, except from Latvia. Iceland is by far the country where most enterprises have high-speed access, a total of 65 per cent, followed by Finland, Denmark, Estonia and Sweden with shares ranking from 50 to 43 per cent. In Latvia 24 per cent of the enterprises have high-speed connection, and in Norway the corresponding figure is 34 per cent.

[1] As there is not a single definition of the term 'high-speed connection to the Internet' there may be differences among the countries, influencing the penetration rates. C.f. note conc. chapter 2.2.2 Broadband access.

Figure 4.4 **Share of enterprises with 10(+) employees with high-speed connection to the Internet. 2001**

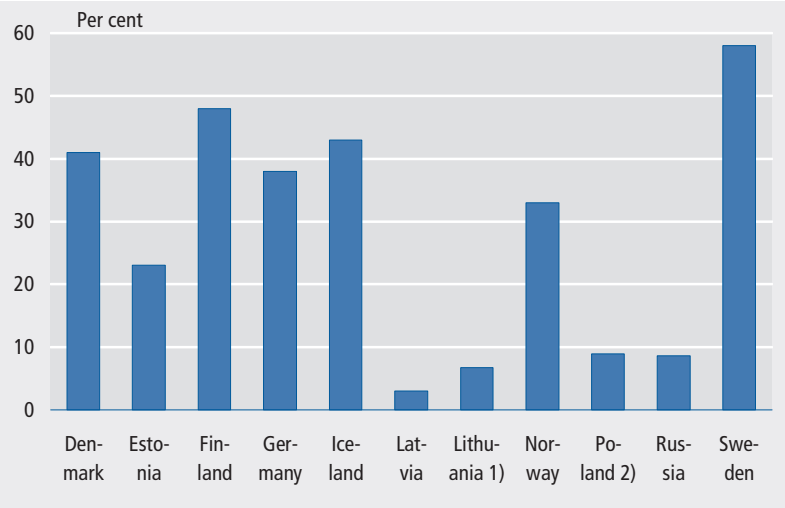


1) Lithuania: not including group 45 and 92 of NACE, rev.1

4.5 Submission and reception of orders via the Internet

Submission of orders via the Internet is less common in Latvia, Lithuania and Poland than in the Nordic countries, Germany and Estonia, cf. figure 4.5.

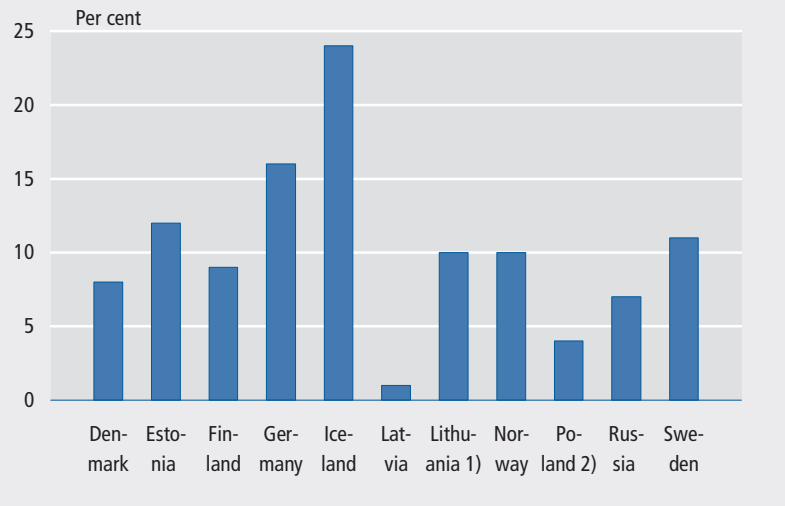
Figure 4.5 **Share of enterprises with 10(+) employees having submitted orders via the Internet. 2001**



1) Lithuania: not including group 45 and 92 of NACE, rev.1
2) Poland: enterprises with 50(+) employees. Divisions 10-41 NACE Rev.1

In Latvia, Lithuania and Poland less than one out of ten enterprises had submitted orders via the Internet in 2001, whereas the share in the other countries ranged from 23 per cent (Estonia) to 57 per cent (Sweden).

Figure 4.6 **Share of enterprises with 10(+) employees having received orders via the Internet. 2001**



1) Lithuania: not including group 45 and 92 of NACE, rev.1
2) Poland: 2000. Enterprises with 10(+) employees. Only NACE section D.

In Iceland nearly one out of four enterprises had received orders via the Internet in 2001, and in Germany the corresponding figure was one out of six enterprises, cf. figure 4.6. Estonia, Lithuania, Norway and Sweden followed by 10-12 per cent, whereas in the rest of the countries less than 10 per cent of the enterprises had received orders via the Internet.

5. The ICT sector

5.0 Introduction

The ICT sector plays a major role in the economy of the Baltic region, with a total of nearly 100,000[1] enterprises employing more than 1.6 million employees[2]. The ICT sector represents 6.5 per cent of the total number of persons employed in the private sector[3], and the turnover of app. 383 billion Euros represents 8.4 per cent of the total turnover of the private sector in the Baltic region.

In this chapter the ICT sector is analysed in more details, covering the following indicators:

- *Turnover of the ICT sector as share of total turnover*
- *Relative distribution of turnover on the ICT sub-sectors*
- *Employment of the ICT sector as a share of total employment*
- *Relative distribution of employment on the ICT sub-sectors*
- *Employment in ICT manufacturing and ICT services by size class*
- *Wages and salaries of the ICT sector as a share of total wages and salaries*
- *Relative distribution of wages and salaries on the ICT sub-sectors*
- *Value added of the ICT sector as a share of total value added*
- *Relative distribution of value added on the ICT sub-sectors*
- *Number of enterprises in the ICT sub-sectors*
- *Relative distribution of number of enterprises on the ICT sub-sectors*

The variables are defined according to the Structural Business Regulation[4] in order to secure the highest possible comparability of the content of the variables. Where variables deviate from the SBS Regulation, this is mentioned in the notes.

The starting point of the data collection is 1995 until most recent year available. As only few countries have been able to provide data from all

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[1] Estonia and Russia not included.

[2] Latvia, Poland and Russia not included.

[3] Latvia, Poland and Russia not included.

[4] Council Regulation (EC, EURATOM) No. 58/97 of 20 December 1996 Concerning structural business statistics.

the years, focus for this chapter will be on the most recent data available[5].

5.1 Definition of the ICT sector[6]

The principles underlying the definition of the ICT sector are the following[7]:

For *manufacturing* industries, the products of a candidate industry:

- Must be intended to fulfil the function of information processing and communication including transmission and display.
- Must use electronic processing to detect, measure and/or record physical phenomena or to control a physical process.

For *services* industries, the products of a candidate industry:

- Must be intended to enable the function of information processing and communication by electronic means.

The definition of the ICT sector is based on the definition elaborated by OECD[8].

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[5] Time series will be presented on the website www.riso.ee/nordic.

[6] The definition of the ICT sector by NACE is found in Annex 1 Definitions.

[7] OECD: *Measuring the ICT Sector*, Paris 2000

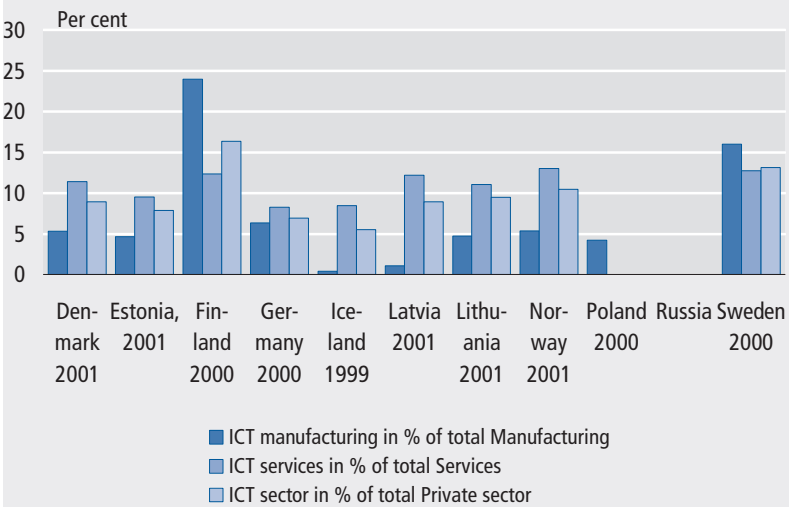
[8] For the Nordic countries, except for Norway, a more narrow definition has been used in order to reach a more pinpoint definition of especially the ICT wholesale activities, leaving out activities such as wholesale of office equipment etc., cf. www.dst.dk/ict, *Nordic Information Society Statistics 2002*, p. 101. The Nordic countries have been cooperating during the past years in order to produce statistics for the information society (see list of publications in the back of this publication). These publications provide time series of data from the early 1990's and forward.

5.2 Turnover

The turnover of the ICT sector in the Baltic region amounts to app. 383 billion Euros[9], which is 8.4 per cent of the turnover of the total private sector of the region. OECD figures show that ICT production as a share of business sector production (agriculture not included) ranges between 4 per cent and 15 per cent in the OECD countries in 2000[10].

The relative size of the turnover compared to the private sector varies from 6 per cent in Iceland to 16 per cent in Finland, cf. figure 5.1. In Denmark, Estonia, Latvia, Lithuania and Norway the turnover of the ICT sector amounts to approximately 9 per cent of the total turnover of the private sector.

Figure 5.1 **ICT sector turnover**



In Denmark, Estonia Lithuania and Norway the relative importance of the ICT sector is almost identical: the ICT manufacturing activities represents app. 5 per cent of the manufacturing industry, and as such it is less important than the ICT services, covering 11 per cent of the total services activities in these three countries.

The relative importance of ICT manufacturing and ICT services shows large variations among the countries. The ICT manufacturing industry is very important to the Finnish manufacturing industry as a whole, as its turnover represents nearly one fourth of the turnover of the total manufacturing sector. Also the Swedish ICT manufacturing industry is relatively large, contributing with 16 per cent of the total turnover of the manufacturing industries.

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[9] Latvia, Poland and Russia not included.

[10] OECD: *Measuring the Information Economy 2002*.

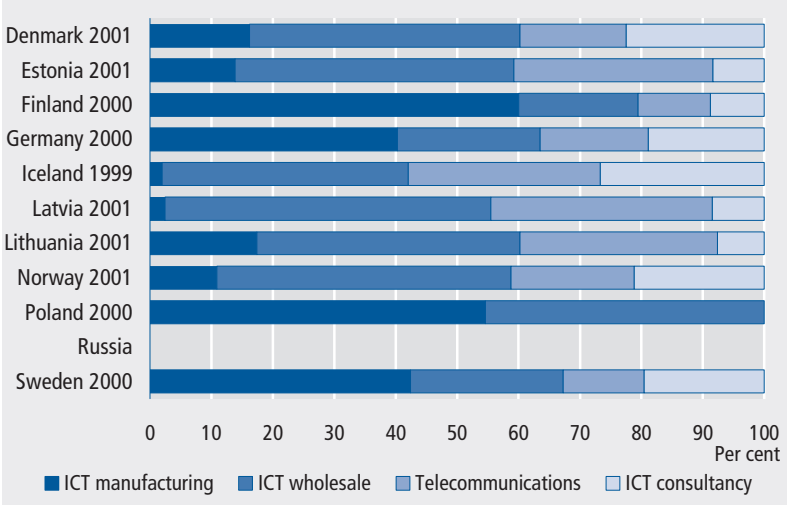
In Iceland and Latvia, on the other hand, this activity is much less significant accounting for less than 0.5 per cent and 1 per cent, respectively, of the manufacturing sector in general. In the other countries, the turnover of ICT manufacturing industry amounts to 4 to 6 per cent of total industrial turnover.

The distribution of the turnover on the sub-sectors of the ICT sector shows significant differences, cf. figure 5.2. Not surprisingly the ICT wholesale trade represents a relatively large share of the turnover of the sector in almost all of the countries. What is more significant is the relative shares of turnover supplied by the Telecommunications sector, which accounts for app. one third of the total turnover of the ICT sector in Estonia, Iceland, Latvia and Lithuania, indicating the importance of this sub-sector to these countries.

The ICT consultancy services has a relatively high importance in countries like Denmark, Germany, Iceland, Norway and Sweden, where it constitutes from around 20 per cent in Denmark, Germany, Norway and Sweden, to 27 per cent in Iceland, thus supplying more than one fifth of the total turnover of the ICT sector.

ICT manufacturing contributes with the largest shares of the ICT sector turnover in Finland (60 per cent), Sweden (42 per cent) and Germany (40 per cent).

Figure 5.2 **ICT sub-sector turnover in per cent of total turnover of the ICT sector**



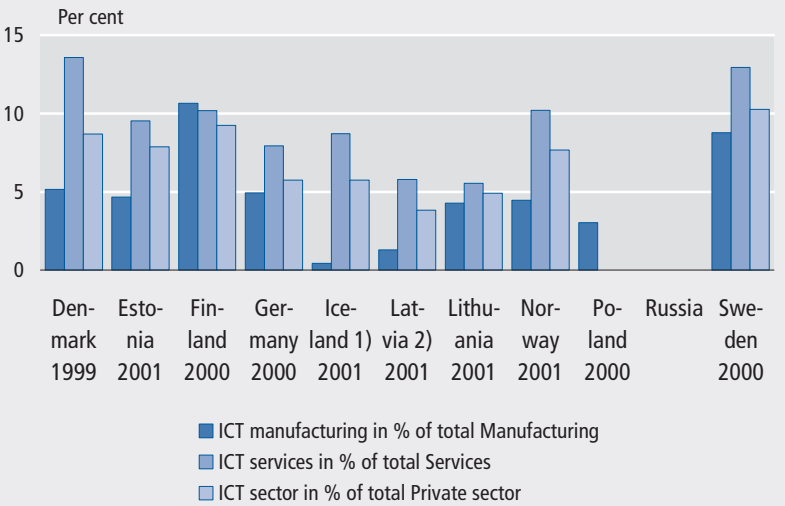
1. Latvia: preliminary data
2. Norway: estimates
3. Poland: no data available for Telecommunication and ICT consultancy services.

5.3 Employment

More than 1.7 million persons[11] are employed in the ICT sector of the Baltic region, compared to a total employment of app. 24.5 millions in the private sector in general. In other words the ICT sector represents app. 6.5 per cent of total employment in the private sector, compared to 6.4 per cent of total business employment in OECD[12]. 35 per cent of the persons employed in the ICT sector are employed within the ICT manufacturing sector, compared to 5.9 per cent in OECD[13]. 35 per cent are employed within the ICT manufacturing sector, 21 per cent within ICT wholesale, 16 per cent in Telecommunications and 28 per cent in ICT consultancy services.

The relative size of the ICT sector employment compared to employment in the private sector in general varies from app. 5 per cent in Iceland, Latvia and Lithuania, to app. 9 per cent in Denmark, Estonia, Finland, Norway and Sweden, cf. figure 5.3.

Figure 5.3 **ICT sector employment (number of employees)**



1) Iceland: persons employed
2) Latvia: preliminary data

The relative size of employment in ICT manufacturing compared to ICT services is more or less similar to the variation in turnover: In Finland and Sweden the ICT manufacturing industry employment contributes with the largest shares compared to total manufacturing industry (11 per cent and 9 per cent, respectively), cf. figure 5.3. The Icelandic and Latvian ICT manufacturing sector employment represent the lowest shares of total manufacturing employment with shares of less than a

[11] Russia not included.

[12] OECD: *Measuring the information economy 2002*. Based on data for the year 2000 from 20 countries.

[13] Cf. above.

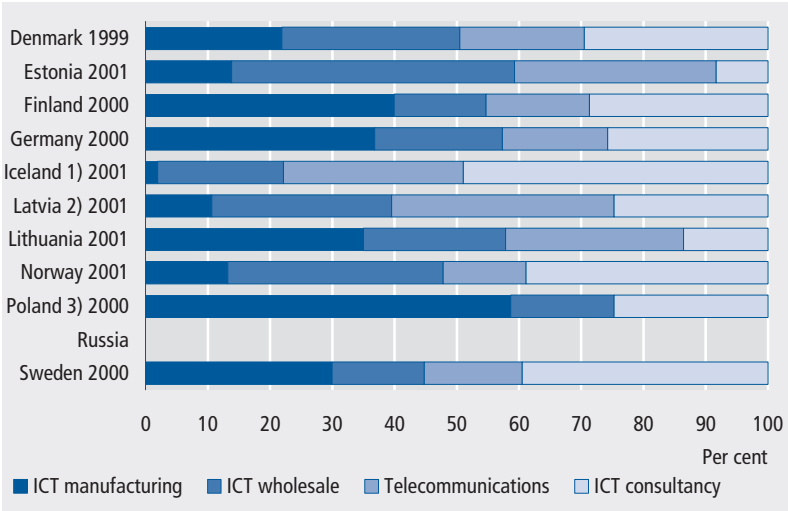
half per cent and 1.3 per cent, respectively. In the other countries of the region, the share is app. 5 per cent.

Within the ICT sector of countries in the Baltic region, the relative size of employment in each of the sub-sectors differs considerably, cf. figure 5.4. In Finland, Germany, Lithuania and Sweden, the ICT manufacturing employment contributes with 30 per cent or more of the total ICT sector employment, with the largest shares in Finland (40 per cent) and Germany (37 per cent).

ICT wholesale is relatively most important in Estonia and Norway, accounting for 45 per cent and 35 per cent of the total ICT employment, respectively, whereas ICT wholesale is of minor relative importance in Finland and Sweden, constituting 15 per cent of the ICT-related employment.

Approximately one third of the Estonian and Latvian ICT employment is related to Telecommunications, whereas ICT consultancy plays a major role especially in Iceland, where half of the ICT related employment is found within this sub-sector. Also in Norway and Sweden ICT consultancy contributes to ICT employment with relatively high shares of 39 per cent in both of the countries. In Denmark and Finland ICT consultancy constitutes 29 per cent of the ICT employment.

Figure 5.4 **ICT sub-sector employment in per cent of total employment of the ICT sector**



1) Iceland: persons employed
2) Latvia: preliminary data
3) Poland: data for Telecommunication are not available due to confidentiality

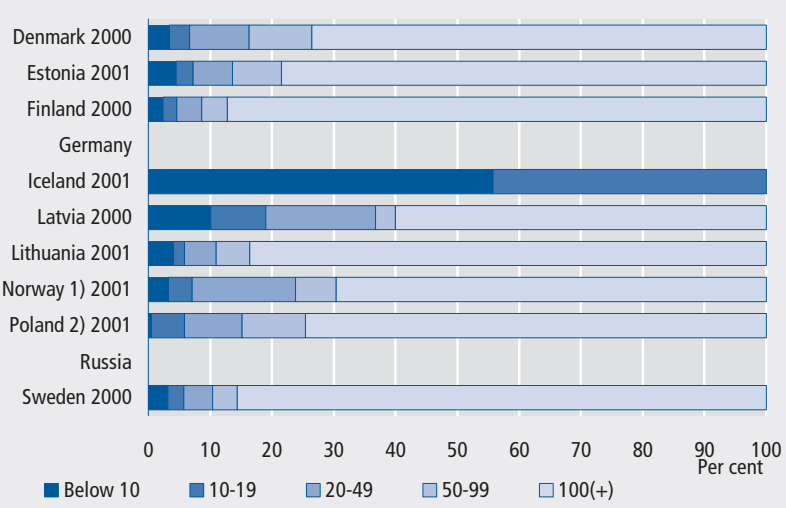
Employment by size classes

Compared to the services sector, the manufacturing industry is generally characterised by large enterprises, measured by their number of

employed persons, indicating a high concentration of the activities, cf. figure 5.5.

This characteristic also applies to the ICT sector: In most of the countries in the Baltic region enterprises with 100 or more employees represent a large share – in most cases more than 75 per cent – of the employees. In Finland, Sweden and Lithuania the employment is to a large extent concentrated to the largest enterprises with shares of 84 per cent or more.

Figure 5.5 **ICT manufacturing employment by enterprise size classes**



1) Norway: 4th quarter of 2001
2) Poland: 31st December 2001

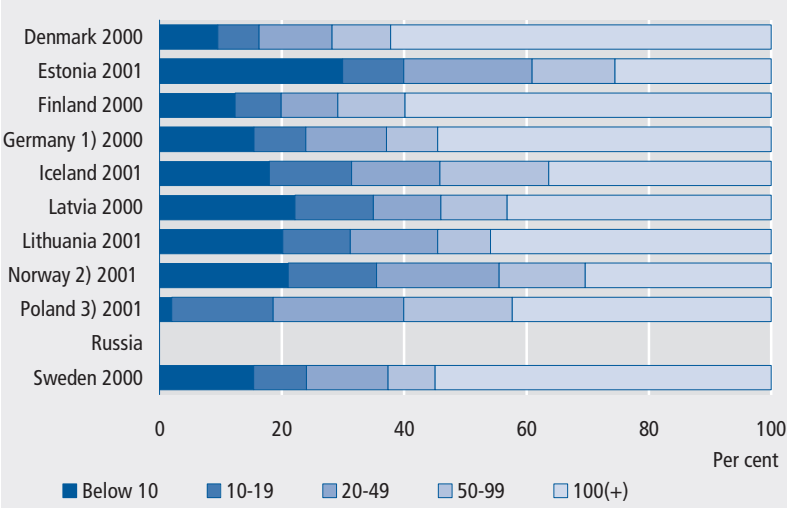
The concentration of ICT manufacturing employment in large enterprises is not quite as high in Denmark, Estonia, Latvia, Norway and Poland.

Iceland is the only country represented where no enterprises within the ICT manufacturing sector have more than 20 persons employed.

Within ICT services the concentration of employment is distinct in Finland and Sweden, as was the case within the ICT manufacturing sector of the two countries, cf. figure 5.6. A high concentration is also found in Germany. The share of employment in these three countries is 60 per cent, 55 per cent and 55 per cent, respectively, in the large enterprises.

In Estonia, Latvia, Lithuania and Norway the ICT services sector is characterised by many small enterprises as 20 per cent or more of the employees are employed in enterprises with 10 or less employees.

Figure 5.6 **ICT services employment by enterprise size classes**



1) Germany: data only available for Telecommunications and ICT consultancy services
2) Norway: 4th quarter of 2001
3) Poland: 31st December 2001

5.4 Wages and salaries

Wages and salaries in the ICT sector only to a certain extent corresponds to the size of employment, indicating major differences in wages between the sub-sectors of the ICT sector, which is likely to reflect variations in the qualifications of the employed persons.

In general the ICT sector in the Baltic region accounts for a relatively larger share of wages and salaries, than of employment, thus indicating higher wages in this sector than in many others, cf. figure 5.7.

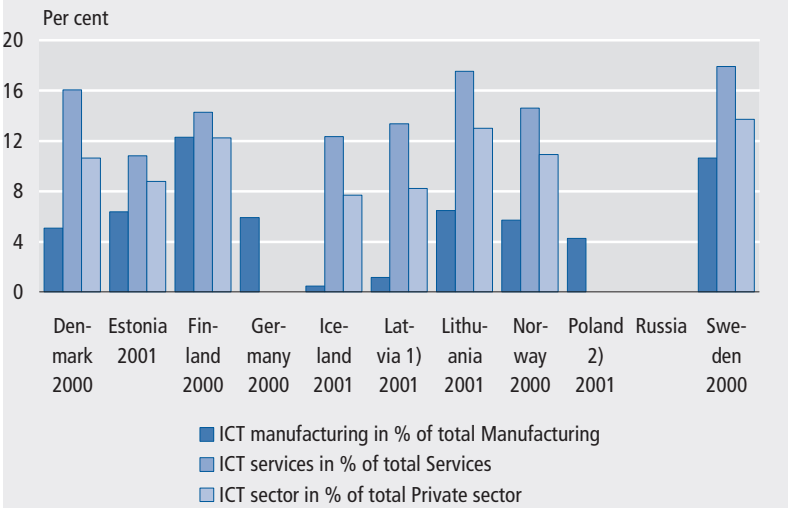
In several of the countries, i.e. Estonia, Germany, Lithuania and Norway, where employment in ICT manufacturing constitutes from app. 4 per cent to app. 5 per cent of total manufacturing employment, the wage share is from one to two percentage points higher. In all the countries of the region, except from Latvia, the wages share of ICT manufacturing is at least as high as the employment share compared to the total manufacturing sector.

In Finland and Sweden, where ICT manufacturing employment accounts for 11 per cent and 9 per cent, respectively, of total manufacturing employment, wages account for 12 per cent and 11 per cent, respectively, of the total wages of the manufacturing industries.

In ICT services wages and salaries generally account for a much higher share of total services than employment. This is especially true for Latvia and Lithuania, where ICT services employment represents 6 per cent of the total services sector, whereas its share of wages and salaries rep-

resent 13 per cent and 12 per cent, respectively, of total wages and salaries of the services sector.

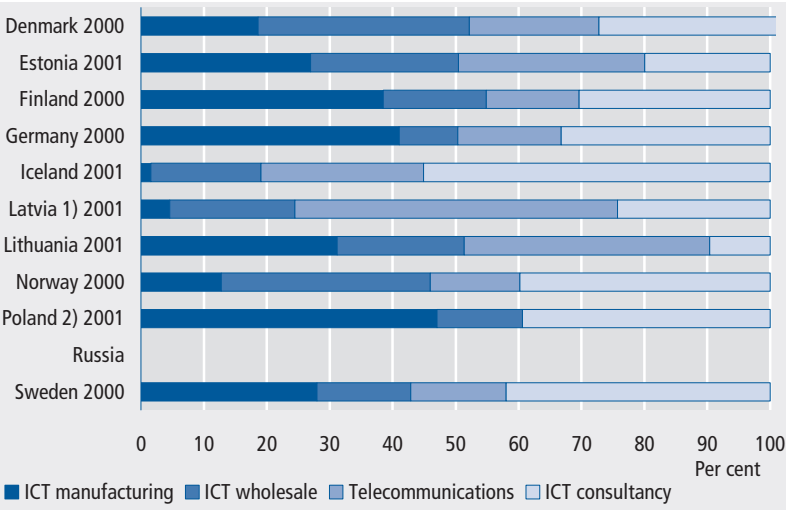
Figure 5.7 **ICT sector wages and salaries**



1) Latvia: preliminary data
2) Poland: excluding economic entities employing up to 9 persons in 2000-2001.

Compared to its employment share, wages and salaries of ICT manufacturing industry is less significant, cf. figure 5.8.

Figure 5.8 **ICT sub-sector wages and salaries in per cent of total wages and salaries of the ICT sector**



1) Latvia: preliminary data
2) Poland: excluding Telecommunications

Telecommunications accounts for a large share of ICT sector wages in Latvia (51 per cent) and Lithuania (39 per cent), compared to employment shares of 36 per cent and 29 per cent, respectively. ICT consultancy in Estonia represents 20 per cent, compared to an employment share of only 8 per cent.

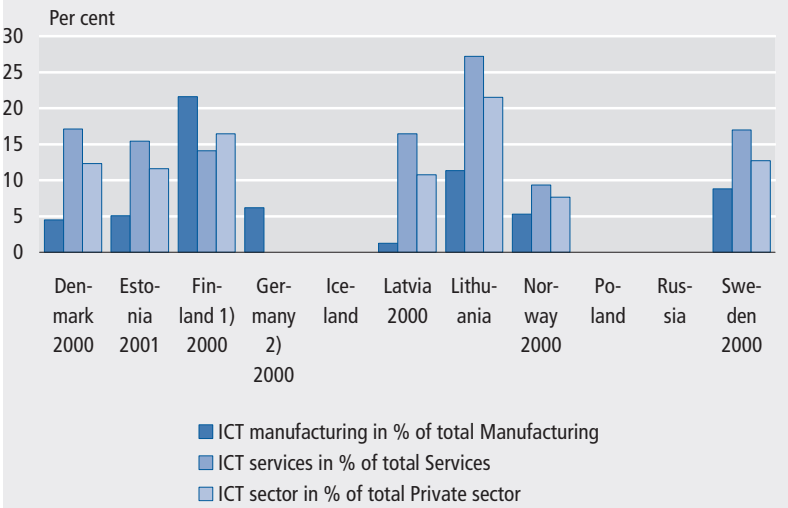
5.5 Value added

Value added is a better indicator of the economic importance of a sector than turnover, indicating its profitability. Value added is the earnings of the enterprises left to pay the production factors labour and fixed capital.

The ICT sector contributes with shares of total value added in the private sector of between 8 per cent (Denmark, Germany and Norway) to 21 per cent in Lithuania, compared to an overall share in OECD of a little less than 10 per cent and a share of 8.5 per cent in the European Union[14].

In Finland, ICT manufacturing constitutes more than one fifth of the value added of the manufacturing sector in general, followed by Lithuania and Sweden with 11 per cent and 9 per cent, respectively. In most of the other countries, ICT manufacturing represents app. 5 per cent of the total value added of the manufacturing industries.

Figure 5.9 **ICT sector value added**

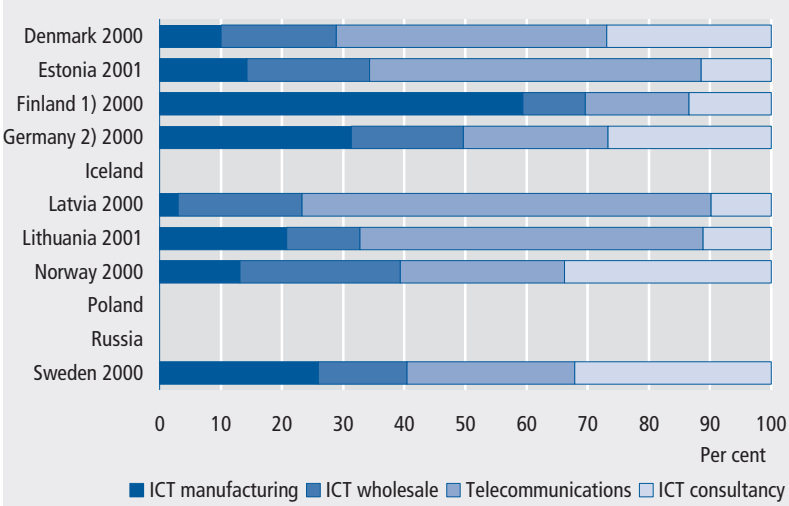


1) Finland: value added at factor costs
2) Germany: Telecommunications and ICT consultancy services: value added at basic prices, others: value added at factor cost

[14] OECD: *Measuring the information economy 2002*:. Based on 25 countries, data for year 2000.

The relative size of ICT services value added compared to the value added of the services sector in general, varies from 10 per cent in Norway as the lowest share, to 27 per cent in Lithuania, but for most countries the share ranges between 12 per cent and 17 per cent. In Lithuania, the large contribution of ICT services to total value added of the services sector is to a large extent due to the Telecommunications sector, which alone accounts for one fifth of the value added of the services sector.

Figure 5.10 **ICT sub-sector value added in per cent of total value added of the ICT sector**



1) Finland and Norway: value added at factor costs
2) Germany: Telecommunications and ICT consultancy services: value added at basic prices, others: value added at factor cost

The relative importance of the ICT sub sectors measured by their contribution to the total value added of the ICT sector, varies significantly, cf. figure 5.10. The Finnish ICT manufacturing sector contributes with 59 per cent of total ICT sector value added, compared to a share in Latvia of 3 per cent.

Wholesale activities are most dominant in Estonia and Latvia, constituting 20 per cent of the total value added of the ICT sector in each of the countries.

The Telecommunications sector plays a very important role in Latvia, Lithuania and Estonia, as the contribution of this sector to the total value added of the ICT sector is 67 per cent, 56 per cent and 54 per cent, respectively. As the employment shares of the telecommunications sector in the three countries are 36 per cent, 29 per cent and 32 per cent, respectively, this indicates the high ability of this sector to generate value added.

ICT consultancy services contributes with the largest share of total value added in Denmark, Germany, Norway and Sweden, where one third or more of the total value added of the ICT sector is generated by this sector.

5.6 Number of enterprises

In the Baltic region nearly 95,000 enterprises have their main activities within the ICT sector[15]. Most of these, app. 78,000 enterprises, belong to the ICT services sector, and 17,000 to the ICT manufacturing activities.

Measured by number of enterprises, the Telecommunications sector is by far the smallest with only app. 1,600 enterprises operating on the market in the Baltic region. But as the previous chapters have shown, it is in many countries an important sector when it comes to its contribution to employment, value added etc., due to the fact that enterprises within this special sub-sector is often large measured by their employment. An important factor has been the transition from public regulation towards free competition on the market. In many countries the consequence of this is the emerging of many new enterprises – but still it is a small sector compared to the number of enterprises operating on the market.

Table 5.1 **Number of enterprises in the ICT sub-sectors**

	ICT manufacturing	ICT wholesale	Telecommunications	ICT consultancy	Total ICT sector
	number				
Denmark [1]	589	1,697	206	6,596	9,088
Estonia	n.a.	n.a.	n.a.	n.a.	n.a.
Finland [1]	687	1,688	246	3,870	6.491
Germany [1]	6,530	5,388	239	22,909	35,066
Iceland [2]	21	131	12	225	389
Latvia [2]	115	687	126	513	1,441
Lithuania [2]	194	630	130	859	1,813
Norway[2] [3]	216	5,147	301	6,551	12,215
Poland [1] [4]	7,046	3,662	n.a.	n.a.	10,708
Russia	n.a.	n.a.	n.a.	n.a.	n.a.
Sweden [1]	1,390	3,852	323	12,915	18,480

[1] 2000.

[2] 2001.

[3] Norway: Number of establishments.

[4] Poland: Incomplete breakdown. The sum of elements does not add to the total.

[15] Estonia, Poland and Russia not included.

ICT manufacturing is the second largest ICT sub-sector when measured by the number of enterprises on the market of app. 17,000. The geographical distribution shows that 41 per cent of these are located in Poland and another 38 per cent in Germany. The ICT wholesale sub-sector consists of app. 22,000 enterprises, of which a little less than one fourth are found in Germany and 19 per cent in Norway. Norway is also the residence of 19 per cent of the enterprises within Telecommunication, whereas 21 per cent are located in Sweden.

ICT consultancy services is by far the largest sub-sector of the ICT sector concerning its number of enterprises: In total more than 54,000 enterprises are operating within the Baltic region, and of these, 4 out of 10 in Germany, followed by Sweden, which is the residence of 24 per cent of the enterprises. Denmark and Norway each are residence of 12 per cent of the enterprises within ICT consultancy.

Table 5.2 **Number of enterprises in the ICT sub-sectors. Per cent**

	ICT manu-facturing	ICT whole-sale	Tele-commu-nications	ICT con-sultancy	Total ICT sector
	per cent				
Denmark [1]	6	19	2	73	100
Estonia	n.a.	n.a.	n.a.	n.a.	n.a.
Finland [1]	11	26	4	60	100
Germany [1]	19	15	1	65	100
Iceland [2]	5	34	3	58	100
Latvia [2]	8	48	9	36	100
Lithuania [2]	11	35	7	47	100
Norway[2] [3]	2	42	2	54	100
Poland [1]	66	34	n.a.	n.a.	100
Russia	n.a.	n.a.	n.a.	n.a.	n.a.
Sweden [1]	8	21	2	70	100

[1] 2000.

[2] 2001.

1 Norway: Number of establishments.

6. Profile of the employed persons in the ICT sector

6.0 Introduction

The demographic structure of the ICT sector employment is necessary in order to analyse the skill requirement and job creation in this sector.

In this chapter the demography of employment is analysed using following indicators concerning the employed persons:

- *Share of female persons employed in ICT manufacturing and in Manufacturing in general*
- *Share of female persons employed in ICT services and in Services in general*
- *Share of persons below 35 years employed in ICT manufacturing and in Manufacturing in general*
- *Share of persons below 35 years employed in ICT services and in Services in general*
- *Share of persons employed with third-level education in ICT manufacturing and in Manufacturing in general*
- *Share of persons employed with third-level education in ICT services and in Services in general*

6.1 Gender structure

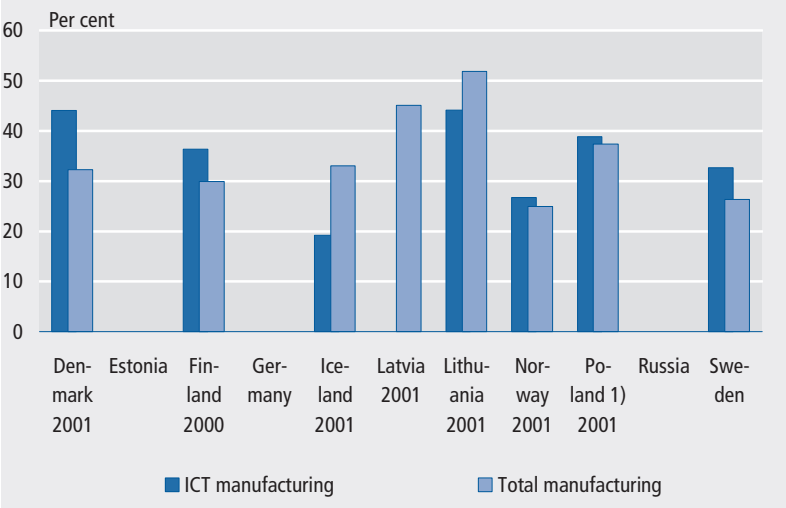
The gender structure of the economy indicates the opportunities of women on the labour market.

The share of females employed differs substantially from one country to another in the region – not only in the ICT sector, but also in the private sector in general[1]. In the private sector, the share of females varies from 35 per cent in Sweden to 47 per cent in Latvia.

In the ICT manufacturing sector the share of females employed is highest in Lithuania and Denmark, where females constitute 44 per cent of persons employed, cf. figure 6.1. But whereas the share of females in total manufacturing is even higher in Lithuania, 52 per cent, it is lower in Denmark (32 per cent). In fact ICT manufacturing employs relatively more females than the manufacturing sector in general in most of the countries, Iceland and Lithuania excepted.

[1] No data available from Estonia and Russia. Data are partly available from Germany, Latvia and Poland.

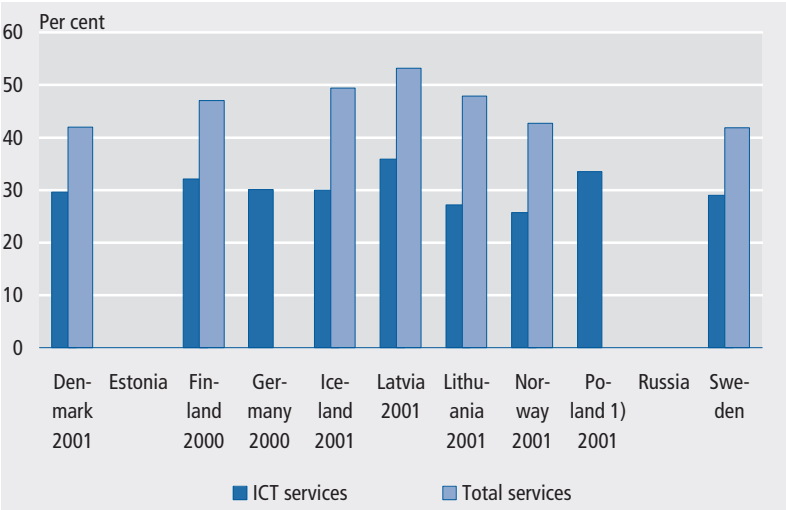
Figure 6.1 **Share of female persons employed in ICT manufacturing and in manufacturing total**



1) Poland: by 31.12.2001

The lowest shares of females in ICT manufacturing is found in Iceland and Norway (19 per cent and 27 per cent, respectively) compared to female shares in total manufacturing of 33 per cent and 26 per cent.

Figure 6.2 **Share of female persons employed in ICT services and in services total**



The services sector traditionally employs more women than the manufacturing sector. This also applies to the Baltic region, except from Lithuania, which generally has a high rate of females on the labour market.

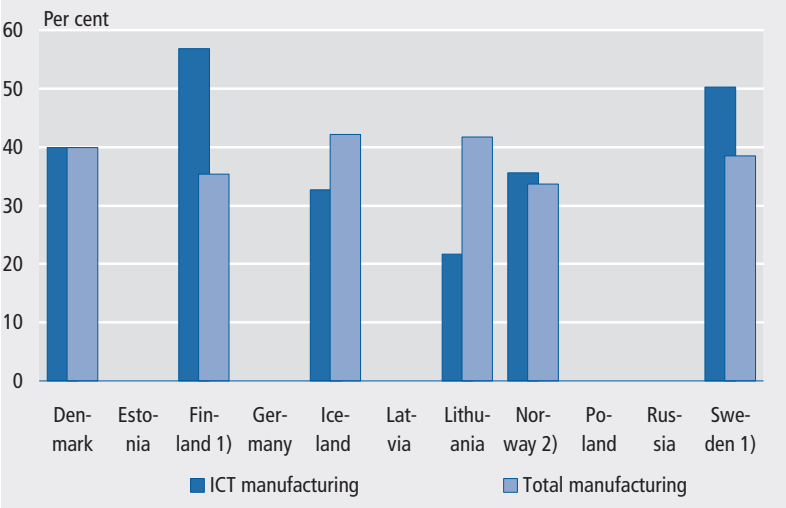
The share of females employed in the services sector varies from 42 per cent (Denmark and Sweden) to 53 per cent (Latvia), cf. figure 6.2. Whereas the female shares of employed persons showed a relatively heterogeneous picture when comparing the ICT manufacturing industry to the manufacturing sector in general, the picture is much more homogeneous in ICT services sector compared to the services sector in general: in all the countries fewer females are employed in the ICT services sector than in the services sector in general. In all of the countries the share of females employed in the ICT services sector are 12 percentage points or more below the share in the services sector in general. In Lithuania and Iceland the difference is most obvious: 21 and 19 percentage points, respectively.

6.2 Age structure

The ICT sector is often referred to as a "young" sector. Not only has it established itself within the last decades, but also its workforce is generally believed to be younger than the average of most other sectors of the economy.

That the workforce generally is young compared to other sectors is only to a certain extent true for the Baltic region, as this chapter shows, and it mainly applies to the ICT services sector.

Figure 6.3 **Share of persons employed below 35 years in ICT manufacturing and in manufacturing total. 2001**



1) Finland and Sweden: 2000
2) Norway: 4th quarter

In manufacturing industry in general the share of persons employed below 35 years varies from 34 per cent (Norway) to 42 per cent (Iceland and Lithuania), cf. figure 6.3[2].

In the ICT manufacturing industry the variation in age composition among the countries are much larger:

In Iceland and Lithuania there are actually fewer young persons employed in ICT manufacturing than in manufacturing industry in general. In Iceland 33 per cent of the workforce in ICT manufacturing is below 35 years, compared to 42 per cent in manufacturing in general, and in Lithuania the comparable figures are 22 per cent and 42 per cent, respectively.

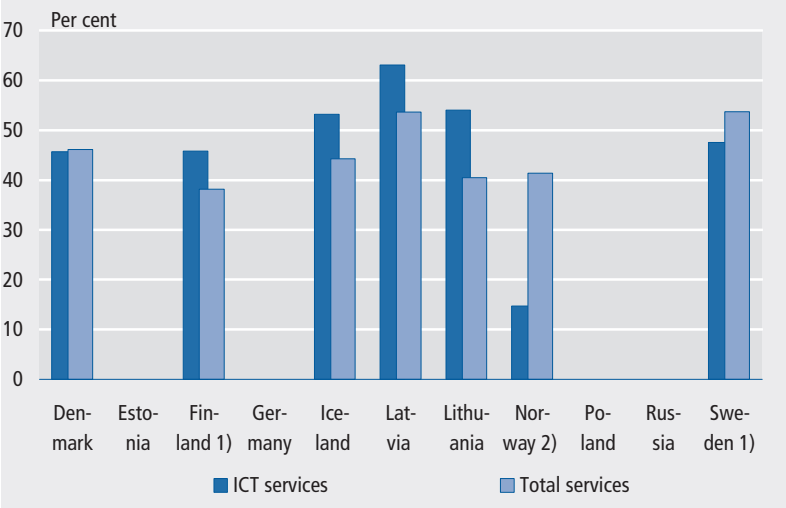
Denmark and Norway are characterised by almost the same share of young persons employed in ICT manufacturing as in manufacturing industry in general.

Only in Finland and Sweden the ICT manufacturing industry has higher shares of young persons employed than the manufacturing industry in general. In Finland 57 per cent of the persons employed in ICT manufacturing are below 35 years, compared to a share of 35 per cent in manufacturing industries in general. For Sweden the figures are 50 per cent and 38 per cent, respectively.

Within the services sector the share of young persons employed varies from 38 per cent (Finland) to 54 per cent (Latvia and Sweden), cf. figure 6.4. Like in ICT manufacturing sector there is an even larger variation among the countries in the ICT services sector than in services in general.

[2] Data are not available from Estonia, Germany, Latvia, Poland and Russia.

Figure 6.4 **Share of persons employed below 35 years in ICT services and in services total. 2001**



1) Finland and Sweden: 2000
2) Norway: 4th quarter

The Latvian ICT services sector can be characterised as dominated by young persons: 63 per cent of its workforce is below 35 years of age, compared to 54 per cent in the services sector in general. Also in Finland, Iceland and Lithuania there are much higher shares of young persons employed in ICT services compared to the total services sector. In the three countries persons below 35 years account for shares of 46 per cent, 53 per cent and 63 per cent, respectively.

In Denmark the share of the workforce below 35 years in ICT services and in services in general is the same, i.e. 46 per cent.

The Norwegian and the Swedish ICT services sector differs from the overall picture by having a smaller share of persons below 35 years employed in the ICT services sector compared to the services sector in general. In Sweden the share of younger persons is still quite high, 48 per cent, compared to 54 per cent in services in general. But in Norway only 15 per cent of the workforce in the ICT services sector is below 35 years, compared to 41 per cent in the total services sector.

6.3 Educational structure

The educational structure, i.e. educational level of persons employed in the ICT sector, relates closely to speculations on the future growth pos-

sibilities for the ICT sector[3]. Here the knowledge intensity is measured by the number of employed persons with third level education[4] .

Besides the Nordic countries, only Lithuania has data concerning the educational structure of the ICT sector. The relatively scarce material shows large variations among the countries, though. What should be taken into account is the fact that the data presented only concerns formal education, whereas skills obtained by post-graduate education, courses, on-the-job training or "learning by doing" are not included.

In general the employed persons in ICT manufacturing have a higher level of education[5] than persons employed in manufacturing industry in general.

The share of persons with third-level educations within ICT manufacturing is from 10 to 27 percentage points higher than in manufacturing industry in general. In Finland nearly half of the persons employed in ICT manufacturing have a third-level education. Only in Lithuania the picture differs, as 30 per cent of the persons employed in ICT manufacturing have a third-level education, which is 9 percentage points less than in manufacturing in general.

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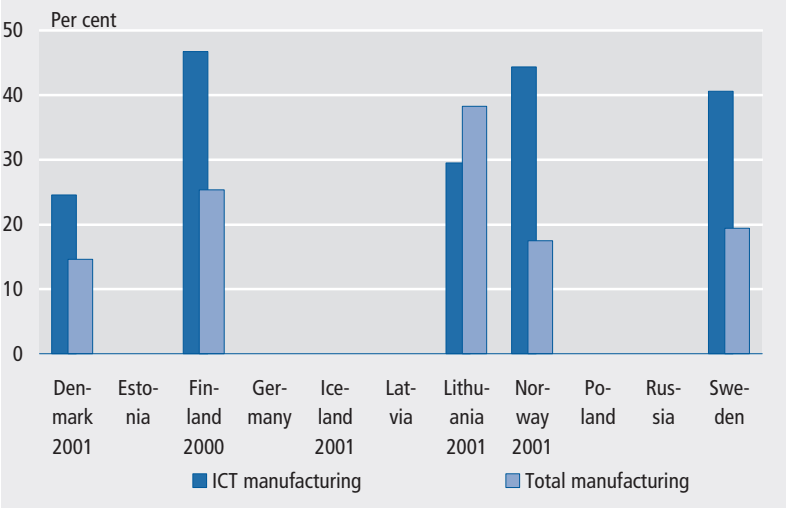
[3] In several of the Nordic countries there has been discussions whether there will actually be enough qualified persons for the ICT sector within the near future.

[4] Figures for EU show that app. 24 per cent of the total number of employed persons in EU had a third level education in 2001. Education and Health and social work had the highest knowledge intensity, 64 per cent and 39 per cent, respectively, followed by High-tech services (Communications, Computers and related activities), where 38.5 per cent of the employed persons had a third level education in 2001. Cf. Eurostat: *Statistics in Focus, Science and technology, Theme 9* - 5/2003.

[5] The figures relate to the share of persons with non-university tertiary education and university level education according to the *International Standard Classification of Educations* (ISCED), developed by OECD.

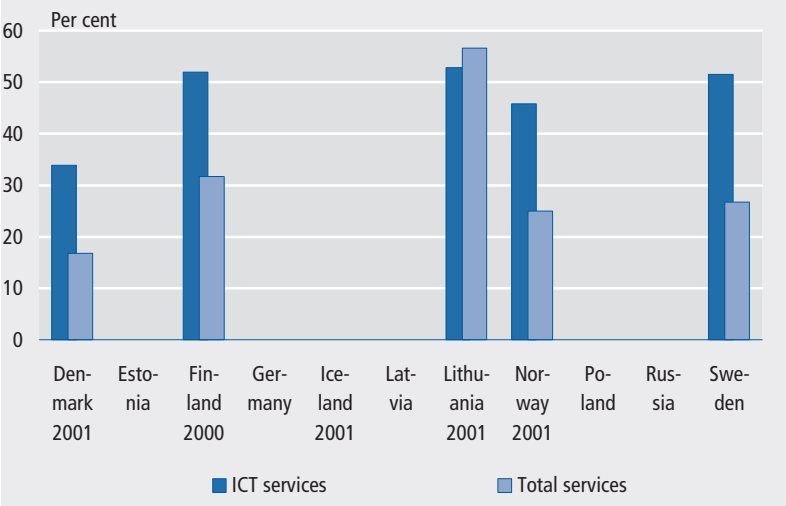
Figure 6.5 **Share of persons employed with third level education in ICT manufacturing and in manufacturing industry total**



In ICT services the picture is similar, as persons employed in ICT services more often have a third-level education than persons employed in services in general, cf. figure 6.6.

In the Finnish, Lithuanian and Swedish ICT services sector more than half of the employed persons have a third-level education, compared to 46 per cent in Norway and 34 per cent in Denmark.

Figure 6.6 **Share of persons employed with third level education in ICT services and in the services sector total**



In the services sector in general app. half as many have a higher education, ranging from 17 per cent in Denmark as the lowest share to 32 per cent in Finland as the highest share. In the Lithuanian services sector the persons employed are generally very well educated, as a total of 57 per cent have a third-level education.

7. Production of ICT goods[1]

7.0 Introduction

Production of ICT goods are closely linked to the ICT manufacturing sector, but may also take place within activities outside of the ICT sector, i.e. when enterprises with activities outside the ICT sector have a production of ICT goods besides a production of non-ICT goods.

This chapter analyses the following indicators:

- *Production of ICT goods as a share of total production*
- *Production of ICT goods distributed by type of product*

7.1 The relative importance of the production of ICT goods

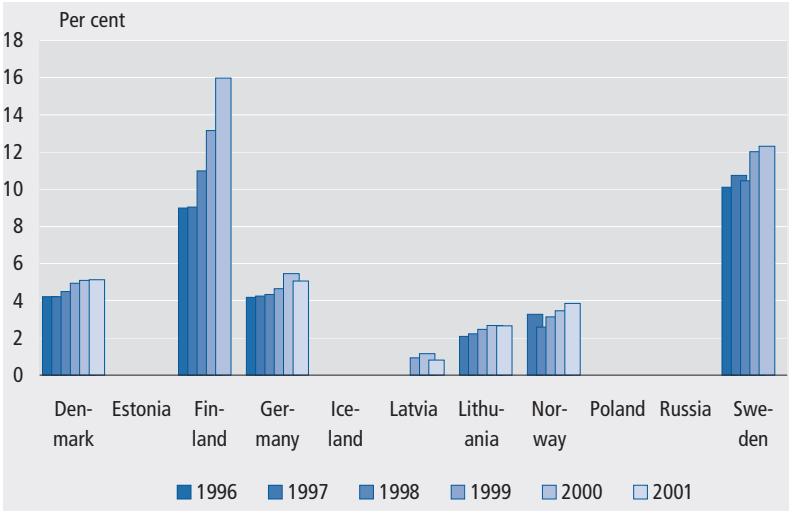
The production of ICT goods shows a varying importance among the countries of the Baltic region compared to the total production.

In Finland ICT goods account for 16 per cent of total industrial production in 2000, followed by Sweden, where it represented 12 per cent.

In the other countries represented in figure 7.1 the share is much lower, accounting for 5.1 per cent in both Denmark and Germany, 3.5 per cent in Norway, 2.5 per cent in Lithuania and 0.8 per cent in Latvia (all 2001).

[1] The products defined as ICT products are based on a preliminary list developed by Eurostat. The ICT products are defined according to PRODCOM (*Production Communautaire*) by Eurostat, and keys are also developed according to the *Harmonised Commodity Description and Coding System* (HS) and *Central Product Classification* (CPC). The list of ICT products by PRODCOM is found in Annex 1.

Figure 7.1 **Production of ICT goods as a proportion of total production. 1996-2001**



Measured by its share of total industrial production, the production of ICT goods has had a growing importance since the mid 1990's in all the countries, except for Latvia. This is particularly the case in Finland, where ICT goods production has grown from 9 per cent in 1996 to 16 per cent of total production in 2000.

Also the Swedish production of ICT goods has grown considerably compared to the total production, from 10 per cent in 1996 to 12 per cent in 2000.

7.2 The composition of the ICT goods production

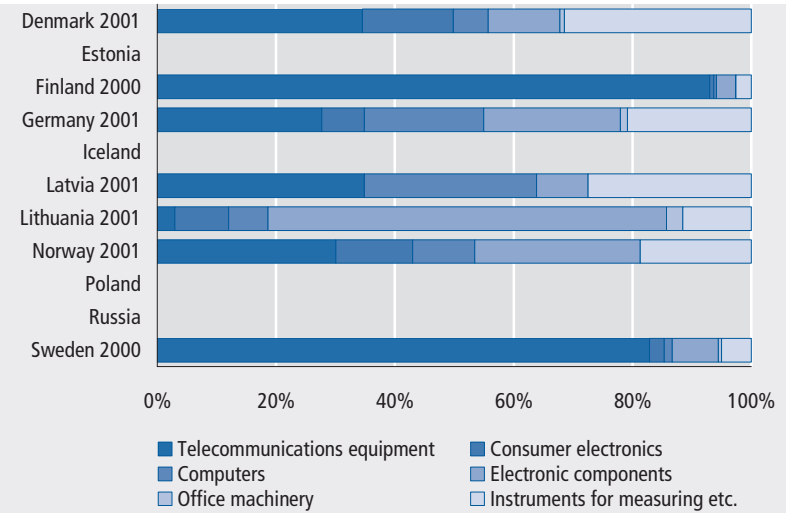
The composition of the national production of ICT goods shows a very heterogeneous pattern. In some countries the production is extremely specialised, concentrating on one of few product types, whereas others have a more broad distribution of the production across the types of ICT goods.

The Finnish and Swedish production of ICT goods is to a large extent concentrated to telecommunications equipment, accounting for 93 per cent and 83 per cent of total ICT production, respectively.

Also in Lithuania the ICT goods production is concentrated, but here electronic components are the main ICT goods, representing a share of total ICT goods production of 67 per cent.

The Danish, German, Latvian and Norwegian production is more evenly distributed among the different types of ICT goods, even though telecommunications equipment account for the largest part of the production, app. 30 per cent in all three countries.

Figure 7.2 **Production of ICT goods distributed by type of product. Per cent**



8. Foreign trade with ICT goods

8.0 Introduction

The Baltic region had an export of ICT goods[1] representing app. 80 billion Euros in 2001/2002, and an import of ICT goods of app. 93 billion Euros[2]. The export of ICT products represents app. 8 per cent of the total export of the region, whereas the import represents app. 11 per cent of the total import. Only few of the countries have a surplus on the ICT trade balance – an export exceeding the import amount, which may indicate a good competitive capacity. On the other hand imported ICT goods can be used as components in further manufacture of goods. A high import of ICT goods may also indicate an advanced use of ICT, and thus the interpretation of external trade figures is not unambiguous.

Only physical goods are covered by this statistics, and therefore services, typically being provided by enterprises within ICT consultancy services, are excluded.

The indicators analysed in this chapter are:

- *Export of ICT goods distributed by types of goods*
- *Export of ICT goods as a proportion of total exports*
- *Import of ICT goods distributed by types of goods*
- *Import of ICT goods as a proportion of total import*
- *Export/import ratio of ICT goods*

8.1 Export of ICT goods

The composition of the export of ICT goods varies among the countries of the Baltic region, cf. figure 8.1.

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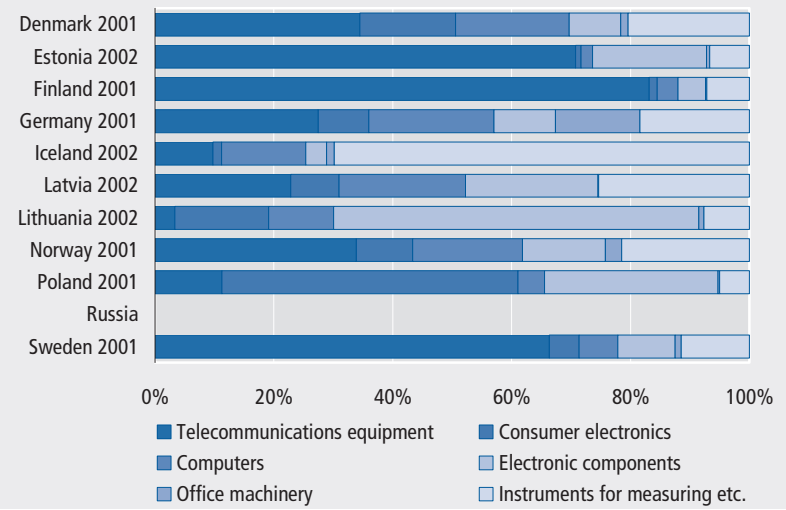
[1] The products defined as ICT products are based on a preliminary list by Eurostat. The ICT products are defined according to PRODCOM (*Production Communautaire*, by Eurostat), and keys are also developed according to the *Harmonised Commodity Description and Coding System* (HS) and *Central product Classification* (CPC). The list of ICT products by PRODCOM is found in Annex 1.

[2] For Estonia, Iceland, Latvia and Lithuania the figures concern 2002, and for the other countries 2001. Russia not included.

Figure 8.1 **Export of ICT goods distributed by types of products. Per cent**



Telecommunications equipment plays an important role in countries like Finland, Estonia and Sweden, where it constitutes more than two thirds of the ICT export.

Consumer electronics are by far most important to Poland, where its share of the total ICT goods export is 50 per cent.

In four countries: Denmark, Germany, Latvia and Norway, export of Computers represents app. one fifth of the total ICT goods export, whereas Electronic components are the largest group within ICT goods export with a share of 61 per cent.

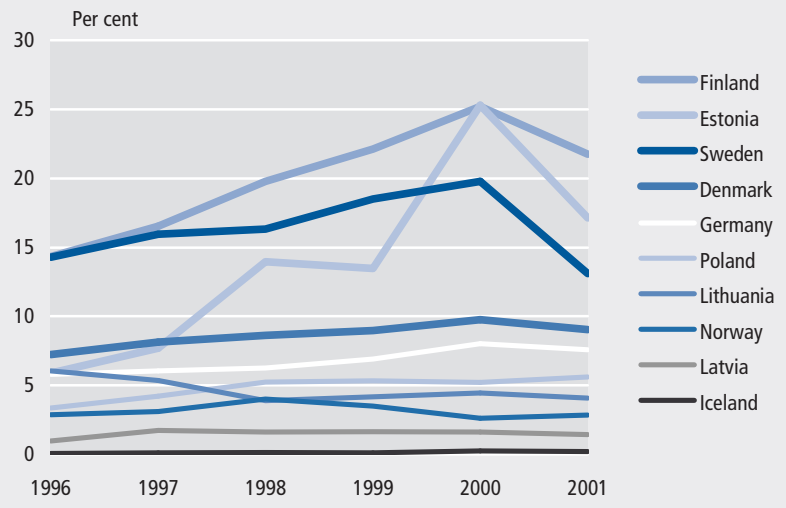
The only country, which has a significant export of Office machinery, is Germany – 14 per cent of the total ICT goods export belongs to this type of products.

Instruments for measuring etc. are the most important type of ICT good exported by Iceland, making up 70 per cent of the export of ICT goods.

In several of the countries of the Baltic region, import of ICT goods has grown faster than the total exports in the period 1996-2001, thus resulting in a growing ratio of ICT export compared to total exports.

In the countries where ICT goods account for the largest shares of the total export, the ICT export has dropped remarkably from 2000 to 2001: by 35 per cent in Sweden, 27 per cent in Estonia, and 17 per cent in Finland. The value of the total export measured by national currencies has also gone down, but only in Finland (by 4 per cent) and Sweden (by 2 per cent), whereas the total export of Estonia has grown by 7 per cent from 2000 to 2001.

Figure 8.2 **Export of ICT goods as proportion of total exports. 1996-2001**



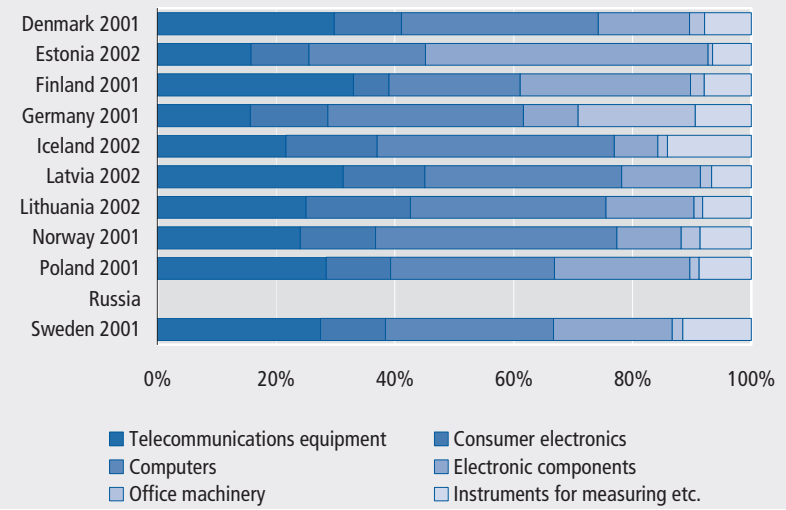
In 2001 the ICT export accounts for approximately the same share of total exports as in 1996, deviating only by few percentages. Only in Estonia and Finland there has been a change exceeding a few percentages. The ICT goods export as a proportion of total export has increased from 6 per cent to 17 per cent in Estonia and in Finland from 14 per cent to 22 per cent.

8.2 Import of ICT goods

The import of different types of ICT goods among the countries of the Baltic region shows a relatively homogeneous picture with electronic components and telecommunications equipment being the types of ICT goods representing the largest share of the total import of ICT goods.

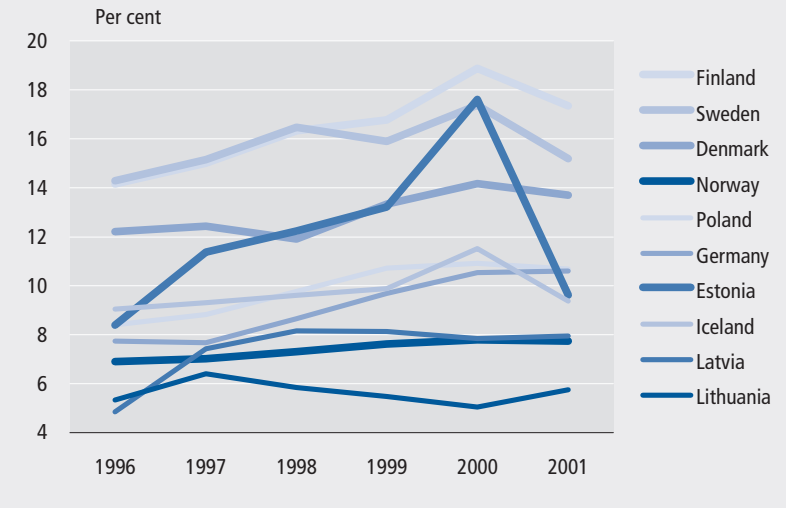
Only a few countries differ from the general picture: Estonia has a relatively large import share of electronic components (48 per cent), whereas in Germany office machinery makes up the largest share (20 per cent) of the import of ICT goods. Finland is characterised by a large import of telecommunications equipment, but the import is still much smaller than the export.

Figure 8.3 **Import of ICT goods distributed by types of products. Per cent**



Compared to 1996 most of the countries have seen a growth in the ICT import compared to the total import of 1 to 3 percentage points, cf. figure 8.4.

Figure 8.4 **Development in ICT goods import as a proportion of total import of goods**



In Finland, Germany and Latvia ICT goods have increased its share shares total import with 3 percentage points in the period 1996-2001. In Norway and Poland the comparable figure is 2 percentage points, and in Denmark, Estonia and Sweden the increase is 1 percentage point.

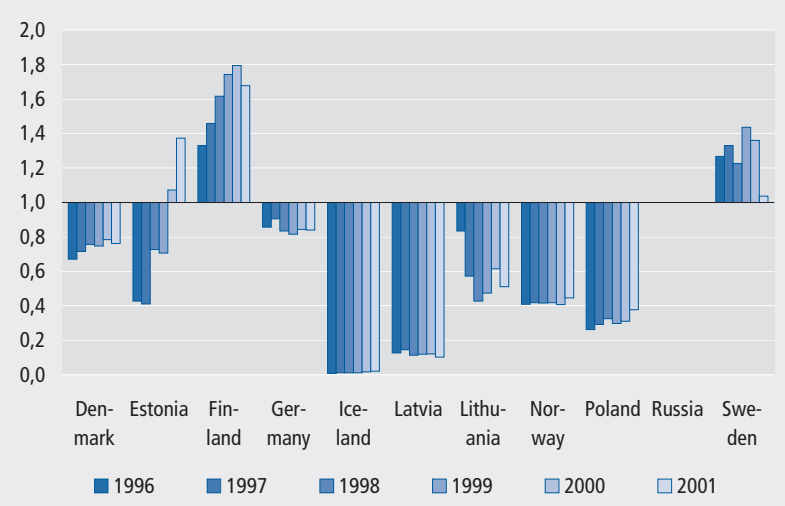
In Iceland the ICT goods import makes up the same share of total imports in 2001 as in 1996, namely 9 per cent. In Lithuania the ICT goods import has grown from 5.3 per cent of total imports in 1996 to 5.8 per cent in 2001.

8.3 Development in export/import ratio of ICT goods

Only few countries, Estonia, Finland and Sweden, have a surplus on their foreign trade with ICT goods, i.e. an export larger than the import.

For Estonia the balance has changed within the most recent years from a deficit to a surplus, cf. figure 8.5. Finland has had a surplus on foreign trade with ICT good for the whole period covered (1996-2001). For Sweden there is a considerable change in 2001: From a period with a clear surplus in the previous years the surplus has dropped dramatically in 2001, due primarily to a drop in the ICT goods export of 35 per cent. Also the import of ICT goods has gone down, but only 15 per cent from 2000 to 2001.

Figure 8.5 **Export/import ratio of ICT goods**



9. Research & Development in the ICT sector

9.0 Introduction

Investments in Research and Development (R&D) are considered an important condition for the development of new products and processes, and in general for leading to innovation in business.

Technological development in ICT runs fast and therefore R&D expenditure within the ICT sector must be expected to constitute a relatively large share of total R&D expenditure – and this is actually also what the figures show for most of the countries.

R&D is in this chapter analysed by the following indicators:

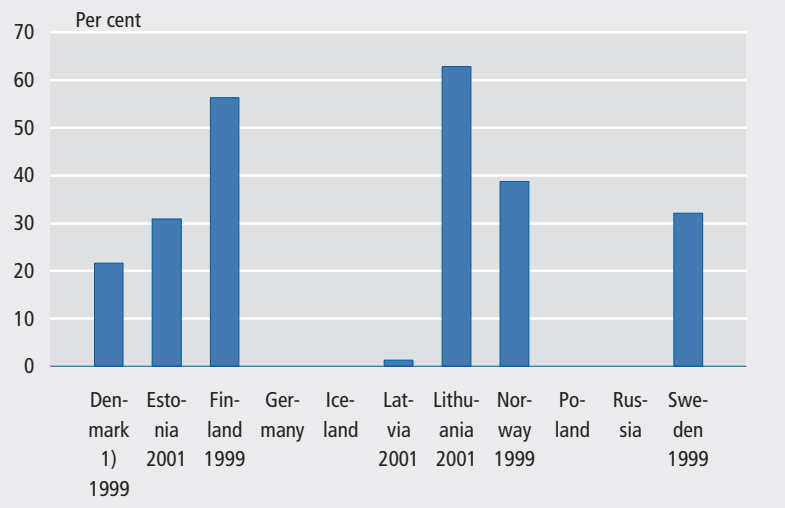
- *R&D expenditure in the ICT sector as a proportion of total R&D expenditure*
- *R&D expenditure as a proportion of the total turnover of the ICT sector*

9.1 R&D expenditure in the ICT sector

The ICT sectors R&D expenditure constitutes a varying proportion of the total R&D expenditures in the private sector, cf. figure 9.1. Lithuania represents the highest share, as 63 per cent of total R&D expenditure in the private sector comes from the ICT sector, followed by Finland, whose share is 56 per cent[3].

[3] According to OECD figures, ICT manufacturing accounted for more than a quarter of total manufacturing business R&D expenditure in most OECD countries in 2000, cf. *Measuring the Information Economy 2002*, OECD 2002.

Figure 9.1 **R&D expenditure in the ICT sector as a proportion of total R&D expenditure**



1) Data from The Danish Institute for Studies in Research and Research Policy.

In Norway, Sweden and Estonia 39 per cent, 32 per cent and 31 per cent of total R&D expenditure are related to the ICT sector. The Latvian ICT sector represents only 1 per cent of total R&D.

The relative distribution of the ICT sectors R&D expenditure on ICT manufacturing and ICT services reflect the importance of the two sectors in the countries to some extent, cf. figure 9.2[4].

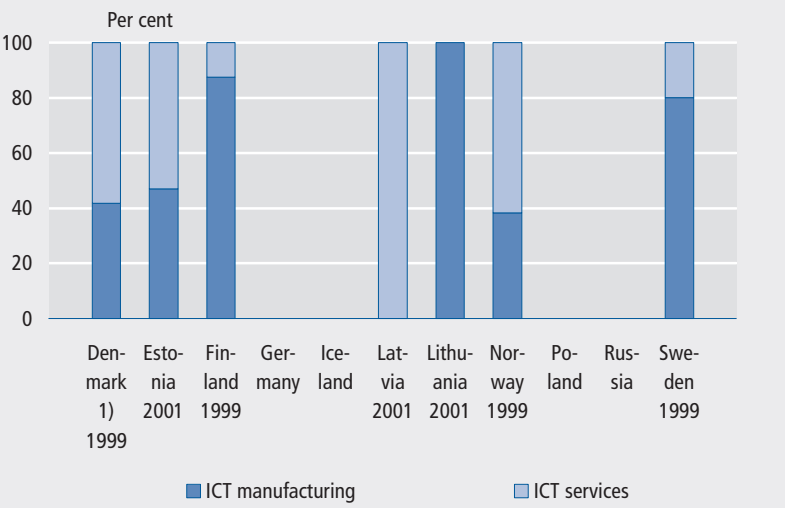
In Finland and Sweden, where the ICT manufacturing sector is of large importance, this sector contributes with a very large share of the ICT sectors total R&D expenditure. In Finland the share is 87 per cent, and in Sweden 80 per cent.

Denmark, Estonia and Norway, who are all characterised by the ICT services being of relatively large importance, have a substantially larger proportion of R&D expenditure within ICT services than Finland and Sweden.

In Norway the ICT services share of total R&D expenditure in the ICT sector is 62 per cent, and in Denmark and Estonia the corresponding figures are 58 per cent and 53 per cent, respectively.

[4] For Lithuania no data are available for ICT services.

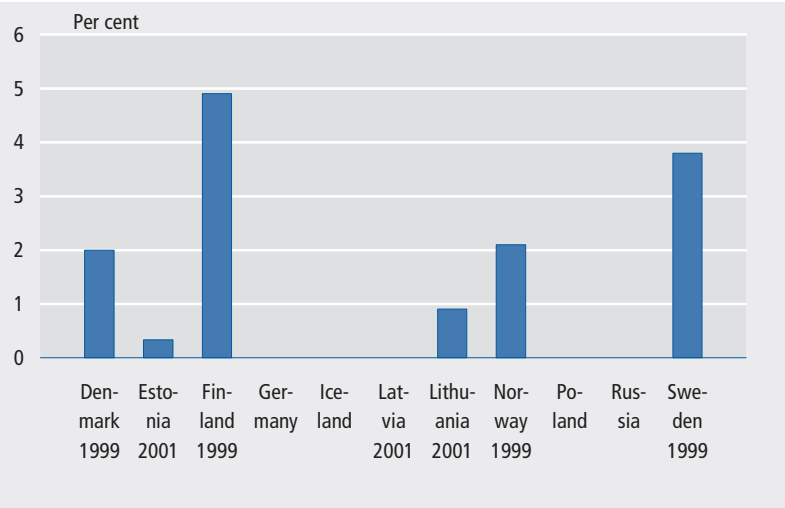
Figure 9.2 **R&D expenditure in the ICT sector distributed by ICT manufacturing and ICT services**



Comparing the R&D expenditure of the ICT sector to the total turnover of the sector shows that the Finnish and Swedish ICT sector spends the largest shares of turnover on R&D: 4.9 per cent and 3.8 per cent, respectively, cf. figure 9.3.

The Danish, Estonian, Lithuanian and Norwegian ICT sectors all spend more than 1.7 percentage points less of their turnover on R&D, varying from 2.0 in Norway to 0.3 per cent in Estonia.

Figure 9.3 **R&D expenditure as a proportion of total turnover in the ICT sector**



Annex 1. Definitions of ICT sector, ICT products and levels of education

1. Definition of ICT sector, based on NACE, rev.1 nomenclature

	ICT manufacturing industry:
3001	Manufacture of office machinery
3002	Manufacture of computers and other information processing equipment
3130	Manufacture of insulated wire and cable
3210	Manufacture of electronic valves and tubes and other electronic components
3220	Manufacture of television and radio transmitters and apparatus for line telephony and line telegraphy
3230	Manufacture of television and radio receivers, sound or video recording or reproducing apparatus and associated goods
3320	Manufacture of instruments and appliances for measuring, checking, testing, navigating and other purposes, except industrial process control equipment
3330	Manufacture of industrial process control equipment
	ICT services:
Wholesale	
5143	Wholesale of electrical house-hold appliances and radio and television goods
5164	Wholesale of office machinery and equipment
5165	Wholesale of other machinery for use in industry, trade and navigation
Telecommunications	
6420	Telecommunications
Consultancy services	
7133	Renting of office machinery and equipment, including computers
7210	Hardware consultancy
7220	Software consultancy and supply
7230	Data processing
7240	Database activities
7250	Maintenance and repair of office, accounting and computing machinery
7260	Other computer related activities

In order to measure the relative size and importance of the ICT sector, the data supplied by the countries also cover:

- The total manufacturing industry (NACE 15-37)
- The total services sector (NACE 50-74, 92), and
- The total private sector (NACE 15-37, 45, 50-74, 92, 93).

2. Definition of ICT products by PRODCOM

Prodcom(98)	Description
	Telecommunications equipment
32201150	Radio/tv transmission apparatus without reception apparatus
32201170	Radio transmission apparatus with reception apparatus
32201290	Television cameras (incl. closed circuit TV cameras) (excl. camcorders)
32202020	Telephone sets (incl. line telephone sets with cordless handsets, videophones) (excl. telephone answering machines not an integral part of the set)
32202030	Teleprinters
32202040	Telephonic or telegraphic switching apparatus (excl. relays and switching equipment such as selectors for automatic telephone exchangers)
32202050	Telephonic/telegraphic apparatus for carrier-current line systems, n.e.c.
32202060	Electrical telephonic and telegraphic apparatus, n.e.c.
32202075	Facsimile machines
32305220	Telescopic and whip-type aerials for portable apparatus or for apparatus for fitting in motor vehicles
32305235	Outside aerials for radio or television reception via satellite (incl. rotor systems) (excl. aerial amplifiers and radio frequency oscillator units)
32305239	Outside aerials for radio or television reception (incl. rotor systems) (excl. for reception via satellite, aerial amplifiers and radio frequency oscillator units)
32305250	Inside aerials for radio or television reception (incl. built-in types) (excl. aerial amplifiers and radio frequency oscillator units)
32305270	Other aerials and parts
33202030	Radar apparatus
33202050	Radio navigational aid apparatus (incl. radio beacons and radio buoys, receivers, radio compasses equipped with multiple aerials or with a directional frame aerial)
33202070	Radio remote control apparatus (incl. for ships, pilotless aircraft, rockets, missiles, toys, and model ships or aircraft, for machines, for the detonation of mines)
33204400	Instruments and apparatus, for telecommunications
35304000	Spacecraft, satellites and launch vehicles
	Consumer electronics
24651000	Prepared unrecorded media for sound recording or similar recording (excl. photographic or cinematographic products)
32301155	Radio receivers, portable, sound recording or reproducing apparatus
32301159	Radio receivers, portable, n.e.c.
32301175	Radio receivers, with sound recording or reproducing apparatus
32301177	Other radio receivers not combined with sound recording or reproducing apparatus but combined with a clock
32301179	Radio receivers, n.e.c.
32301270	Radio receivers motor vehicles with sound recording or reproducing apparatus
32301290	Radio receivers for motor vehicles, n.e.c.
32302020	Colour television projection equipment and videoprojectors
32302030	Colour televisions with a video recorder or player
32302045	Colour video monitors with cathode-ray tube

32302049	Flat panel video monitor, LCD or plasma, etc., without tuner (colour video monitors) (excl. with cathode-ray tube)
32302050	Colour television receivers with integral tube (excl. television projection equipment, apparatus with a video recorder or player, video monitors)
32302060	Colour television receivers with other screens
32302075	Tuner blocks for CTV/VCR and cable TV receiver units (colour video tuners) (excl. those which isolate high-frequency television signals)
32302079	Satellite TV Receiver/Decoder (colour television receivers) (excl. with a screen, video tuners, video monitors, television projection equipment, with integral tube)
32302083	Black and white or other monochrome video monitors
32302085	Black and white or other monochrome television receivers (excl. video monitors)
32303135	Jukeboxes and the like (coin or disc-operated record-players)
32303139	Record-players and turntables (record decks) (excl. coin or disc-operated record-players)
32303150	Transcribing machines
32303175	Sound reproducing apparatus, cassette type, unable to record
32303179	Other sound reproducing apparatus
32303230	Dictating machines operated by an external source of power
32303250	Telephone answering machines with sound recording apparatus (excl. those forming an integral part of a telephone set)
32303275	Cassette recorders (cassette player/recorders) (incl. recording personal stereos) (excl. those combined with a radio or television receiver, dictating machines, etc.)
32303279	Other tape recorders (magnetic tape player/recorders) (excl. those combined with a radio or television receiver, dictating machines, telephone answering machines, cassette-type)
32303290	Sound recording apparatus (incl. digital disc audio recorders) (excl. dictating machines, telephone answering machines, magnetic tape player/recorders)
32303335	Electronic stills cameras and video camcorders (still image video cameras and other video camera recorders) (excl. closed circuit TV cameras)
32303339	Other video apparatus (+ video tuner) with tapes <= 1.3 cm, speed <= 50 mm/s
32303350	Other magnetic tape-types video apparatus (incl. or not video tuner)
32303370	Video recorders or player/recorders (incl. laser or digital video disc players/recorders) (excl. those combined with a television, for magnetic tape)
32304100	Microphones and their stands (excl. cordless microphones with a transmitter)
32304235	Single loudspeakers mounted in their enclosures (incl. frames or cabinets mainly designed for mounting loudspeakers)
32304237	Multiple loudspeakers mounted in the same enclosure (incl. frames or cabinets mainly designed for mounting loudspeakers)
32304239	Loudspeakers (incl. speaker drive units, frames or cabinets mainly designed for mounting loudspeakers) (excl. those mounted in their enclosures)
32304270	Headphones, earphones and combined microphone/speaker sets (excl. airmen's headgear with headphones, telephone sets, cordless microphones with a transmitter, hearing aids)
32304355	Telephonic and measurement amplifiers (excl. high or intermediate frequency amplifiers)
32304359	Audio-frequency electric amplifiers (incl. hi-fi amplifiers) (excl. high or intermediate frequency amplifiers, telephonic and measurement amplifiers)
32304370	Electric sound amplifier sets (incl. public address systems with microphone and speaker)
32304420	Portable receivers
32305130	Pick-up cartridges for discs or mechanically recorded sound films

	Computers
30021100	Analogue or hybrid automatic data processing machines
30021200	Laptop PCs and palm-top organisers
30021300	Desk top PCs
30021400	Digital data processing machines: presented in the form of systems
30021500	Other digital automatic data processing machines whether or not containing in the same housing 1 or 2 of the following units: storage units, input/output units
30021630	Printers and plotters
30021650	Keyboards and scanners
30021670	Input or output units whether or not containing storage units in the same housing (incl. mouses) (excl. printers, plotters, keyboards, scanners)
30021730	Central storage units
30021755	CD-ROM drives
30021757	Hard and floppy disk drives
30021770	Magnetic tape storage units
30021790	Storage units (excl. central storage units, disk storage units and magnetic tape storage units)
30021800	Other machines for processing data, n.e.c.
30021900	Parts & access. of machines of HS 8471, incl. parts & access. equally suitable for use with >= 2 machines of HS 8469 to 8472 (excl. mouses & hard disk drives)
	Electronic components
31301200	Insulated coaxial cables and other coaxial electric conductors for data and control purposes whether or not fitted with connectors
31301330	Electrics conductors used for telecommunications whether or not fitted with connectors, for a voltage <= 80 V
31301350	Other electric conductors for data & control purposes whether or not fitted with connectors, voltage <= 80 V
31301370	Insulated electric conductors whether or not fitted with connectors, for a voltage > 80 V but <= 1
31301500	Optical fibre cables made up of individually sheathed fibres whether or not assembled with electric conductors or fitted with connectors
32101100	Fixed power capacitors with a power handling capacity of > 0.5 kVAr
32101230	Fixed tantalum capacitors
32101250	Fixed aluminium capacitors
32101273	Fixed single layer ceramic capacitors
32101275	Fixed multilayer ceramic capacitors
32101277	Fixed metallised paper or plastic capacitors
32101279	Other fixed capacitors (excl. tantalum, aluminium, single or multilayer ceramic, metallised paper or plastic)
32101300	Variable capacitors (incl. pre-sets)
32102020	Fixed carbon or metal film resistors
32102035	Other fixed resistors for a power handling capacity <= 20 W (excl. heating resistors, light dependent resistors)
32102037	Other fixed electrical resistors for a power handling capacity > 20 W (excl. heating resistors, light dependent resistors)
32102055	Wirewound variable resistors for a power handling capacity <= 20 W
32102057	Wirewound variable resistors for a power handling capacity > 20 W
32102070	Non wirewound variable resistors (incl. rheostats, potentiometers and trimmers)

32103050	Bare multilayer printed circuit boards
32103070	Bare printed circuit boards other than multilayer
32103090	Passive networks (incl. networks of resistors and/or capacitors) (excl. resistor chip arrays, capacitor chip arrays, boards containing active components, hybrids)
32104135	Colour TV tubes
32104137	Black and white, monochrome TV tubes
32104139	Monitor tubes (with a phosphor dot screen pitch < 0.4 mm)
32104150	Television camera tubes, image converters and intensifiers and other photo-cathode tubes
32104200	Magnetrons, klystrons, microwave tubes, valves and tubes
32105120	Semiconductor diodes
32105130	Semiconductor power rectifier diodes
32105155	Semiconductor small signal transistors with a dissipation rate < 1 W
32105157	Semiconductor power transistors with a dissipation rate >= 1 W
32105170	Semiconductor thyristors, diacs and triacs
32105235	Semiconductor light emitting diodes (LEDs)
32105237	Photosensitive semiconductor devices; solar cells, photo-diodes, photo-transistors, etc.
32105250	Semiconductor devices (excl. photosensitive semiconductor devices, photovoltaic cells, thyristors, diacs and triacs, transistors, diodes, and light-emitting diodes)
32105270	Mounted piezo-electric crystals (incl. quartz, oscillator and resonators)
32106015	Digital MOS integrated circuits (ICs): wafers not yet cut into chips
32106017	Digital MOS integrated circuits (ICs): chips
32106025	Digital MOS integrated circuits (ICs), DRAM (incl. modules) with a capacity <= 4 Mbits
32106027	Digital MOS integrated circuits (ICs), DRAM (incl. modules) with a capacity > 4 Mbits
32106033	Digital MOS integrated circuits (ICs), SRAM (incl. modules) with a capacity <= 256 Kbits
32106035	Digital MOS integrated circuits (ICs), SRAM (incl. modules) with a capacity > 256 Kbits but <= 1 Mbit
32106037	Digital MOS integrated circuits (ICs), SRAM (incl. modules) with a capacity > 1 Mbit
32106053	MOS UV erasable, programmable, read only memories: EPROMs: storage cap. <= 1 Mbit
32106055	MOS UV erasable, programmable, read only memories: EPROMs: 1 Mbit < storage cap. <= 4 Mbit
32106057	MOS UV erasable, programmable, read only memories: EPROMs: storage cap. > 4 Mbit
32106065	Digital MOS integrated circuits (ICs) EEPROMS and flash EEPROMS
32106069	Digital MOS integrated circuits (ICs) memories (incl. ROM, FIFO, LILO (excl. circuits consisting solely of passive elements, DRAMS, SRAMS, Cache-RAMS, [E]EPROMS)
32106070	Digital MOS integrated circuits (ICs), (CPUs and MPUs)
32106093	Other digital MOS integrated circuits (ICs) (incl. MPR, MCU, ASIC, standard logic, PLD and other logic)
32106095	Linear (analogue) integrated circuits (ICs)
32106097	Hybrid integrated circuits (excl. circuits consisting solely of passive elements)
32106099	Electronic microassemblies (excl. circuits consisting solely of passive elements, assemblies formed by mounting one or more discrete components on a support)
	Office machinery
30011100	Word-processors (incl. automatic typewriters)
30011320	Calculating machines
30011350	Cash registers

30011370	Postage-franking machines, ticket-issuing machines and similar machines incorporating a calculating device
30011430	Parts and accessories of the machines of HS 8469
30011450	Parts and accessories of the electronic calculating of HS 8470
30012150	Blueprint and diazocopiers (excl. ordinary photographic printing frames)
30012170	Electrostatic photocopiers
30012190	Photocopiers incorporating an optical system, thermocopiers and contact type photocopiers (excl. electrostatic photocopiers, blueprinters and diazocopiers)
30012400	Parts and accessories of the machines of HS 8472
	Instruments and equipment for detecting, measuring, checking and controlling physical phenomena or processes
33201130	Direction finding compasses (incl. magnetic, gyroscopic, binnacle and position finding)
33201155	Instruments and appliances for aeronautical or space navigation (excl. compasses)
33201159	Instruments and appliances for navigation (incl. for marine or river navigation) (excl. for aeronautical or space navigation, compasses)
33201215	Electronic surveying and hydrographic instruments and appliances (incl. rangefinders, levels, theodolites and tacheometers, photogrammetrical instruments and appliances) (excl. comp
33201219	Other rangefinders, theodolites and tacheometers, levels, photogrammetrical applications
33201235	Other electronic instruments for meteorological purposes
33201239	Other electronic instruments, n.e.c.
33201253	Instruments and appliances used in geodesy, topography, surveying...
33201255	Other meteorological, hydrological and geophysical instruments and apparatus
33201257	Other surveying, hydrographic... geophysical instruments and appliances
33204100	Instruments and apparatus for measuring or detecting ionising radiations
33204200	Cathode-ray oscilloscopes and cathode-ray oscillographs
33204310	Multimeters
33204330	Instruments and apparatus, for measuring or checking voltage... : electronic
33204355	Voltmeters
33204359	Non-electronic instruments and apparatus, for measuring or checking voltage, current, resistance or power, without a recording device (excl. multimeters, voltmeters)
33204520	Instruments and apparatus for measuring or checking semiconductor wafers or devices
33204530	Instruments and apparatus, with a recording device, for measuring or checking electric gains (excl. gas, liquid or electricity supply or production meters)
33204555	Electronic instruments and apparatus, WITHOUT a recording device, for measuring or checking electric gains (excl. gas, liquid or electricity supply or production meters)
33204559	Non-electronic instruments and apparatus, without a recording device, for measuring or checking electrical gains (excl. multimeters, voltmeters)
33205150	Barometers, not combined with other instruments (incl. barometric altimeters, sympiesometers)
33205175	Electronic hydrometers, hygrometers and psychrometers
33205179	Hydrometers, pyrometers, hygrometers and psychrometers : others
33205271	Instruments... for measuring or checking pressure : electronic
33205273	Non-electronic spiral or metal diaphragm type pressure gauges for measuring and non-automatically regulating tyre pressure
33205275	Instruments for measuring or checking: spiral or metal diaphragm type pressure gauges, others
33205279	Other instruments for measuring or checking pressure: others
33205283	Other electronic instruments and apparatus

33205289	Non-electronic instruments for measuring or checking variables of liquids or gases (incl. heat meters) (excl. for measuring or checking pressure or the flow or level of liquids)
33205313	Electronic gas or smoke analysers
33205319	Non-electronic gas or smoke analysers
33205323	Chromatographs
33205329	Electrophoresis instruments
33205330	Spectrometers, spectrophotometers... using optical radiations
33205340	Exposure meters
33205350	Instruments and apparatus using optical radiations, n.e.c.
33205381	Electronic pH and rH meters and other apparatus for measuring conductivity
33205383	Other electronic instruments and apparatus
33205385	Viscometers, porosimeters and expansion meters
33205389	Other instruments and apparatus for physical and chemical analysis
33206100	Microscopes and diffraction apparatus (excl. optical microscopes)
33206210	Electronic machines and appliances for testing the mechanical properties of metals (excl. metallographic machines or appliances, instruments for detecting defects)
33206233	Non-electronic universal and tensile testing machines and appliances for metals
33206235	Non-electronic hardness testing machines and appliances for metals
33206239	Other machines and appliances for testing metals
33206255	Electronic machines and appliances for testing the properties of materials (excl. for metals)
33206259	Other machines and appliances for testing materials (excl. metals)
33206330	Gas supply or production meters (incl. calibrated)
33206350	Liquid supply or production meters (incl. calibrated) (excl. pumps)
33206370	Electricity supply or production meters (incl. calibrated) (excl. voltmeters, ammeters, wattmeters and the like)
33206430	Revolution counters, production counters, taximeters, mileometers
33206453	Vehicle speed indicators
33206455	Tachometers
33206470	Stroboscopes (incl. photographic or cinematographic cameras permanently incorporated in stroboscopes)
33206510	Machines for balancing mechanical parts
33206520	Test benches
33206530	Profile projectors
33206540	Optical instruments and appliances for measuring or checking, n.e.c.
33206550	Electronic instruments, appliances and machines for measuring or checking geometrical quantities (incl. comparators, coordinate measuring machines (CMMs))
33206570	Other electronic instruments, appliances,... for measuring or checking
33206583	Other instruments, appliances,... for measuring or checking geometrical quantities
33206589	Other instruments, appliances and machines for measuring or checking
33207015	Electronic thermostats
33207019	Non-electronic thermostats
33207030	Manostats
33207050	Hydraulic or pneumatic automatic regulating or controlling instruments and apparatus
33207090	Instruments and apparatus, regulating or controlling, n.e.c.
33208190	Parts and accessories, nes, for machines, appliances, etc, of HS 90
33402115	Image conductor cables

33402119	Optical fibres, optical fibre bundles and cables (excl. image conductor cables, optical fibre cables made up of individually sheathed fibres)
33402153	Prisms, mirrors and other optical elements, n.e.c.
33402155	Mounted lenses, prisms, mirrors, etc, of any material, n.e.c.
33402310	Telescopic sights for fitting to arms; periscopes; telescopes...
33402330	Lasers (excl. laser diodes, machines and appliances incorporating lasers)
33402355	Liquid crystal devices (incl. active matrix liquid crystal devices)
33402359	Optical devices, appliances and instruments, nes : others
33403250	Cameras of a kind used for recording documents on microfilm, microfiche or other microforms
33403270	Cameras for underwater use, for aerial survey or for medical or surgical examination of internal organs, comparison cameras for forensic or criminological purposes
33403390	Photographic apparatus (excl. still image video camera's)
33403430	Cinematographic cameras for film of a width < 16 mm or for double 8 mm film
33403450	Cinematographic cameras (excl. for film of a width < 16 mm wide or for double 8 mm film)
33403530	Cinematographic projectors

3. ISCED levels of education

	ISCED	ISCED97
ISCED 0:	Early childhood education	Pre-primary level of education
ISCED 1:	Primary level of education	Primary level of education
ISCED 2:	Lower secondary level of education	Lower secondary level of education
ISCED 3:	Upper secondary level of education	Upper secondary level of education
ISCED 4:	-	Post-secondary non tertiary
ISCED 5:	Non-university level of education	First stage of tertiary education
ISCED 6:	University degree level of education	Second stage of tertiary education leading to an advanced research qualification
ISCED 7:	University degree level of education	-
ISCED 9:	No information	Level of unspecified or unknown

Annex 2. Statistical tables

Table 2.1 Number of fixed telephone lines. 2001

	Number of fixed telephone lines	Population 2001 [1]	Penetration rate
Denmark	3 882 000	5 368 354	73.2
Estonia	512 000	1 361 242	37.6
Finland	2 806 000	5 195 000	54.2
Germany	52 280 000	82 440 309	63.4
Iceland	157 723	288 201	54.7
Latvia	721 752	2 345 768	30.8
Lithuania	1 145 000	3 476 000	32.9
Norway	3 314 000	4 525 000	73.2
Poland	10 934 400	38 600 000	28.3
Russia	n.a.	146 200 000	n.a.
Sweden	6 718 000	8 909 128	75.4

[1] Denmark 1.1.2002, Russia 1999.

Table 2.2 Number of ISDN subscriptions. 2001

	ISDN Basic subscriptions	ISDN Primary subscriptions	Population 2001 [1]	ISDN Basic subscriptions per 100 capita	ISDN Primary subscriptions per 100 capita
Denmark	398 671	9 052	5 368 354	7.5	0.2
Estonia	46 358	n.a.	1 361 242	3.4	n.a.
Finland	272 013	4 342	5 195 000	5.2	0.1
Germany	21 640 000	n.a.	82 440 309	26.2	n.a.
Iceland	17 379	749	288 201	6.0	0.3
Latvia	n.a.	n.a.	2 345 768	n.a.	n.a.
Lithuania	6 200	350	3 476 000	0.2	0.0
Norway	760 643	8 165	4 525 000	16.8	0.2
Poland	102 052	n.a.	38 600 000	0.3	n.a.
Russia	n.a.	n.a.	146 200 000	n.a.	n.a.
Sweden	270 100	16 990	8 909 128	3.1	0.2

[1] Denmark 1.1.2002, Russia 1999.

Table 2.3 Number of xDSL subscriptions. 2001

	Number of xDSL subscriptions
Denmark	152 000
Estonia	17 210
Finland	61 467
Germany	2 070 000
Iceland	10 618
Latvia	284
Lithuania	2 427
Norway	25 646
Poland	64 400
Russia	n.a.
Sweden	241 000

Table 2.4 Number of mobile phone subscriptions. 2001

	Number of mobile phone subscriptions (1,000)
Denmark	3 954
Estonia	543
Finland	4 176
Germany	56 245
Iceland	248
Latvia	625
Lithuania	1 018
Norway	3 689
Poland	9 605
Russia	n.a.
Sweden	7 158

Table 3.1 Access to ICT at home. 1. quarter of 2002

	Mobile phone	Computer	Internet
Denmark	80	77	61
Estonia	n.a.	n.a.	n.a.
Finland	94	63	53
Germany	n.a.	n.a.	n.a.
Iceland [1]	96	84	78
Latvia	n.a.	n.a.	n.a.
Lithuania	n.a.	16	8
Norway	93	76	61
Poland [2]	26	18	8
Russia	n.a.	n.a.	n.a.
Sweden	89	75	68

[1] Iceland: 4th quarter 2002

[2] Poland: 2001

Table 3.2 Frequency of computer use in the last 3 months. 1st quarter 2002[1)]

	Computer use in the last three months			Uses 1-3 times a month	Uses less than once a month
	Users in the last 3 months, total	Daily users	Uses at least once a week		
Denmark	72	52	14	4	2
Estonia	n.a.	n.a.	n.a.	n.a.	n.a.
Finland	74	45	20	6	3
Germany	63	19	27	10	7
Iceland	82	n.a.	n.a.	n.a.	n.a.
Latvia	n.a.	n.a.	n.a.	n.a.	n.a.
Lithuania	n.a.	n.a.	28	n.a.	n.a.
Norway	n.a.	n.a.	n.a.	n.a.	n.a.
Poland	n.a.	n.a.	n.a.	n.a.	n.a.
Russia	n.a.	n.a.	n.a.	n.a.	n.a.
Sweden	76	51	19	4	1

Note. Denmark and Finland 2002, Iceland 4th quarter 2002.

Table 3.3 Frequency of Internet use in the last 3 months. 1st quarter 2002

	Internet use in the last three months			Uses 1-3 times a month	Uses less than once a month
	Users in the last 3 months, total	Daily users	Uses at least once a week		
Denmark	64	36	20	6	2
Estonia	n.a.	n.a.	n.a.	n.a.	n.a.
Finland	62	29	24	7	3
Germany	49	10	22	10	7
Iceland [1]	79	45	25	5	4
Latvia	n.a.	n.a.	n.a.	n.a.	n.a.
Lithuania	18	n.a.	n.a.	n.a.	n.a.
Norway	n.a.	n.a.	n.a.	n.a.	n.a.
Poland	n.a.	n.a.	n.a.	n.a.	n.a.
Russia	n.a.	n.a.	n.a.	n.a.	n.a.
Sweden	71	36	27	6	2

[1] Iceland 2001.

Table 3.4 Purpose of Internet use in the last 3 months. 1st quarter 2002

	Sending/ receiving e-mails	Finding information about goods and services	Purchases	Reading/ downloading online newspapers	Playing/ downloading games and music	Educational purposes	Internet banking [1]	Interaction with public authorities
Denmark	56	51	24	26	13	4	35	41
Estonia	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Finland	46	58	43	26	13	28	40	34
Germany	38	34	15	10	10	19	15	17
Iceland [2]	71	65	17	59	16	41	46	56
Latvia	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Lithuania	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Norway	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Poland	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Russia	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Sweden	57	62	26	44	34	4	39	40

[1] Denmark Financial services.

[2] Iceland: 4th quarter 2002.

Table 4.1 Use of ICT by enterprises. 2001

	Use of ICT (computers)	Access to the Internet	Own homepage	High-speed connection to the internet	Have submitted orders via the Internet (home-pages) [4]	Have received orders via the Internet (homepage) [5]
Denmark [1]	98	94	72	47	42	8
Estonia [2]	91	92	45	46	23	12
Finland [1]	98	94	64	50	48	9
Germany	95	88	66	n.a.	38	16
Iceland [1]	98	92	64	65	44	24
Latvia	78	51	19	24	3	1
Lithuania [6]	84	66	27	23	7	10
Norway [1]	94	81	55	34	33	10
Poland [3]	n.a.	75	54	n.a.	9	4
Russia	76	29	9	n.a.	9	7
Sweden [1]	98	95	78	43	57	11

[1] Enterprises with 10 or more employees.

[2] Per cent of enterprises using computers.

[3] Enterprises with 50(+) persons employed, divisions 10-41 of NACE, rev. 1. Number of enterprises having received orders is based on enterprises with 10(+) employees, only covering section D of NACE, rev. 1, year 2000.

[4] Denmark, Finland, Iceland, Norway and Sweden: Enterprises having made purchases on the Internet

[5] Denmark, Finland, Iceland, Norway and Sweden: Enterprises having Internet sales (1 per cent or more of turnover comes from Internet sales).

[6] Lithuania: not included group 45 and 92 of NACE, rev. 1.

Table 5.1.1 Turnover 2001 in mill. Euros

	ICT manufacturing	ICT wholesale	Telecommunications	ICT consultancy	ICT services total	Total manufacturing	Total services	Total private sector
	mill. Euros							
Denmark	4 168	11 326	4 462	5 774	21 562	78 328	188 763	287 816
Estonia	180	590	421	108	1 120	3 854	11 759	16 517
Finland [4]	24 491	7 913	4 824	3 553	16 290	102 233	131 818	249 581
Germany [4]	90 286	52 002	39 501	42 288	133 791	1 425 116	1 617 497	3 230 748
Iceland [3]	11	228	177	151	556	2 936	6 568	10 299
Latvia [1]	37	798	543	127	1 467	3 498	12 047	16 815
Lithuania	318	780	587	138	1 505	6 687	13 616	19 190
Norway [2]	3 165	13 979	5 847	6 166	25 992	59 103	199 818	278 986
Poland [4 5]	5 385	4 472	.	n.a.	n.a.	127 191	n.a.	n.a.
Russia	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Sweden [4]	25 129	14 728	7 814	11 580	34 122	157 060	267 737	450 492

[1] Latvia: Preliminary data.

[2] Norway: Estimates.

[3] Iceland: 1999.

[4] Finland, Germany, Poland and Sweden: 2000.

[5] Poland: Data on Telecommunications are confidential.

Table 5.1.2 Turnover in national currency. 2001

	ICT manufacturing	ICT wholesale	Telecommunications	ICT consultancy	ICT services total	Total manufacturing	Total services	Total private sector
	mill.							
Denmark	31 063	84 399	33 249	43 031	160 679	583 706	1 406 681	2 144 837
Estonia	2 818	9 233	6 592	1 692	17 517	60 299	183 992	258 439
Finland [4]	24 491	7 913	4 824	3 553	16 290	102 233	131 818	249 581
Germany [4]	90 286	52 002	39 501	42 288	133 791	1 425 116	1 617 497	3 230 748
Iceland [3]	983	19 804	15 447	13 184	48 435	255 529	571 659	896 377
Latvia [1]	21	463	315	74	852	2 031	6 994	9 763
Lithuania	1 099	2 700	2 029	477	5 206	23 132	47 103	66 387
Norway [2]	25 471	112 501	47 057	49 618	209 176	475 640	1 608 052	2 245 166
Poland [4 5]	19 763	16 414	.	n.a.	n.a.	466 797	n.a.	n.a.
Russia	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Sweden [4]	232 381	136 197	72 262	107 088	315 547	1 452 443	2 475 945	4 166 008

[1] Latvia: Preliminary data.

[2] Norway: Estimates.

[3] Iceland: 1999. For 2001 the data are: ICT manufacturing : 1,312, ICT wholesale: 22,131, Telecomm.: 19,645, ICT consultancy: 20,083. Data for total manufacturing, total services and total private sector are not available for 2001.

[4] Finland, Germany, Poland and Sweden: 2000.

[5] Poland: Data on Telecommunications are confidential.

Table 5.2 Number of employees. 2001

	ICT manufacturing	ICT wholesale	Telecommunications	ICT consultancy	ICT services total	Total manufacturing	Total services	Total private sector
	number of employees							
Denmark [4]	21 486	27 657	20 792	34 076	82 525	410 931	671 462	1 257 488
Estonia	2 818	9 233	6 592	1 692	17 517	60 299	183 992	258 439
Finland [4]	45 123	16 703	18 775	32 376	67 854	423 492	666 562	1 222 549
Germany [4]	371 723	206 648	171 121	259 660	637 429	7 520 007	8 029 848	17 515 435
Iceland [3]	104	1 094	1 563	2 646	5 303	24 568	60 816	93 899
Latvia [1]	2 009	5 458	6 751	4 662	16 871	153 633	290 623	493 076
Lithuania	10 584	6 879	8 626	4 109	19 614	246 375	353 053	613 325
Norway [2]	12 061	31 632	12 191	35 507	79 330	269 621	777 667	1 189 759
Poland [4 5]	69 720	19 764	.	n.a.	n.a.	2 289 848	n.a.	n.a.
Russia	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Sweden [4]	62 227	30 692	32 726	82 020	145 438	709 227	1 124 835	2 023 698

[1] Latvia: Preliminary data.
[2] Norway: Estimates.
[3] Iceland: 1999.
[4] Denmark, Finland, Germany, Poland and Sweden: 2000.
[5] Poland: Data on Telecommunications are confidential.

Table 5.3 Wages and salaries in national currency. 2001

	ICT manufacturing	ICT wholesale	Telecommunications	ICT consultancy	ICT services total	Total manufacturing	Total services	Total private sector
	mill.							
Denmark [2]	6 258	11 310	6 933	15 399	33 642	123 132	209 401	374 396
Estonia	459	400	505	340	1 245	7 206	11 503	19 400
Finland [2]	1 455	620	556	1 148	2 323	11 844	16 269	30 873
Germany [2]	14 713	3 322	5 882	11 911	21 115	248 100	n.a.	n.a.
Iceland	272	3 076	4 507	9 630	17 213	58 926	139 369	226 629
Latvia [1]	3	13	33	16	62	256	461	783
Lithuania	159	103	199	49	510	2 458	2 907	5 137
Norway [2]	5 525	14 400	6 186	17 249	37 835	96 592	258 955	397 109
Poland [2 3]	2 275	657	.	1 905	2 562	53 252	n.a.	n.a.
Russia	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Sweden [2]	19 810	10 549	10 740	29 715	51 004	186 154	284 794	516 164

[1] Latvia: Preliminary data.
[2] Denmark, Finland, Germany, Norway, Poland and Sweden: 2000.
[3] Poland: Incomplete breakdown. The sum of elements does not add to the total. Data on Telecommunications are confidential.

Table 5.4 Value added in national currency. 2001

	ICT manufacturing	ICT wholesale	Telecommunications	ICT consultancy	ICT services total	Total manufacturing	Total services	Total private sector
	mill.							
Denmark [3]	10 461	18 544	n.a.	20 886	39 430	224 303	337 820	626 283
Estonia	788	1 105	2 993	629	4 727	15 487	30 692	47 554
Finland [1 4]	6 650	1 142	1 896	1 506	4 544	30 775	32 272	68 153
Germany [2 4]	24 976	14 547	18 874	21 267	54 688	405 409	459 008	939 014
Iceland	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Latvia [4]	8	50	166	24	241	596	1.465	2.310
Lithuania	586	338	1 584	313	2 235	5 170	8 216	13 125
Norway [4]	7 177	8 689	14 645	18 488	41 822	135 670	448 193	639 240
Poland	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Russia	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Sweden [4]	36 049	20 125	38 112	44 664	102 901	409 699	606 716	1 094 035

[1] Finland: Value added at factor costs.

[2] Germany: Telecommunications and Consultancy services: Value added at basic prises, others: Value added at factor costs.

[3] Denmark: 1999.

[4] Finland, Germany, Latvia, Norway and Sweden: 2000.

Table 5.5 Number of enterprises. 2001

	ICT manufacturing	ICT wholesale	Telecommunications	ICT consultancy	ICT services total	Total manufacturing	Total services	Total private sector
	number of enterprises							
Denmark [2]	589	1 697	206	6 596	8 499	20 470	136 166	195 961
Estonia	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Finland [2]	687	1 688	246	3 870	5 804	25 687	131 574	197 589
Germany [2]	6 530	5 388	239	22 909	28 536	231 789	n.a.	n.a.
Iceland	21	131	12	225	368	n.a.	n.a.	n.a.
Latvia	115	687	126	513	1 326	4 951	29 409	37 594
Lithuania	194	630	130	859	1 619	9 575	45 095	58 141
Norway [1]	216	5 147	301	6 551	11 999	11 394	n.a.	n.a.
Poland [2 3]	7 046	3 662	.	n.a.	n.a.	219 313	n.a.	n.a.
Russia	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Sweden [2]	1 390	3 852	323	12 915	17 090	33 208	209 511	272 925

[1] Norway: Establisments.

[2] Denmark, Finland, Germany, Poland and Sweden: 2000.

[3] Poland: Data on Telecommunications are confidential.

Table 6.1.1 **Employed persons in ICT manufacturing and in manufacturing activities in general, distributed by gender. 2001**

	ICT manufacturing			Total manufacturing		
	Male	Female	Total	Male	Female	Total
Denmark	12 711	10 027	22 738	314 297	149 801	464 098
Estonia	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Finland [2]	29 776	17 028	46 804	309 125	131 963	441 088
Germany	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Iceland	84	20	104	16 452	8 116	24 568
Latvia	n.a.	n.a.	n.a.	84 614	69 510	154 124
Lithuania	5 911	4 673	10 584	118 708	127 666	246 374
Norway	8 857	3 235	12 092	206 612	68 801	275 413
Poland [1]	41 577	26 413	67 990	1 332 311	796 599	2 128 910
Russia	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Sweden	47 923	23 253	71 176	565 786	202 803	768 589

[1] Poland: By 31.12.2001.

[2] Finland: 2000.

Table 6.1.2 **Employed persons in ICT services and in services activities in general, distributed by gender. 2001**

	ICT service			Total services		
	Male	Female	Total	Male	Female	Total
Denmark	65 310	27 546	92 856	635 026	459 133	1 094 159
Estonia	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Finland [1]	46 973	22 223	69 196	442 577	393 349	835 926
Germany [1]	300 119	129 286	429 405	n.a.	n.a.	n.a.
Iceland	3 712	1 591	5 303	30 772	30 044	60 816
Latvia	7 363	4 126	11 489	154 030	175 093	329 123
Lithuania	14 278	5 336	19 614	184 016	169 037	353 053
Norway	60 073	20 841	80 914	470 747	351 039	821 786
Poland [2]	32 943	16 631	49 574	n.a.	n.a.	n.a.
Russia	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Sweden	106 098	43 385	149 483	885 520	637 048	1 522 568

[1] Finland and Germany: 2000.

[2] Poland: By 31.12.2001.

3 Latvia: not included ICT wholesale (NACE 5143, 5164 and 5165)

Table 6.2.1 **Employed persons in ICT manufacturing and in manufacturing activities in general. Number of persons below 35 years. 2001**

	ICT manufacturing				Total manufacturing			
	<25	25-34	Total <35	Total number of persons employed	<25	25-34[3]	Total <35[4]	Total number of persons employed
Denmark	2 365	6 719	9 084	22 738	66 458	118 956	185 414	464 098
Estonia	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Finland [1]	5 871	20 719	26 590	46 804	46 535	109 518	156 053	441 088
Germany	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Iceland	11	23	34	104	5 156	5 201	10 357	24 568
Latvia	n.a.	n.a.	n.a.	n.a.	17 232	52 183	69 415	n.a.
Lithuania	1 162	1 136	2 298	10 584	28 840	73 980	102 820	246 375
Norway [2]	611	3 694	4 305	12 098	25 342	67 426	92 768	275 413
Poland	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Russia	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Sweden	6 662	24 633	31 295	62 227	73 052	199 976	273 028	709 227

[1] Finland: 2000.

[2] Norway: 4th quarter.

[3] Latvia: 25-39 years.

[4] Latvia: Total < 39 years.

Table 6.2.2 **Employed persons in ICT services and in services activities in general. Number of persons below 35 years. 2001**

	ICT services				Total services			
	<25	25-34	Total <35	Total number of persons employed	<25	25-34[4]	Total <35[5]	Total number of persons employed
Denmark	9 035	33 385	42 420	92 856	231 082	273 504	504 586	1 094 159
Estonia	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Finland [1]	7 807	23 871	31 678	69 196	121 099	197 958	319 057	835 926
Germany	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Iceland	855	1 961	2 816	5 297	13 522	13 392	26 914	60 816
Latvia [3]	1 692	4 443	6 135	9 727	34 286	116 966	151 252	282 051
Lithuania	2 821	7 770	10 591	19 614	32 892	110 009	142 901	353 053
Norway [2]	5 137	28 816	33 953	80 914	126 798	213 472	340 270	821 786
Poland	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Russia	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Sweden	12 477	56 677	69 154	145 438	201 908	401 982	603 890	1 124 835

[1] Finland: 2000.

[2] Norway: 4th quarter.

[3] Latvia: Not included ICT wholesale (NACE 5143, 5164 and

[4] Latvia: 25-39 years.

[5] Latvia: Total < 39 years.

Tabel 6.3.1 **Employed persons in ICT manufacturing and in manufacturing activities in general. Number of persons with 3rd level education. 2001**

	ICT manufacturing				Total manufacturing			
	ISCED 5	ISCED 6/7	ISCED 5-7, total	Total number of persons employed	ISCED 5	ISCED 6/7	ISCED 5-7, total	Total number of persons employed
Denmark	n.a.	n.a.	5 589	22 738	n.a.	n.a.	67 898	464 898
Estonia	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Finland [2]	6 962	14 917	21 879	46 804	56 789	55 225	112 014	441 088
Germany	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Iceland	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Latvia	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Lithuania	2 531	594	3 125	10 584	68 783	25 534	94 317	246 375
Norway [1]	655	4 708	5 363	12 092	9 116	39 137	48 253	275 413
Poland	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Russia	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Sweden	12 673	16 234	28 907	71 176	81 245	68 128	149 373	768 588

[1] Norway: 4th quarter.

[2] Finland: 2000.

Tabel 6.3.2 **Employed persons in ICT services and in services activities in general. Number of persons with 3rd level education. 2001**

	ICT services				Total services			
	ISCED 5	ISCED 6/7	ISCED 5-7, total	Total number of persons employed	ISCED 5	ISCED 6/7	ISCED 5-7, total	Total number of persons employed
Denmark	n.a.	n.a.	31 462	92 856	n.a.	n.a.	183 898	1 094 159
Estonia	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Finland [2]	17 296	18 634	35 930	69 196	151 252	113 774	265 026	835 926
Germany	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Iceland	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Latvia	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Lithuania	5 152	5 199	10 351	19 614	123 907	75 957	199 864	353 053
Norway [1]	3 866	33 178	37 044	80 914	27 828	177 427	205 255	821 786
Poland	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Russia	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Sweden	35 661	41 319	76 980	149 483	198 911	208 107	407 018	1 522 568

[1] Norway: 4th quarter.

[2] Finland: 2000.

Tabel 6.4.1 Persons employed in ICT manufacturing by size class. 2001

	Below 10	10-19	20-49	50-99	100(+)	Total
Denmark [1]	729	705	2 076	2 175	15 801	21 486
Estonia 2001	338	210	481	599	5 928	7 556
Finland [1]	1 075	1 000	1 812	1 882	39 354	45 123
Germany [1]	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Iceland	58	46	0	0	0	104
Latvia	206	184	364	66	1 230	2 050
Lithuania	430	186	542	583	8 843	10 584
Norway [2]	391	464	2 017	794	8 395	12 061
Poland [3]	358	3 596	6 374	6 937	50 725	67 990
Russia	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Sweden	1 954	1 619	2 881	2 512	53 261	62 227

[1] Denmark, Finland and Germany: 2000.

[2] Norway: 4th quarter.

[3] Poland: 31st December 2001.

Tabel 6.4.2 Persons employed in ICT services by size class. 2001

	Below 10	10-19	20-49	50-99	100(+)	Total
Denmark [1]	7 852	5 575	9 820	7 938	51 340	82 525
Estonia 2001	3 063	1 030	2 149	1 389	2 618	10 249
Finland [1]	8 409	5 073	6 290	7 470	40 612	67 854
Germany [1 4]	43 884	24 008	37 521	23 738	155 078	240 345
Iceland	951	712	765	943	1 926	5 297
Latvia	3 548	2 063	1 767	1 739	6 924	16 041
Lithuania	3 954	2 166	2 799	1 697	8 998	19 614
Norway [2]	16 688	11 484	15 902	11 142	24 114	79 330
Poland [3]	992	8 215	10 599	8 791	20 977	49 574
Russia	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Sweden	22 208	12 404	19 291	11 075	79 301	144 279

[1] Denmark, Finland and Germany: 2000.

[2] Norway: 4th quarter.

[3] Poland: 31st December 2001.

[4] Germany: Data only available for Telecommunications and ICT consultancy services.

Table 7.1 Production of ICT goods in national currency. 2001

	Telecommunications equipment	Consumer electronics	Computers	Electronic components	Office machinery	Instruments for measuring etc.	ICT products, total	Other products	Production, total
	mill.								
Denmark	8 017	3 548	1 371	2 795	175	7 309	23 215	430 503	453 718
Estonia	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Finland[2]	13 634	100	67	470	7	379	14 657	77 088	91 745
Germany	14 410	3 731	10 457	11 981	608	10 849	52 872	n.a.	n.a.
Iceland	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Latvia [1]	5	n.a.	4	1	n.a.	4	15	1 821	1 836
Lithuania	21	64	47	472	19	81	704	25 905	26 609
Norway [2]	3 883	1 675	1 353	3 604	n.a.	2 417	12 932	361 708	374 640
Poland	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Russia	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Sweden [2]	144 326	4 254	2 395	13 522	917	8 732	174 148	1 241 186	1 415 334

[1] Latvia: For confidentiality reasons Telecommunications and Consumer electronics have been added together.

[2] Finland, Norway and Sweden: 2000.

Table 7.2 Production of ICT goods in national currency. 1996-2001

	1996	1997	1998	1999	2000	2001
	mill.					
Denmark	15 757	16 737	18 209	20 429	22 968	23 215
Estonia	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Finland	6 579	7 200	9 374	11 636	14 657	n.a.
Germany	34 280	36 719	39 484	42 694	55 547	52 036
Iceland	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Latvia	n.a.	n.a.	n.a.	13	18	15
Lithuania	n.a.	447	512	525	638	704
Norway	n.a.	10 574	8 751	11 018	12 932	15 206
Poland	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Russia	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Sweden	95 227	125 927	129 663	155 892	174 148	n.a.

Table 8.1 **Export of ICT goods by types of goods in national currency. 2002**

	Telecommunications equipment	Consumer electronics	Computers	Electronic components	Office machinery	Instruments for measuring etc.	ICT products, total	Other products	Production, total
	mill.								
Denmark [1]	13 082	6 085	7 260	3 305	468	7 741	37 940	382 125	420 065
Estonia	3 933	52	109	1 065	29	371	5 559	51 298	56 857
Finland [1]	8 622	137	363	482	24	741	10 369	37 312	47 681
Germany [1]	13 275	4 136	10 206	4 978	6 882	8 922	48 398	589 870	638 268
Iceland	48	7	70	17	6	346	495	202 898	203 393
Latvia	5	2	5	5	0	6	24	1 385	1 409
Lithuania	25	118	81	459	7	57	747	19 544	20 291
Norway [1]	5 130	1 438	2 812	2 126	413	3 239	15 158	683 718	698 876
Poland [1]	929	4 133	372	2 424	20	416	8 293	139 822	148 115
Russia	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Sweden [1]	67 842	5 163	6 617	9 881	1 039	11 734	102 275	678 725	781 000

[1] Denmark, Finland, Germany, Norway, Poland and Sweden: 2001.

Table 8.2 **Export of ICT goods in national currency. 1995-2002**

	1995	1996	1997	1998	1999	2000	2001	2002
	mill.							
Denmark	n.a.	21 367	26 140	27 836	31 067	39 117	37 940	n.a.
Estonia	1 213	1 252	2 278	4 911	4 716	13 638	9 915	5 559
Finland	n.a.	4 489	5 922	7 669	8 680	12 475	10 369	n.a.
Germany	n.a.	23 396	27 418	30 572	35 157	47 843	48 398	n.a.
Iceland	n.a.	89	138	183	181	364	390	495
Latvia	8	8	17	17	17	18	18	24
Lithuania	517	812	827	578	502	676	746	747
Norway	n.a.	9 223	10 774	12 279	12 537	13 934	15 158	n.a.
Poland	1 319	2 206	3 557	5 158	5 796	7 185	8 293	n.a.
Russia	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Sweden	n.a.	81 271	100 943	110 216	129 758	157 556	102 275	n.a.

Table 8.3 Import of ICT goods by types of goods in national currency. 2002

	Telecommunications equipment	Consumer electronics	Computers	Electronic components	Office machinery	Instruments for measuring etc.	ICT products, total	Other products	Production, total
	mill.								
Denmark [1]	14 794	5 647	16 484	7 626	1 272	3 898	49 721	313 224	362 945
Estonia	1 301	801	1 617	3 923	63	535	8 240	71 228	79 467
Finland [1]	2 043	368	1 367	1 772	143	490	6 184	29 456	35 640
Germany [1]	9 016	7 494	18 945	5 292	11 362	5 432	57 540	485 233	542 774
Iceland	3 798	2 701	7 008	1 283	278	2 485	17 553	173 653	191 206
Latvia	59	26	63	25	4	13	189	2 308	2 497
Lithuania	420	295	554	249	25	138	1 681	26 881	28 562
Norway [1]	8 242	4 333	13 881	3 696	1 101	2 940	34 193	407 676	441 869
Poland [1]	6 258	2 386	6 068	5 014	354	1 931	22 011	184 242	206 253
Russia	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Sweden [1]	27 083	10 806	27 904	19 748	1 731	11 399	98 671	550 929	649 600

[1] Denmark, Finland, Germany, Norway, Poland and Sweden: 2001.

Table 8.4 Import of ICT goods in national currency. 1995-2002

	1995	1996	1997	1998	1999	2000	2001	2002
	mill.							
Denmark	n.a.	31 860	36 504	36 792	41 561	49 879	49 721	n.a.
Estonia	2 028	2 933	5 566	6 760	6 667	12 719	7 224	8 240
Finland	n.a.	3 375	4 063	4 746	4 982	6 952	6 184	n.a.
Germany	n.a.	27 291	30 273	36 637	43 081	56 690	57 540	n.a.
Iceland	n.a.	11 295	12 210	15 565	16 562	21 577	19 022	17 553
Latvia	40	62	117	153	140	152	175	189
Lithuania	631	972	1 447	1 352	1 060	1 101	1 463	1 681
Norway	n.a.	22 569	25 859	29 608	29 988	34 279	34 193	n.a.
Poland	3 446	8 419	12 243	15 899	19 532	23 258	22 011	n.a.
Russia	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Sweden	n.a.	64 126	75 915	89 831	90 315	115 893	98 671	n.a.

Table 8.5 Export/import ratio. 1996-2001

	1996	1997	1998	1999	2000	2001
Denmark	0.7	0.7	0.8	0.7	0.8	0.8
Estonia	0.4	0.4	0.7	0.7	1.1	1.4
Finland	1.3	1.5	1.6	1.7	1.8	1.7
Germany	0.9	0.9	0.8	0.8	0.8	0.8
Iceland	0.0	0.0	0.0	0.0	0.0	0.0
Latvia	0.1	0.1	0.1	0.1	0.1	0.1
Lithuania	0.8	0.6	0.4	0.5	0.6	0.5
Norway	0.4	0.4	0.4	0.4	0.4	0.4
Poland	0.3	0.3	0.3	0.3	0.3	0.4
Russia	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Sweden	1.3	1.3	1.2	1.4	1.4	1.0

Table 9.1 Expenditure in Research and Development (R&D) in national currency

	All sectors	ICT sectors	ICT manu-facturing	ICT services	ICT whole-sale	Tele-communi-cations	ICT consultancy services	Other sectors
	mill.							
Denmark 1999 [1]	16 054	3 466	1 448	2 018	n.a.	n.a.	n.a.	12 589
Estonia 2001	220	68	32	36	n.a.	1	35	152
Finland 1999	2 644	1 489	1 302	187	n.a.	93	94	1 155
Germany 2000	34 724	n.a.	34 724	n.a.	n.a.	n.a.	n.a.	n.a.
Iceland	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Latvia 2001	8	0	0	0	0	0	0	8
Lithuania 2001	95	60	60	0	0	0	0	35
Norway 1999	9 540	3 700	1 421	2 279	n.a.	719	1 560	5 840
Poland [2]	n.a.	n.a.	111	n.a.	n.a.	98	31	n.a.
Russia	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Sweden 1999	56 954	18 304	14 660	3 645	n.a.	n.a.	3 645	38 649

[1] Data from The Danish Institute for Studies in Research and Research Policy

[2] Poland: For ICT manufacturing: 2001, for ICT services: 1999