

# Research and development: annual statistics

Data 1988-1998



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1999 EDITION

# Research and development: annual statistics

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THEME 9  
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**Yves Franchet**  
**Director-General**



# RESEARCH AND DEVELOPMENT:

## ANNUAL STATISTICS 1999

### FOREWORD

The publication *Research and Development: Annual Statistics 1999* contains up-to-date statistics on R&D and on patent applications in the European Union and the EEA. These statistics show the trends and structure of research and development in the EEA.

Continuing our efforts to improve the quality of the annual publication, for the 1999 edition, we have decided to reorganise the contents of the publication by topic (e.g. all the information regarding GBAORD are now located in the GBAORD chapter). This follows on from internal discussion at Eurostat and various comments from our readers. In this way, it is hoped that this more concise publication will be easier for the user to find their way around.

Other major changes have concentrated on improving the dissemination of the R&D and patent statistics to reach as wide an audience as possible. Hence we have decided to disseminate these statistics via this paper version, a CD-ROM and supplemented by "Statistics in Focus" on specific topics. The paper version of the publication will include data at NUTS level 1, methodological notes and brief analysis; whereas the CD-ROM will provide detailed data (data to NUTS level 3 and complete time series) with methodological notes. The Statistics in Focus, on the other hand, will concentrate on providing readers with a more detailed analysis of the R&D situation within the EEA.

We hope that this new edition serves our users well, both within the policy making and scientific communities and the public at large, and that these changes will be welcomed. If you have any comments to make on this publication, further suggestions for improvement or so on, please do not hesitate to contact Unit A4 "Research and development, methods and data analysis" of Eurostat.

All the information in this publication is based on data supplied to Eurostat by the Member States, by DG XII-02 (Science, Research and Development - Competitiveness, Economic Analysis and Indicators Unit) of the European Commission, by the European Patent Office (EPO) and by the OECD. We should like to express our thanks to our colleagues in the Member States (and in Iceland and Norway), the Commission Services, EPO and the OECD for their excellent co-operation and their willingness to help meet the ever-growing demand for information on R&D.

The team that prepared this publication consisted of: César de Diego Díez, Véronique de Känel, Moss Khan, Ibrahim Laafia, George Paterson, Frédéric Riehl, Martin Schaaper and Nancy Thomas.

# CONTENTS

Page No.

EXECUTIVE SUMMARY	6
DEFINITIONS AND EXPLANATORY NOTES	7
LIST OF ABBREVIATIONS	9

## **PART A: RESEARCH AND DEVELOPMENT IN EUROPE**

Chapter 1: GOVERNMENT BUDGET APPROPRIATIONS ON R&D - GBAORD	11
1.1. GBAORD allocation in the EEA	11
1.2. GBAORD allocation by socio-economic objectives	13
1.3. GBAORD allocation of the triad	14
1.4. Specific developments in the Member States	15
Chapter 2: R&D EXPENDITURE AND R&D PERSONNEL	24
2.1. R&D expenditure and R&D personnel at national level	24
2.1.A R&D expenditure of the EEA	24
2.1.B R&D personnel of the EEA	27
2.2. R&D expenditure and R&D personnel at regional level	30
2.2.A R&D expenditure at regional level	32
2.2.B R&D personnel at regional level	34
2.3. Global comparisons	35
2.4. Specific developments in the Member States	36
2.5. Standard definitions and explanatory notes	39
Chapter 3: EUROPEAN PATENT APPLICATIONS	42
3.1. Patent activities in the EU	42
3.2. Patent applications by IPC sections	45
3.3. Regional distribution of the EU patent applications	46
3.4. Standard definition and explanatory notes	48



## **PART B: TABLES AND NOTES RELATING TO THE TABLES**

### **NOTES RELATING TO THE TABLES**

T.1. Tables on government R&D appropriations	52
T.2. Tables on R&D expenditure	53
T.3. Tables on R&D personnel	54
T.4. Tables on European patent applications	56

### **TABLES**

#### **GOVERNMENT R&D APPROPRIATIONS**

##### **Tables**

1 - 3	Total	57
4 - 5	By chapters of NABS	60
6	By special fields of technology	64

#### **R&D EXPENDITURE**

##### **Tables**

7 - 10	All sectors	65
11 - 14	Business enterprise sector	77
15 - 18	Government sector	89
19 - 22	Higher education sector	101

#### **R&D PERSONNEL**

##### **Tables**

23 - 25	All sectors	113
26 - 28	Business enterprise sector	122
29 - 31	Government sector	131
32 - 34	Higher education sector	140

#### **EUROPEAN PATENT APPLICATIONS**

##### **Tables**

35 - 40	European patent applications	149
---------	------------------------------	-----

#### **REFERENCE DATA**

##### **Tables**

41 - 42	Reference data	167
---------	----------------	-----

## EXECUTIVE SUMMARY

Research and Development (R&D) is regarded as an important contribution to our well-being; it is a driving factor behind economic growth and job creation, a source of increasing quality of products and a prime mover of improvements in health care and environmental protection. For the development of the European Union, its Member States and regions, R&D is therefore a key issue. This is why political decision-makers at all levels are calling for stronger measures in support of R&D.

Putting such measures into practice requires, among other things, data which are as comprehensive, comparable and as up to date as possible. This publication, by the Statistical Office of the European Communities (Eurostat), attempts to meet the European-wide demand for such data, providing regional data as far as possible for four key R&D statistical indicators - government R&D appropriations, R&D expenditure, R&D personnel and European patent applications.

Government R&D appropriations are an important indicator of R&D trends. In 1997, budget appropriations in the Member States of the European Economic Area totalled more than ECU 57,600 million, with a further ECU 2,600 million earmarked by the European Commission. This amount is in real terms similar to the past three years, and provisional figures for 1998 suggest around the same.

As far as R&D expenditure is concerned, in 1997, approximately ECU 137,700 million was spent in the European Union, an estimated increase of 4.6% (and 2.3% in real terms) on 1996. This figure is equivalent to about 1.9% of the EU's gross domestic product, but well below the corresponding figures for the United States and Japan. More than 60% was accounted for by the business enterprise sector, and the rest by the government and higher education sectors in roughly equal proportions.

Apart from adequate funding, successful R&D activities require the deployment of qualified staff. In 1997, in the European Union there were over 2.1 million scientists (1 601 900 FTE), technicians and other R&D-related personnel, most of them in the business enterprise sector. This figure continues a steady gradual increase seen this decade. Provisional figures suggest a further increase in 1998. R&D personnel make up approximately 1.27% of the entire EU labour force.

Patent data have long been used as a measure of innovative activity, technology development, and particularly for international comparisons of technology growth. Since 1990, the EU-15 patent applications have grown at an average annual rate of 2.7% and in 1998, just over 40,000 patent applications were filed by the EU-15. Germany, France and UK are the three dominant countries in EU patenting and in 1998 they accounted for around 70% of the EU total.

## DEFINITIONS AND EXPLANATORY NOTES

### The standards used

The basic methodological recommendations for R&D statistics are given in the "Proposed Standard Practice for Surveys of Research and Experimental Development – Frascati Manual" (OECD, 1994). This manual deals exclusively with the measurement of R&D "input". The regional aspects of R&D and innovation statistics are covered by "The Regional Dimension of R&D and Innovation Statistics – Regional Manual" (Eurostat, 1996). The following definitions are mainly derived from these manuals. In principle, the R&D data in this publication are being collected in line with these recommendations. The basic data are collected by the relevant authorities in the MS (National Statistical Offices, Research Councils, Ministries for R&D). These data are transmitted to Eurostat where the data are checked, transformed, and where the derived indicators are calculated.

### Research and Development – R&D

Research and experimental development (R&D) comprise creative work undertaken on a systematic basis in order to increase the stock of knowledge, including knowledge of man, culture and society and the use of this stock of knowledge to devise new applications (Frascati Manual, § 57). This term covers three activities: basic research; applied research, and experimental development.

### Measures for R&D input

According to the recommendations of the Frascati Manual and the Regional Manual, the following indicators for R&D input are compiled in this publication:

- *Government budget appropriations or outlays on R&D – GBAORD*  
GBAORD means all appropriations by central government allocated to R&D in central government budgets. Data on government R&D appropriations therefore refer to budget provisions, not to actual expenditure, i.e. GBAORD measures government support for R&D using data collected from budgets.
- *R&D expenditure*  
The basic measure for R&D expenditure is the "intramural expenditures", which are all expenditures for R&D performed within a statistical unit or sector of the economy, whatever the source of funds (Frascati Manual, § 335).
- *R&D personnel*  
R&D personnel data measure the amount of resources going *directly* into R&D activities. This includes all persons employed directly in R&D plus persons supplying direct services to R&D, such as managers, administrative staff and office staff (Frascati Manual § 279).

### GBAORD

As a departure from the general rule, the provisional budget figures are converted from national currency into ECU on the basis of the exchange rates in March of the year in question.

### Figures in ECU at current prices

The average rates of exchange for the year in question are used for converting absolute values from national currencies into ECU.

### Figures in 1990 PPS at constant prices

Since disparate price trends in the countries under consideration make inter-country comparisons of monetary aggregates at current prices unreliable, the absolute figures are also expressed in constant prices. The implicit GDP price index, obtained by dividing GDP at market prices expressed at current values by GDP at market prices expressed in 1990 constant prices, is used as a deflator. This price index is thus of the Paasche type, and it enables the deflated monetary aggregates to be directly compared.

Financial aggregates in different countries are not even fully comparable after deflation and conversion to ECU, since exchange rates are influenced not only by disparate price trends but also by other factors, and this may distort any comparisons based on those rates. Purchasing power parities, based on comparisons of the prices of representative and comparable goods or services in different countries in different currencies on a specific date, are used to eliminate such effects. As a result, financial aggregates are expressed in purchasing power standards (PPS) rather than ECU based on exchange rates. The calculations in this publication are based on 1990 purchasing power standards.

### **Central government**

Central government is a sub-sector of the general government sector of the national accounts. According to the European System of Accounts (ESA, Eurostat 1995), the general government sector includes all institutional units which are principally engaged in the production of non-market services intended for individual and collective consumption and/or the redistribution of national income and wealth. The sub-sector central government is restricted to all administrative departments of the State and other central agencies whose competence extends over the whole economic territory (except the administration of social security funds). In Germany this sub-sector includes the central governments of the *Länder*.

### **Central government budget**

The central government budget (CGB) comprises current and capital expenditure by central government. Eurostat extracts the CGB data from the harmonised results of the ESA. No data are available for Greece.

### **Region**

The regional breakdown of the Member States of the EU is based on the NUTS (Nomenclature of Territorial Units for Statistics, Eurostat, 1995) classification. The NUTS 1995 classification was revised in 1998 (Nomenclature of Territorial Units for Statistics, Eurostat, 1998) but due to time constraint we have been unable to take this into account. However it is envisaged that in next years publication the latest version of NUTS classification will be taken into consideration. The NUTS are at three levels, not all of which are represented in every Member State: Denmark and Ireland, for example, have no NUTS 1 or NUTS 2 regions, which means that these two levels are identical to the countries themselves.

### **Gross domestic product (GDP) at market prices**

This aggregate represents the result of the production activity of resident producer units. It corresponds to the economy's output of goods and services, less intermediate consumption, plus taxes linked to imports. The sum of the regional values of the GDP at market prices might differ from the national values for some countries.

### **Labour force**

The labour force comprises all people aged 15 and over who are employed or unemployed but not inactive (pupils, students, people in compulsory military service, retired people).

### **Population**

The population figures are estimates, harmonised by Eurostat, of mean population over the year.

## LIST OF ABBREVIATIONS

A	Austria	IRL	Ireland
ATS	Austrian shilling	IS	Iceland
B	Belgium	ISK	Icelandic krona
BEF	Belgian franc	ITL	Italian lira
BERD	Business enterprise expenditure on R&D	JPO	Japanese Patent Office
BES	Business enterprise sector	L	Luxembourg
Bio	Billion (= 1,000 Million)	LF	Labour force
CERN	European centre for nuclear research	LI	Liechtenstein
CNRS	National centre for scientific research	LUF	Luxembourgish franc
CSF	Community support framework	MLF	Million labour force
D	Germany	MP	Million population
DEM	German mark	N	Norway
DG	Directorate General	NABS	Nomenclature for the Analysis and Comparison of Scientific programmes and Budgets
DK	Denmark		
DKK	Danish kroner	NACE	Statistical Classification of Economic Activities in the EC
E	Spain		
EC	European Commission	NL	Netherlands
ECU	European Currency Unit	NLG	Dutch guilder
EEA	European Economic Area	NOK	Norwegian crown
EFTA	European Free Trade Area	NUTS	Nomenclature of Territorial Units for Statistics
EL	Greece		
EPC	European Patent Convention (=Munich Convention)	OECD	Organisation for Economic Co-operation and Development
EPO	European Patent Office	OST	Office for Science and Technology
ESA	European System of Integrated Accounts	P	Portugal
ESP	Spanish peseta	PCT	Patent Co-operation Treaty
EU/EU-15	European Union	PNP	Public non-profit sector
EUR-11	Euro-zone (B, D, E, F, IRL, I, L, NL, A, P, FIN)	PPS	Purchasing Power Standard
Eurostat	Statistical Office of the European Communities	PTE	Portuguese escudo
F	France	R&D	Research and Development
FIM	Finnish mark	S	Sweden
FIN	Finland	SEK	Swedish krona
FRF	French franc	SME	Small and medium sized enterprises
FTE	Full time equivalent	UK	United Kingdom
GBAORD	Government budget appropriations or outlays for R&D	USA	United States of America
GBP	Pound sterling	USPTO	United States Patent and Trademark Office
GDP	Gross Domestic Product	No.	Number
GERD	Gross Domestic Expenditure on R&D	:	Data not available
GOV	Government sector	-	Nil
GRD	Greek drachma	0	Less than fifty percent of the indicated unit
GUF	General university funds		Break in series
HC	Head count	<i>italics</i>	<i>Estimates of Eurostat or OECD</i>
HES	Higher education sector		
I	Italy		
IEP	Irish pound		
ILO	International Labour Office		
IPC	International Patent Classification		

**PART A:**  
**RESEARCH AND DEVELOPMENT IN EUROPE**

# CHAPTER 1: Government Budget Appropriations on R&D - GBAORD

## Introductory remark

There are two ways of measuring government support for R&D. The most accurate way is to hold surveys in order to identify the amount actually spent on R&D over the previous year and the share which was financed by the government. However, data from this method do not become available until several years after the R&D has been carried out. Hence a second method of measuring government support for R&D has been devised, using data collected from the budgets. Budget based data are referred to as government budget appropriations or outlays for R&D (GBAORD).

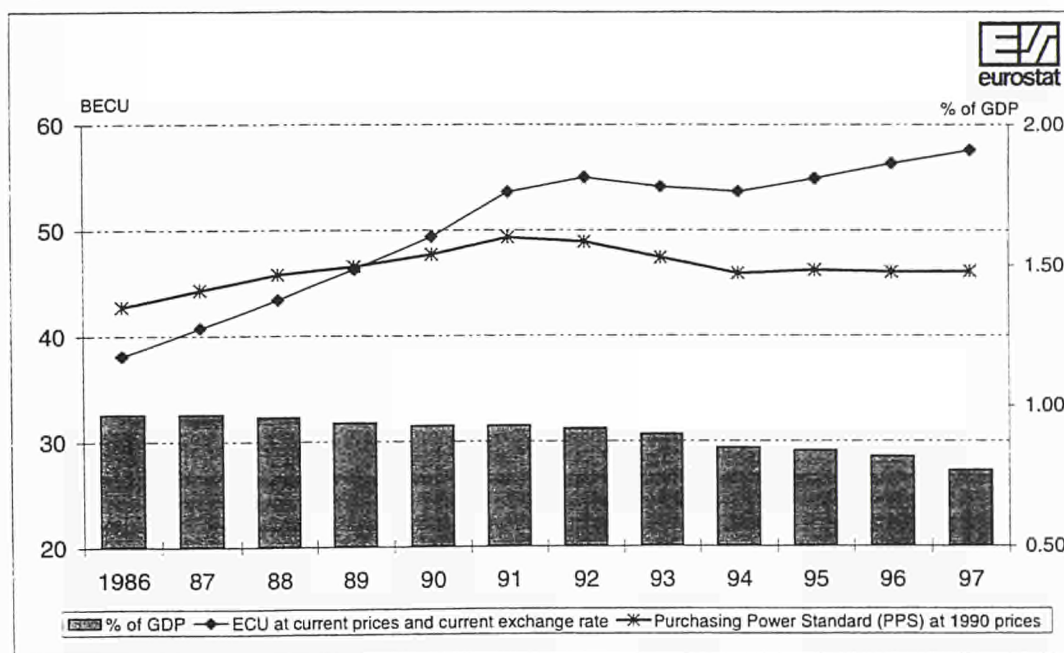
GBAORD means all appropriations by central government allocated to R&D in central government budgets. Data on government R&D appropriations therefore refer to budget provisions, not to actual expenditure, i.e. GBAORD measures government support for R&D using data collected from budgets. The figures on actual expenditure, which are not available in their final form until some time after the end of the budget year concerned, may well differ from the original budget provisions.

Despite all efforts, the concepts and methods used by the individual Member States of the EEA, the United States of America and Japan for collecting data on government R&D appropriations are not completely harmonised. One methodological discrepancy lies in the treatment of transfers of funds for R&D purposes by the European Commission to the Member States in the context of the Community Support Framework (CSF).

## 1.1. GBAORD ALLOCATION IN THE EEA

Funds allocated by the EEA governments towards R&D activities increased substantially in the late 80's. However, since then it has remained more or less constant. Between 1986-92, GBAORD in the EEA increased at an annual average growth rate of 6.3%, whereas the growth rate between 1992-97 was a mere 0.8%. In terms of current ECU, EEA governments allocated 57.6 BECU towards R&D activities in 1997, representing a 1.5 fold increase on the 1986 level.

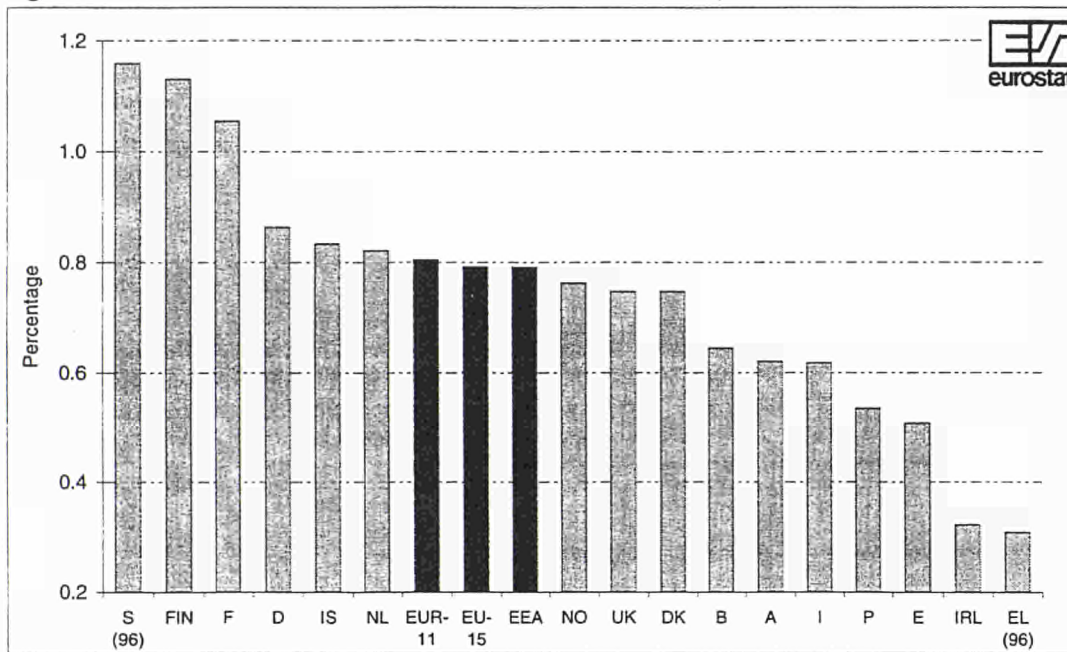
Figure 1 : Trends in GBAORD of the EEA, 1986-97



However, in constant (PPS) prices, GBAORD of the EEA governments increased steadily and reached a peak in 1991, but since then it has continuously declined. In constant (PPS) prices, funds allocated by EEA governments towards R&D increased by 2.9% annually between 1986-91, since then it has been decreasing at an annual rate of 1.1% between 1991-97. GBAORD as a proportion of GDP shows a similar trend for the 1986-97 period. The budgets allocated for the R&D activities as a proportion of GDP by the EEA governments have consistently declined; in 1986 1.0% of the EEA GDP was allocated for R&D activities but by 1997 the ratio had declined to 0.8% (figure 1).

Aggregate GBAORD data of the EEA hides the existence of the disparities between the EEA countries. There are in fact major differences in the allocation of funds towards R&D activities within the Member States. Expressing GBAORD as a proportion of GDP reveals that Sweden, Finland and France clearly stands out from the rest of the EEA countries. They allocated more than 1% of their respective GDP towards R&D activities in 1997, which is far above the EEA average (0.8%). At the other extreme, the four southern EU Member States plus Ireland allocated between 0.6% and 0.3% of their respective GDP towards R&D activities in 1997 (figure 2).

**Figure 2 : GBAORD as a % of GDP of the EEA countries, 1997**

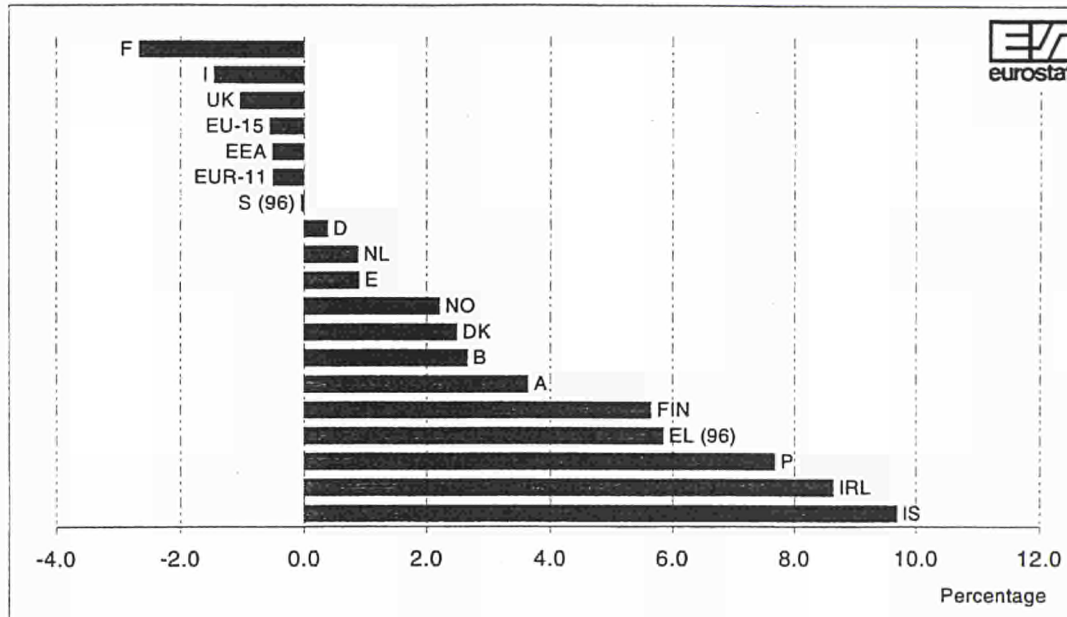


Long term trends show that the funds allocated towards R&D activities (GBAORD as a % GDP) by the governments of the large four EEA countries have declined substantially during the 1986-97 period, whereas the smaller EEA countries increased their allocation of funds towards R&D activities. In 1986 the United Kingdom government allocated 1.1% of it's GDP towards R&D activities, however by 1997 this figure has declined to 0.75%. The Finnish government on the other hand increased it's allocation of funds towards R&D activities from 0.7% in 1986 to 1.1% by 1997.

The largest increase in the allocation of funds towards the R&D activities devoted by the government is recorded for Iceland followed by Ireland, Portugal, and Greece. This is in contrast to the allocation of funds towards R&D activities by the governments of Italy, France and the United Kingdom, all of which have allocated fewer funds in 1997 than in 1990. GBOARD for Iceland and Ireland increased at an average annual growth rate of 9.7% and 8.7% (based on 1990 PPS data) between 1990-97, whereas the Italian and French GBOARD declined by 1.5% and 2.7% (per annum) during the same period (figure 3).



**Figure 3 : Growth rate of GBAORD, 1990-97 (1990 PPS)**



**1.2. GBAORD ALLOCATION BY SOCIO-ECONOMIC OBJECTIVES**

The aim of the classifying GBAORD by socio-economic objectives is to aid policy makers in the formulation of science and technology policy. Government R&D appropriations are broken down by socio-economic objectives on the basis of NABS (Nomenclature for the Analysis and Comparison of Scientific Programmes and Budgets, Eurostat 1994).<sup>1</sup> Analysis of the disaggregated data reveals the priorities placed by individual governments in different categories.

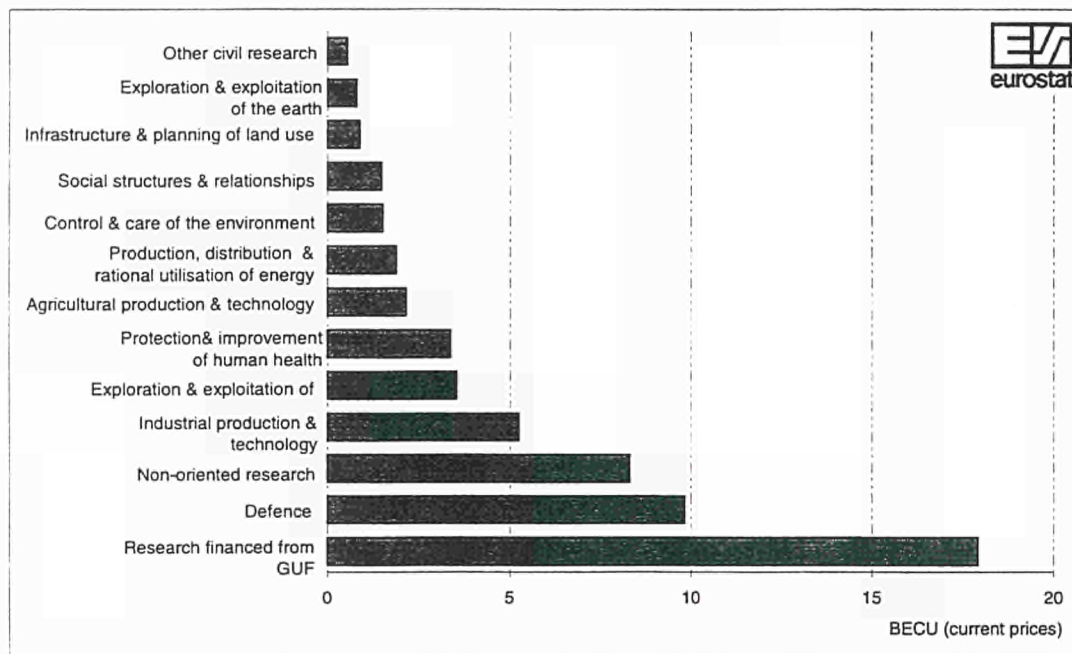
Figure 4 shows the breakdown of R&D appropriations of the EEA governments taken together. The largest share of R&D funds allocated by the EEA governments were for the Government University Fund (GUF) category, followed by Defence and Non-Oriented Research. In 1997, 17.9 BECU was allocated for the GUF category, representing 31% of the total EEA GBAORD, whereas the Defence and Non-Oriented Research categories accounted for 17% and 14.5% of the total EEA GBAORD.

Since the early 90s the EEA governments have placed greater emphasis on the GUF category at the expense of the defence category. R&D funds allocated to defence related research declined from 23% in 1990 to 17% in 1997; in contrast, R&D funds allocated to GUF increased from 24% in 1990 to 31% in 1997. Other significant changes in the allocation of funds are observed for the Industrial Production and Technology category, which accounted for 9% of the total EEA GBAORD in 1997, a decline of 4% points from 1990.

<sup>1</sup> The 1983 version of NABS applies to all the figures up until the 1992 final budgets and the 1993 provisional budgets. The 1993 version applies from the 1993 final and the 1994 provisional budgets onwards. As a result of the revision of NABS, the data for some 1- and 2-digit NABS headings cannot really be compared with those in earlier publications. The greatest differences are to be found in chapters 1, 3, 5, 7, 10 and 11 of NABS. Not all countries collect the data directly by NABS but by other compatible classifications (OECD, NORDFORSK), which are then converted to NABS classification. Some countries have difficulty in allocating government R&D appropriations to some NABS sub-chapters, which undermines the comparability of results at sub-chapter level. This concerns, among others, the sub-chapters "General Research", which may also include R&D appropriations which according to their content belong to other sub-chapters but which for one reason or another are allocated to the sub-chapters "General Research". Furthermore, the sums of the figures at sub-chapter level do not always agree with the figures at chapter level. One possible explanation for underestimates, where the sum of the R&D budget provisions in the sub-chapters shown is less than the value at chapter level, is that not all of the R&D budget provisions of a chapter can be allocated to the sub-chapters.

There are wide variations in the emphasis placed by the governments of the individual EEA countries on the NABS categories. The majority of the EEA countries allocated the largest share of GBAORD to the GUF category in 1997. France and the United Kingdom on the other hand allocated the largest share to the Defence category (28% and 39% respectively). Ireland and Finland placed more emphasis on Industrial Production and Technology; in 1997 the Irish and the Finnish governments allocated 34% and 27% respectively of their total GBAORD to this category.

**Figure 4 : EEA GBAORD by socio-economic objective, 1997**

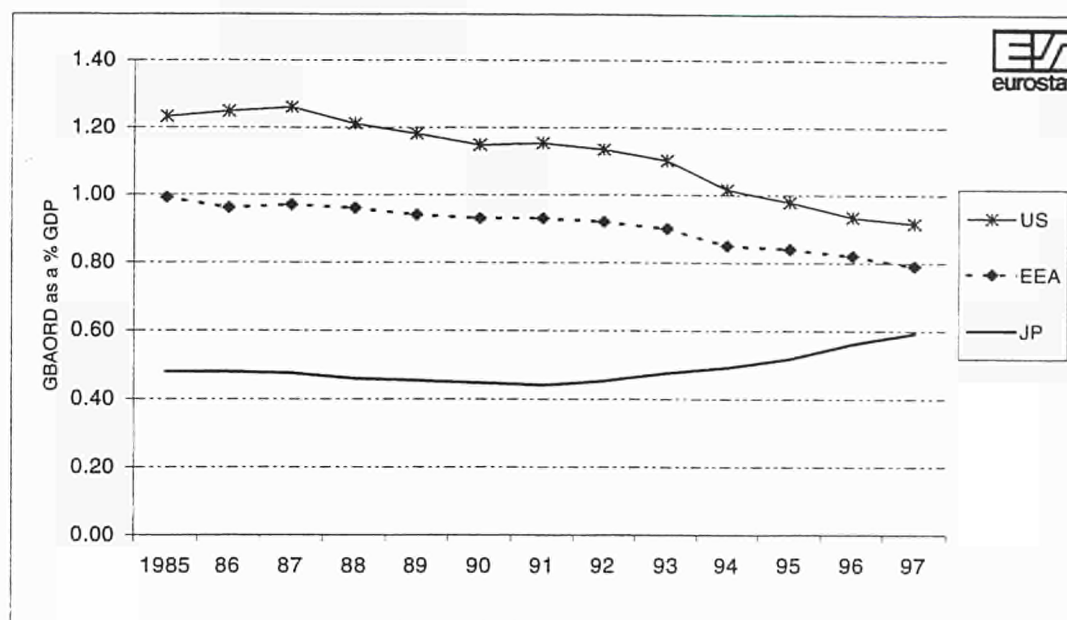


### 1.3. GBAORD ALLOCATION OF THE TRIAD

The United States government allocated the largest amounts of funds for R&D activities throughout the 80s and 90s, followed by the EEA and Japan. In 1997 the United States government allocated 63.2 BECU towards R&D activities as compared to the 57.6 BECU of the EEA. Japanese GBAORD is very low in comparison to the EEA and US, even after taking into consideration the size of the Japanese economy. The Japanese government allocated 22.0 BECU towards R&D activities in 1997. However at constant prices, the Japanese GBAORD increased at an annual average growth rate of 4.8% between 1985-97, whereas the EEA GBAORD increased by 0.7% (annually) and there is virtually no change for the US.

A similar pattern is observed for the triad when the GBAORD data is expressed as a proportion of GDP (figure 5). Both the United States and the EEA have experienced substantial decline in the share of GDP allocated towards R&D activities, in contrast to Japan which has gradually increased its share of GDP allocated for R&D purposes. In 1997, the United States and the EEA allocated 0.9% and 0.8% of their respective GDP to GBAORD, a substantial decrease from the 1985 level (US 1.2%: EEA 1.0%). Japan on the other hand increased its share of GDP for GBAORD from 0.5% in 1985 to 0.6% in 1997.

Figure 5 : GBAORD as a % of GDP of the Triad, 1997



#### 1.4. SPECIFIC DEVELOPMENTS IN THE MEMBER STATES

##### BELGIUM

The final budget for the 1997 financial year was BEF 55.9 billion, an increase of 3.4 billion over 1996. The final budget of 1996 and 1997 shows that approximately one-third of the public-sector expenditure on R&D in Belgium came from general university funds (which are financed mainly by Belgium's constituent communities). About 20% of public R&D expenditure was on non-oriented research, with spending by the Federal Government, the Flemish community and the French-speaking community at approximately the same level.

Industrial production and technology objectives are the third largest category accounting for 15% of the total GBAORD (this expenditure is shared by the Federal Government and the three regions). Space exploration and exploitation accounted for 12% of public spending in 1997, the cost being borne solely by the Federal Government. In general, it can be seen that there were only minor variations by NABS objectives or groups of objectives between 1996 and 1997 (or indeed 1998).

Table 1 : GBAORD in Belgium, by groups of objectives (in %)

eurostat Groups of NABS objectives		Final budgets		Provisional budgets	
		1996	1997	1997	1998
2-3-4-8	Human and social objectives	7.2	7.1	6.9	7.8
1-5-7-9	Technological objectives	31.3	33.3	33.0	34.2
6	Agriculture	3.3	3.1	3.0	2.9
10	Research funded by GUF	35.2	30.8	31.1	29.6
11	Non-oriented research	17.6	20.9	21.2	21.0
12	Other civil research	4.9	4.4	4.3	4.0
13	Defence	0.5	0.5	0.5	0.4
Total		100.0	100.0	100.0	100.0

## Institutional context

Belgium's federal structures (which arose from the reforms of 1980, 1988 and 1993) give primary responsibility for basic and university research to the communities, while the regions are primarily responsible for supporting industrial and technological research. The Federal Government has particular responsibility for federal scientific and cultural establishments, space research, nuclear research, a broad area of agricultural research, and Belgian participation in the activities of international research bodies.

The Interministerial Conference for Science Policy (Conférence interministérielle de la politique scientifique - CIMPS) and its administrative bodies are the instruments of dialogue between the Government, the regions and the communities.

## Priorities

At federal level: Scientific support for the preparation of federal policies (especially in the area of sustainable development and promotion of the information society); ongoing support for networks of excellence ("inter-university poles of attraction") and support for the implementation of space programmes.

At regional and community level:

Flemish Community/Region: increased support for public funding of R&D in order to reach total R&D spending of 2% of GDP in 1999; modernisation and improvement of the system of R&D financing; promotion of high-technology sectors and encouragement of the dissemination of technology; promotion of the social aspects of technology.

French-speaking Community: increase in the appropriations for basic research; promotion of investment in research in the context of the drive to create employment.


Walloon Region: maintenance of or increase in the global R&D effort and in assistance to leading-edge technological sectors, in particular technological sectors with high employment potential.

Region of Brussels-Capital: promotion of SME access to R&D and of networking of regional R&D potential and greatest possible integration of R&D results into the economic processes of the region.

## SPAIN

According to data obtained from the Final 1997 Budget, public funding for R&D totalled PTA 406 249 million. This represents an increase of 11.2% on the 1996 figure, in pesetas at current value. The proportion of budget allocated for the human and social objective category decreased in 1996 and 1997, but stabilised thereafter. In contrast, the proportion of GBAORD allocated to the GUF, non-oriented research and other civil research categories declined continuously during the 1996-98 period, but the reasons differ according to the group. Technological objectives declined due to much greater differential growth in the other groups, and specifically defence, for the reasons explained below.

**Table 2 : GBAORD in Spain, by groups of objectives (in %)**

		Final budgets		Provisional budgets	
		1996	1997	1997	1998
 eurostat					
<b>Groups of NABS objectives</b>					
2-3-4-8	Human and social objectives	9.7	8.2	8.2	8.2
1-5-7-9	Technological objectives	33.0	30.4	30.2	25.9
6	Agriculture	4.1	4.0	3.8	3.9
10	Research funded by GUF	31.3	28.7	30.1	25.5
11	Non-oriented research	9.4	7.8	6.0	5.4
12	Other civil research	1.7	1.3	1.4	1.2
13	Defence	10.8	19.6	20.3	29.9
Total		100.0	100.0	100.0	100.0

The decrease of the GUF category share can be explained by the fact that the phase of expansion with the creation of new state-owned universities and generous funding was naturally followed by a downward trend. The decline in the share of the non-oriented research group masks the effect of gradually improving differentiation between the funding for R&D "items" in the questionnaire. Whereas some bodies previously tended to use this category as a catch-all for R&D funding, repeated insistence on the maximum possible detail in the breakdown between the various objectives has borne fruit, leading to a decline in the relative share of the non-oriented research group. The other civil research group share declined for the similar reason: insistence that only in the extreme are figures to be assigned to this chapter has brought better distribution between specific objectives, whereupon the percentage assigned to other civil research has declined within total R&D allocations.

As for the defence category, the figures for 1997 and 1998 are marked by the incorporation into the defence budget of large sums from the Ministry of Industry and Energy with a substantial industrial R&D content corresponding to the "Promotion and Industrial Strategies for Defence" programmes. This explains the reason behind the increase of almost 300% in the figure assigned to the defence objective over the three-year period. The share of the agriculture category has remained virtually stable, albeit showing a slight decrease over the 1996-98 period.

## FRANCE


### Institutional context

Responsibility for co-ordinating national research and development policy lies with the Ministry of Education, Research and Technology under the CRDB (civilian research and development budget). R&D budget appropriations are not confined to the CRDB alone but also include university funds and the research budget of the Ministry of Defence. In 1997, the CRDB accounted for 58% of total appropriations, defence 28% and university funds 14%.

### Developments

All final budget appropriations totalled FRF 85 256 million in 1997 compared with FRF 85 963 million in 1996, representing a fall of 0.8% in terms of value which is slightly more than the rate observed in 1996. The main factor for the reduction is due to the reduction of funds allocated to the Defence Ministry research, which decreased by 6.6% in 1997 (FRF 1.7 billion). This decrease is in line with the reduction observed since 1990, representing a total of FRF 10.7 billion since this date.

**Table 3 : GBAORD in France, by groups of objectives (in %)**

		Final budgets		Provisional budgets	
		1996	1997	1997	1998
 eurostat					
<b>Groups of NABS objectives</b>					
2-3-4-8	Human and social objectives	8.5	8.9	8.9	9.5
1-5-7-9	Technological objectives	21.1	21.2	21.7	22.6
6	Agriculture	3.6	3.7	3.6	3.8
10	Research funded by GUF	16.0	16.5	16.5	17.1
11	Non-oriented research	18.7	19.3	19.2	20.4
12	Other civil research	2.4	2.4	2.4	1.8
13	Defence	29.7	28.0	27.7	24.8
Total		100.0	100.0	100.0	100.0

The trends in the pattern of the CRDB by socio-economic objectives largely explain those in budget appropriations. 1997 saw no changes in the composition of the CRDB.


The prime objective of R&D public budget appropriations is the general advancement of knowledge. They comprise university general funds and non-targeted research, which accounted for 36% in 1997, a similar level to 1996. Technological objectives occupy second place in terms of civilian budget appropriations; their proportion has hardly changed in recent years. Within them there was little change in 1997, despite a slight increase in space research. The share of human and social objectives has increased considerably. Health, the main item (NABS 4), showed an increase in 1997.

## IRELAND

Since the introduction of the EU Community Support Framework (CSF) in 1989 the Irish government has used the opportunity to invest heavily in science and technology initiatives. It is estimated that in 1997 one third of government funds for R&D come from the CSF. The second round of CSF Operational Programmes came into effect in 1994. The levels of funding under its various measures have been phased in, therefore there are no wide variations in the CSF allocations between 1996 and 1997 to the NABS chapters. The most significant changes are in agriculture and research financed from GUF as outlined in the table below.

The total budgetary allocation to R&D in 1997 amounted to IEP 163.6m, an increase of IEP 3.8 million (2.4%) over the 1996 level. The reason for this increase is due to the significant increased investment in the agricultural sector (IEP 9.7 million), technological objectives (IEP 2.9 million) and in non-oriented research (IEP 2.8 million). This is partly offset by the decrease in research financed from GUF (IEP 10.4 million). Although research investment in the third level sector is constantly increasing in real terms, the budgeted exchequer support decreased significantly in 1997. The actual expenditure has increased by 14.8% between 1996 and 1997.

**Table 4 : GBAORD in Ireland, by groups of objectives (in %)**

		Final budgets		Provisional budgets	
		1996	1997	1997	1998
 eurostat					
<b>Groups of NABS objectives</b>					
2-3-4-8	Human and social objectives	14.5	13.4	13.9	14.0
1-5-7-9	Technological objectives	37.0	37.9	39.4	37.2
6	Agriculture	14.8	20.5	21.2	10.5
10	Research funded by GUF	28.4	21.4	18.3	22.3
11	Non-oriented research	5.3	6.9	7.2	16.0
12	Other civil research	-	-	-	-
13	Defence	-	-	-	-
<b>Total</b>		<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>

Funding for R&D in the natural resource areas has traditionally been declining since the mid-1980s. The CSF has provided the opportunity to reverse this trend. A number of research programmes have been initiated into specified areas in agriculture, food, forestry and marine. Researchers in the higher education sector are the main recipients of these research contracts. A Marine Institute has also been established with the assistance of CSF funds. For the first time all research and technological development in the marine area is co-ordinated by the one institution. Research expenditure in agriculture (chapter 6) has increased from IEP 23.7 million in 1996 to IEP 33.5 million in 1997.

NABS chapter 7 is significantly affected by the allocation of funds from the CSF. Funding for R&D in support of industrial development increased from IEP 53.6 million in 1996 to IEP 56.3 million in 1997. Grant support by the industrial development agencies for R&D projects increased across all sectors except software development. The decrease in social sciences and humanities is largely accounted by the phasing out of government expenditure in relation to the design and development of new computer systems to support the administration of social welfare services.

Funding for non-oriented research (chapter 11) has increased from IEP 8.5 million in 1996 to IEP 11.3 million in 1997. There was increased funding in the marine and wildlife sectors, and a new drugs programme was introduced where researchers in 3rd level institutions are funded to research projects in areas such as drug detection and analysis, pharmacology and social impacts.

Allocation of funds by the government increased for all other chapters, except chapter 3, which showed a marginal decrease in allocation in 1997 compared to 1996.

## Methodology

The data has been calculated according to the methodology introduced in 1992. This method results in government funds only being included in the analysis. The definition of government funds includes money received from the EU Community Support Framework in support of R&D activities. The data for 1997 has been classified according to the NABS 1993 classification system.


## ITALY

In 1997, final budget amounts to ITL 12,047,336 million. The increase on 1996 final budget is 9.0% in nominal terms and 6.2% in real terms (at 1995 prices). The most significant increases are registered for energy (24%, due to higher allocations to National Agency for New Technologies and Environment) and GUF (16.3%) objectives.

Decreases on 1996 final budget occurred in the following objectives: society (-1.7%), space (-5.7%), and non-oriented research (-16.2%). The negative variation in the space category is due to an important decrease of space research allocation of the Italian Space Agency (ASI). Other variations, positive or negative, are especially due to the reorganisation of National Research Council (CNR) classification: in 1997, CNR allocations are broken down following the results of a survey on NABS objectives performed at the different research institutes and services.

In 1998, the provisional budget for research amounts to ITL 11,889,662 million, representing a decrease of 1.3% in nominal terms or a decrease of 4.7% in real terms (at 1995 prices). The major differences between final budget for 1997 and provisional budget for 1998 are due to an increase of allocations to environment (partly due to a reorganisation of CNR classification) and energy, and decreases in human health and in defence.

Table 5 : GBAORD in Italy, by groups of objectives (in %)

		Final budgets		Provisional budgets	
		1996	1997	1997	1998
 eurostat					
<b>Groups of NABS objectives</b>					
2-3-4-8	Human and social objectives	14.8	14.0	16.0	13.3
1-5-7-9	Technological objectives	23.4	23.1	18.6	23.0
6	Agriculture	2.1	2.2	2.3	1.9
10	Research funded by GUF	42.5	45.4	47.4	48.0
11	Non-oriented research	14.1	10.9	12.1	11.1
12	Other civil research	-	-	-	-
13	Defence	3.1	4.4	3.5	2.7
Total		100.0	100.0	100.0	100.0


Share of funds allocated to researchers financed from GUF have increased in contrast to social sciences & humanities, non-oriented research and defence whose relative importance have decreased. Share of funds allocated for the technological objectives and agriculture have remained more or less stable

Changes occurred between provisional and final data in 1997 due to under-estimation of provisional data. Positive differences can be found especially for objectives 9 (space) and 10 (university).

## THE NETHERLANDS

Central government budget appropriations for R&D show an nominal increase of approximately 50 million NLG in the figures between the budgetary years 1996 and 1997 (final budget) and 180 million NLG between 1997 and 1998 (provisional budget). The final budget for 1997 amounts to 5.8 billion NLG in current terms, while the provisional budget for 1998 is higher, with a difference of +125 million NLG, equal to an increase of 2.2% between 1997 and 1998.

**Table 6 : GBAORD in the Netherlands, by groups of objectives (in %)**

		Final budgets		Provisional budgets	
		1996	1997	1997	1998
 eurostat					
<b>Groups of NABS objectives</b>					
2-3-4-8	Human and social objectives	11.1	11.0	10.4	10.6
1-5-7-9	Technological objectives	19.2	19.4	19.2	19.8
6	Agriculture	4.3	4.0	4.2	3.8
10	Research funded by GUF	46.6	46.1	47.0	46.4
11	Non-oriented research	10.9	11.2	11.0	11.3
12	Other civil research	5.0	5.4	4.9	5.1
13	Defence	3.0	3.2	3.2	3.0
Total		100.0	100.0	100.0	100.0

The relative positions of the different objectives are quite stable. A substantial proportion of the budget is allocated to fundamental research, which is reflected by the fact that approximately 47% of the total budget are allocated to the GUF category and 11% to the non-oriented research category. Almost 20% of the budget are devoted to R&D with technological objectives. Research with human and social objectives is the third major area, with a share of approximately 10%. Changes in budgets of ministries are not the result of policy changes, but mainly due to methodological changes and better monitoring of R&D-efforts of ministries.

### Priorities

S&T policy is oriented to stimulating scientific quality on the one hand and societal relevance on the other hand. This should lead to a closer co-operation between institutes in the public knowledge infrastructure and market parties (private as well as public). Public research institutes receive a basic funding (the relative weight depends on the function) and are stimulated to acquire contracts, both public and private.

### Major methodological changes

An effort has been made to harmonise the funding (GBAORD) and performance (Statistical Office) figures on university research. This results in higher figures for GUF as part of GBAORD.




## AUSTRIA

Public funding of R&D amounted to ATS 15.6 billion in 1997 (final budget). This means that public R&D expenditure grew by a nominal 0.8% compared with the previous year. According to the federal estimate (provisional budget), public R&D funding for 1999 amounts to ATS 16.9 billion, a nominal increase of 1.4% on the corresponding figure in the provisional budget for 1998 (ATS 16.7 billion). Compared with the figure from the final budget for 1997, the 1999 figure represents a nominal increase of 8.6%.

1999 saw no fundamental change to the particularly dominant position occupied by the universities in Austrian research, with the result that about 65% of overall federal R&D expenditure is accounted for by Chapter 10, "Research financed from general university funds (GUF)". Following on from a slight nominal increase (0.9%) between 1996 and 1997, however, bigger increases have been recorded, particularly between 1997 and 1998 (1998: +8.6%, 1999: +1.7%). This is mainly because of the bigger difference, compared with previous years, between the provisional and final budgets for a given reference year. Most of the other groups of objectives, on the other hand, show much smaller rates of growth, with the "Technological objectives" group actually registering a nominal decline of 4.6% in 1998.

As can be seen from the following table, the relative share of "Research financed from GUF" is 66% in 1999. It should be borne in mind that ÖSTAT's detailed R&D surveys of Austria's universities have revealed that the share accounted for by applied research and experimental development is very large (1993: Applied research: 40%; experimental development: 11%).

**Table 7 : GBAORD in Austria, by groups of objectives (in %)**

		Final budgets		Provisional budgets	
		1996	1997	1997	1998
 eurostat					
<b>Groups of NABS objectives</b>					
2-3-4-8	Human and social objectives	8.5	9.4	8.9	8.9
1-5-7-9	Technological objectives	9.5	9.2	8.2	8.1
6	Agriculture	3.2	3.3	3.2	3.2
10	Research funded by GUF	64.7	64.7	65.8	65.9
11	Non-oriented research	14.0	13.2	13.8	13.8
12	Other civil research	0.1	0.2	0.1	0.1
13	Defence	0.0	0.0	0.0	0.0
Total		100.0	100.0	100.0	100.0

As there are not usually very significant differences between the provisional and final budgets in Austria, a meaningful comparison can be made between the final budgets for 1996 and 1997 on the one hand and the provisional budgets for 1998 and 1999 on the other.

This means that, as in the years up to 1994, total public R&D spending has been rising continually in nominal terms (1998: 7.1%, 1999: 1.4%), with the relative shares of all the "smaller" groups of objectives remaining unchanged (apart from the relative share of "Technological objectives", which has declined), whereas the relative share of "Research financed from GUF" has increased.

### Methodology

There were no methodological changes during the reference period (1996-1999), which means that the data are fully comparable. The classification by NABS chapters is done via a conversion from the national system to the OECD system of socio-economic objectives, which is almost identical to the NABS single-digit chapters.

## UNITED KINGDOM

Data on government expenditure on Research and Development are collected by means of an annual survey of Central Government Departments. The total net Government expenditure on R&D in 1997-98 was GBP 5892 million, representing 2.9% of the total Central Government expenditure and 0.7% of the UK GDP. The expenditure on R&D in 1997-98 increased in cash terms by GBP 132.2 million (2%) on 1996-97.

**Table 8 : GBAORD in the UK, by groups of objectives (in %)**

eurostat Groups of NABS objectives		Final budgets		Provisional budgets	
		1996	1997	1997	1998
2-3-4-8	Human and social objectives	20.5	20.3	20.4	20.6
1-5-7-9	Technological objectives	7.8	6.6	6.9	5.4
6	Agriculture	4.5	4.6	4.4	4.3
10	Research funded by GUF	17.8	17.5	18.5	18.1
11	Non-oriented research	11.8	11.4	11.8	11.7
12	Other civil research	0.4	0.4	0.4	0.4
13	Defence	37.2	39.2	37.7	39.5
Total		100.0	100.0	100.0	100.0


The defence category is by far the largest sector accounting of around 39% of the total UK GBAORD. In 1997-98, Government expenditure on R&D in Defence was GBP 2312 million, representing an increase of 8% from the previous year. Social Sciences & Humanities objective is the second biggest category and it shows a small increase in expenditure from GBP 1183 million in 1996-97 to GBP 1196 million in 1997-98.

Other categories showing an increase in expenditure between 1996-97 to 1997-98 were; Agriculture, Research financed from GUF, and Other Research. Expenditure on agriculture increased from GBP 257 to GBP 269 million (5%), Research financed from GUF increased from GBP 1027 to GBP 1033 million (1%) and Other Research increased from GBP 20 to GBP 21 million (5%). Technological objectives and Non-orientated research on the other hand decreased by 13% and 1% respectively over the same time period.

## NORWAY

Net Government Budget Appropriations and Outlays for R&D (GBAORD) in the provisional budget for 1998 amounted to nearly 8.7 billion NOK. In current prices this is an increase of approximately 410 million NOK from the final budget for 1997, or 5%. In real terms this means a 2.7% growth. From the final budget for 1996 to the final budget for 1997 there was a nominal increase of 4.3%, but in real terms the increase is only 0.3%.

**Table 9 : GBAORD in Norway, by groups of objectives (in %)**

 eurostat <b>Groups of NABS objectives</b>		Final budgets		Provisional budgets	
		1996	1997	1997	1998
2-3-4-8	Human and social objectives	19.2	19.7	19.7	19.2
1-5-7-9	Technological objectives	22.9	21.7	21.7	21.3
6	Agriculture	9.4	9.3	9.3	9.1
10	Research funded by GUF	35.5	37.0	36.8	38.5
11	Non-oriented research	7.2	6.8	6.9	6.4
12	Other civil research	-	-	-	-
13	Defence	5.8	5.5	5.6	5.5
Total		100.0	100.0	100.0	100.0

38.5% of net Norwegian GBAORD in 1998 was allocated through General University Funds (GUF). Universities are thus by far the most prominent recipient of Government R&D funding, and the share still seems to be on the increase. Funds for technological objectives account for one fifth, of which industrial production and technology makes up almost two thirds. The overall technology share, however, has decreased over the period from 23% to around 21% in 1997. Support for R&D with human and social objectives holds a slightly lower share than technology, but the growth of late seems to have culminated in 1997. Finally, funds for R&D directed towards agriculture and defence as well as non-oriented research are (slightly) decreasing.

## CHAPTER 2: R&D Expenditure and R&D Personnel

### 2.1. R&D EXPENDITURE AND R&D PERSONNEL AT NATIONAL LEVEL

#### Introductory remark

R&D activities require both funding and qualified staff. For statistical purposes, two inputs are measured - R&D expenditure and R&D personnel - normally on an annual basis. Both have their strengths and weaknesses, hence both are necessary to secure an adequate representation of the effort dedicated to R&D activities.

The basic measure for R&D expenditure is the "intramural expenditures", which are all expenditures for R&D performed within a statistical unit or sector of the economy, whatever the source of funds (Frascati Manual, § 335). For statistical purpose, both current and capital expenditures are included.<sup>2</sup>

R&D personnel data measure the amount of resources going *directly* into R&D activities. This includes all persons employed directly in R&D plus persons supplying direct services to R&D, such as managers, administrative staff and office staff (Frascati Manual § 279). R&D personnel data are collected for both full-time equivalent (FTE) and in-terms of physical persons ("headcount", HC).<sup>3</sup>

Both intramural R&D expenditure and R&D personnel are broken down by institutional sector, i.e. the sectors in which the R&D is performed are specified. Four sectors are relevant in the context of this publication where indicators for R&D performance are compiled: the business enterprise sector, the government sector, the higher education sector, and the private non-profit sector<sup>4</sup> (see part 2.5 for further details).

#### 2.1.A. R&D EXPENDITURE OF THE EEA

##### R&D expenditure in the EEA in 1997 is over ECU 137 billion

In 1997, total R&D expenditure in the EEA (excluding Luxembourg and Liechtenstein) amounted to an estimated ECU 137,700 million, representing a nominal increase of 4.6% on the previous year. In constant prices (PPS 1990), the R&D expenditure of the EEA increased by 2.3% from the previous year.

R&D expenditure as a percentage of GDP was above 2% between 1988-90, but since then this ratio has continuously declined (except 1993) and in 1997 total R&D expenditure in the EEA amounted to 1.9% of its respective GDP (figure 6).

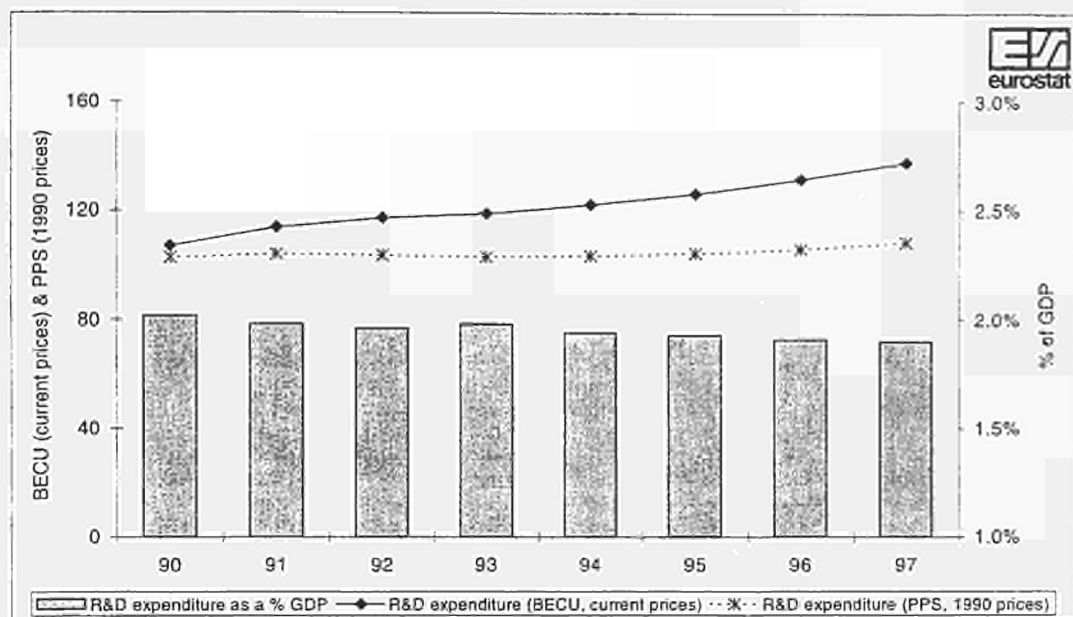
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<sup>2</sup> Data on R&D expenditures are performance based, i.e. they refer to R&D effort that has been made in a given year. Owing to the time it takes to carry out such surveys and to process their results, data on R&D expenditure do not become available until a substantial time after the R&D has been carried out. Data on R&D expenditure are available for all Member States of the European Union (excluding Luxembourg), Norway and Iceland from 1987 onwards.

<sup>3</sup> The data on R&D personnel are also performance based; i.e. they refer to the personnel that were employed in R&D in a given year. Data on R&D personnel are available in terms of HC and FTE for all Member States of the European Union (excluding Luxembourg), Norway and Iceland from 1987 onwards.

<sup>4</sup> In other publications (e.g. by OECD) where data are also compiled by source of funds the sector "abroad" is also relevant.

**Figure 6 : Trends in R&D expenditure of the EEA, 1990-97**



### Germany, France and the UK accounts for 67% of the EEA R&D expenditure

As expected, most of the EEA R&D expenditure is accounted for by Germany, France and the United Kingdom. Latest available figures (1996) shows that they account for approximately 67% of the total EEA R&D expenditure; however the share of EEA R&D accounted by the above mentioned three countries have been on a downward path since 1993.

In constant prices (1990 PPS), R&D expenditure of the four large EU Member States (Germany, France, Italy and the United Kingdom) have remained fairly stable since the late 1980s and early 1990s. However, the R&D expenditure of the smaller EEA countries like Ireland, Sweden, Denmark and Finland has increased over same time period.

### 3.8% of the Swedish GDP is devoted to R&D activities

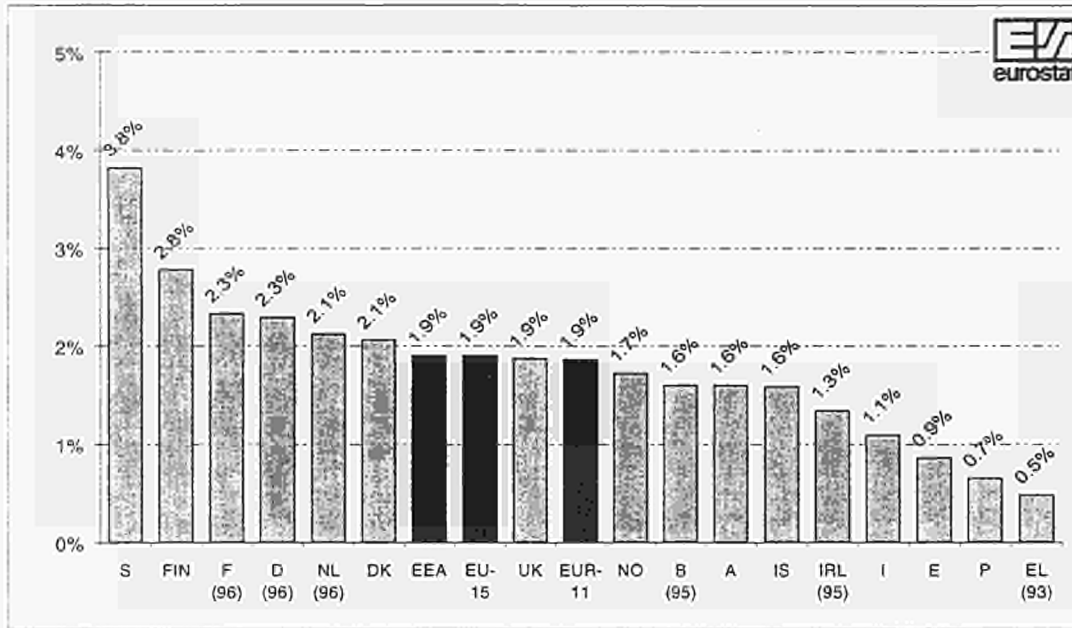
When R&D expenditure is expressed as a proportion of GDP, Sweden clearly stands out from the rest of the EEA countries (figure 7). In 1997, 3.8% of the Swedish GDP was devoted to R&D activities, which represents a substantial increase from the 1991 figure. The largest increase in the R&D expenditure over GDP ratio since 1991 is recorded for Sweden followed by Finland and Iceland and the largest decreases are recorded for the United Kingdom, Germany and Italy. To a certain extent there exists a north-south divide, where the expenditure over GDP ratio for the most of the northern countries is above the EEA average and for the southern countries it is below the EEA average.

## R&D EXPENDITURE BY INSTITUTIONAL SECTORS

### More than 60% of R&D expenditure is carried out in the business enterprise sector

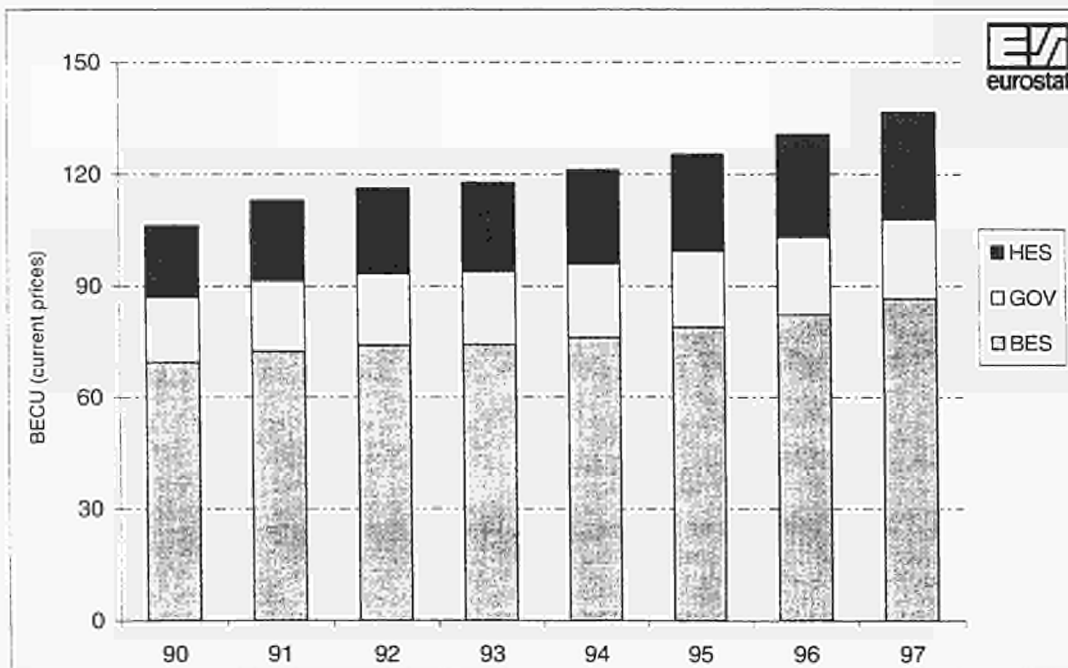
Most of the R&D expenditure of the EEA is carried out in the business enterprise sector (BES), followed by the higher education sector (HES) and the government sector (GOV). In 1997 BES accounted for around 63% of the total EEA R&D expenditure, representing a 2% point decline from the 1990 level.

Figure 7 : R&D expenditure as a % of GDP of the EEA countries, 1997



HES is the second largest sector; R&D expenditure carried out by this sector has continuously increased since the late 80s. In 1997, HES accounted for around 21% of the total EEA R&D expenditure, representing a 3% point increase from the 1990 figure. The share of the government sector has remained more or less stable since the late 80s and in 1997 this sector accounted for around 16% of the total EEA R&D expenditure (figure 8).

Figure 8 : R&D expenditure of the EEA by institutional sectors, 1990-97

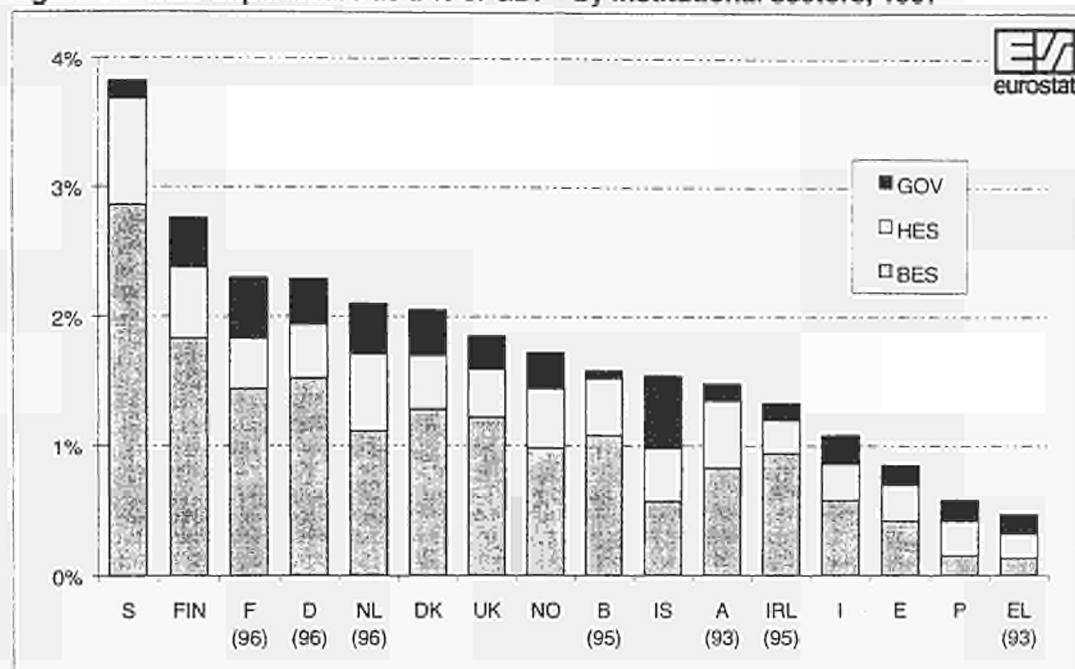


*At country level:*

In most countries, the BES accounts for the largest share of R&D expenditure (as a % GDP), the exception being Greece and Portugal. The highest share of the R&D expenditure carried out by the BES in 1997 is recorded for Sweden (75%), followed by Ireland (71%) and Belgium (69%) (figure 9).

By contrast, in Greece and Portugal, the largest share of their respective total R&D expenditure is accounted by the HES. Total R&D expenditure of Iceland on the other hand is more evenly distributed amongst the three sectors.

**Figure 9 : R&D expenditure as a % of GDP - by institutional sectors, 1997**



### 2.1.B. R&D PERSONNEL OF THE EEA

#### Over 2.2 million R&D personnel in the EEA

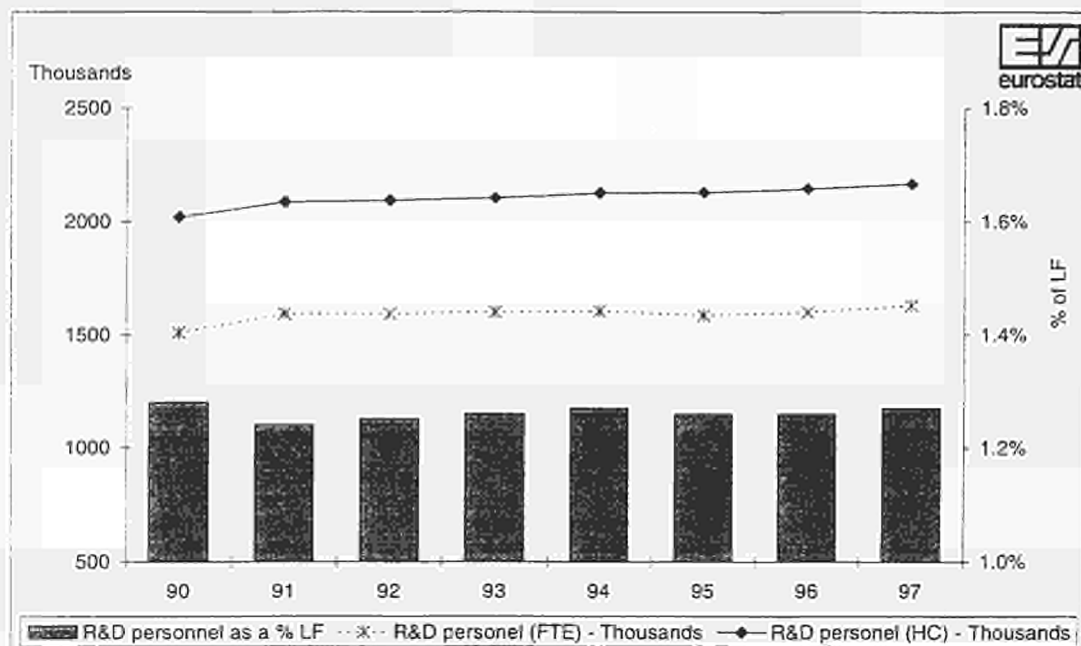
In 1997, the number of R&D personnel in the EEA (excluding Luxembourg and Liechtenstein) was an estimated 2,167,100 in terms of head count, which translated as 1,628,600 full time equivalents (figure 10). In the late 80s, R&D personnel (both HC and FTE) within the EEA gradually increased, although since then it has stabilised around the 2.1 to 2.2 million (HC) mark. Expressed as a percentage of the labour force, approximately 1.27% of the EEA labour force were employed in R&D in 1997, representing a slight increase on the previous year.

#### Around 60% of the EEA R&D personnel are located either in Germany, France or the UK

In terms of HC, approximately 60% of the total EEA R&D personnel are located either in Germany, France or the United Kingdom. However, the number of R&D personnel located in Germany has been continuously declining since 1991 and the latest figures show that the German 1997 R&D personnel is some 13.5% lower than the 1991 level. The number of R&D personnel located in France has continuously increased over the last seven years and the latest figures show that the 1997 level of R&D personnel is some 11% higher than the 1990 level.

The numbers of R&D personnel (both in terms of head count and FTE) in many countries, namely the smaller countries or those with a relatively low base, continue to increase according to the latest available data. R&D personnel located within the Nordic countries (Denmark, Sweden, Finland and Norway) are at their highest levels. R&D personnel located in Norway and Sweden increased at an average annual growth rate of 8% and 6% respectively, between 1991-97.

Figure 10 : Trends in R&D personnel located within the EEA, 1990-97



#### Nordic countries have the highest proportion of R&D personnel as a % of the LF

For more comparable comparisons, R&D personnel (HC) are expressed as a percentage of labour force (figure 11). As with R&D expenditure, the highest proportion of R&D personnel as a percentage of the labour force in 1997 can be found in Sweden (2.3%) followed by Finland and Iceland (2.2% each).

The other Nordic countries are also well above the EEA average, and generally show an upward trend. In contrast, the proportion of R&D personnel as a percentage of the labour force of the Southern EEA countries (Greece, Spain, Italy and Portugal) are well below the EEA average, despite the upward trend in recent years.

#### R&D PERSONNEL BY INSTITUTIONAL SECTORS

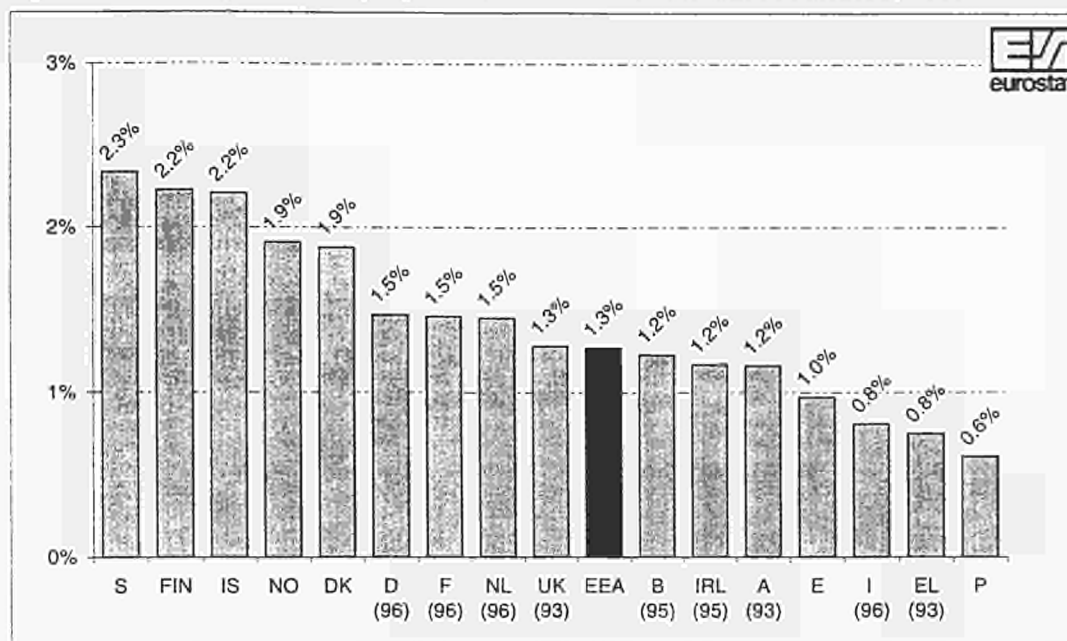
Although at the EEA level the BES remains the largest employer of R&D personnel, its share has been on a downward path. In 1990, around 51% of the total EEA R&D personnel were employed within the BES, but by 1997 this share had declined to around 47%. Employment of the R&D personnel within the HES on the other hand has been on an upward trend; its share of the R&D personnel has increased from around 31% in 1988 to 38% by 1997.

Figure 12 shows the R&D personnel as a proportion of the labour force. In 1997, around 0.59% of the EEA labour force are engaged R&D activities within the BES, 0.47% (of the LF) in the HES and around 0.2% in the Government sector.

At individual country level, the BES is the largest employer of R&D personnel in Belgium, Germany, France, the Netherlands, the United Kingdom, plus the two Nordic countries (Finland and Sweden). In contrast, the HES is the largest employer of R&D personnel in the southern EEA countries (Greece, Spain, Italy and Portugal), along with Ireland, Austria, Iceland and Norway (figure 13).



Figure 11 : R&D personnel (HC) as a % of the LF of the EEA countries, 1997



The latest available data shows that the R&D personnel (HC) in the higher education sector are at a higher level in most countries (with the exception of Belgium, Germany and the Netherlands) than their respective 1991 level. The largest increase of R&D personnel in the HES has been in Greece, Ireland and Spain, i.e. those countries starting from the lowest base. Steady increases in FTE in the HES can also be seen in France, Finland, Sweden, the UK and Norway.

Figure 12 : R&D personnel (HC) as a % of LF of the EEA (institutional sectors)

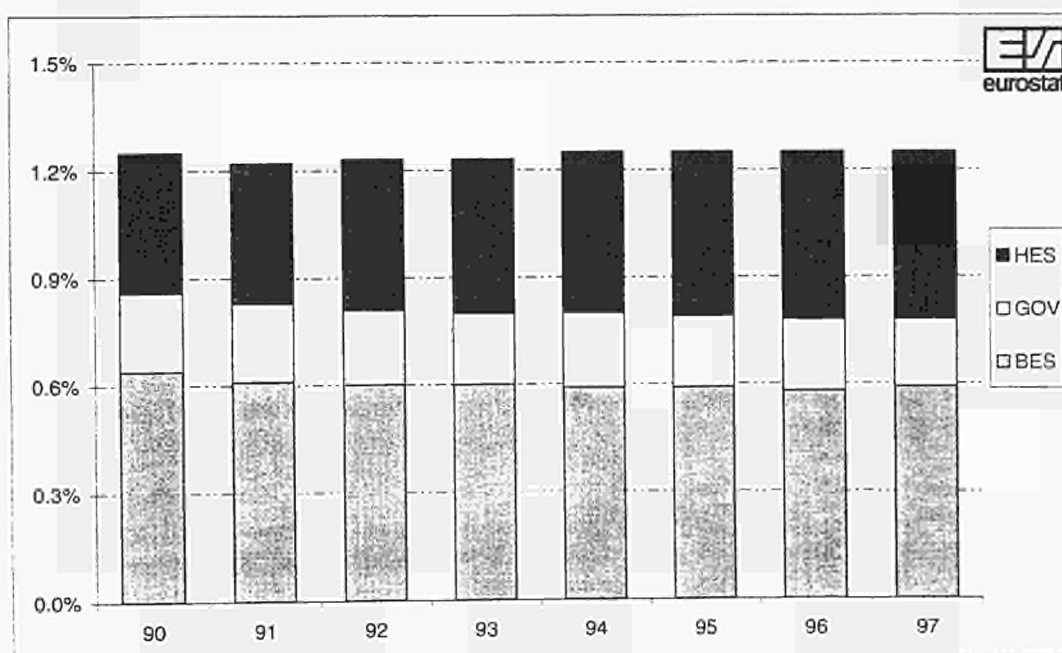
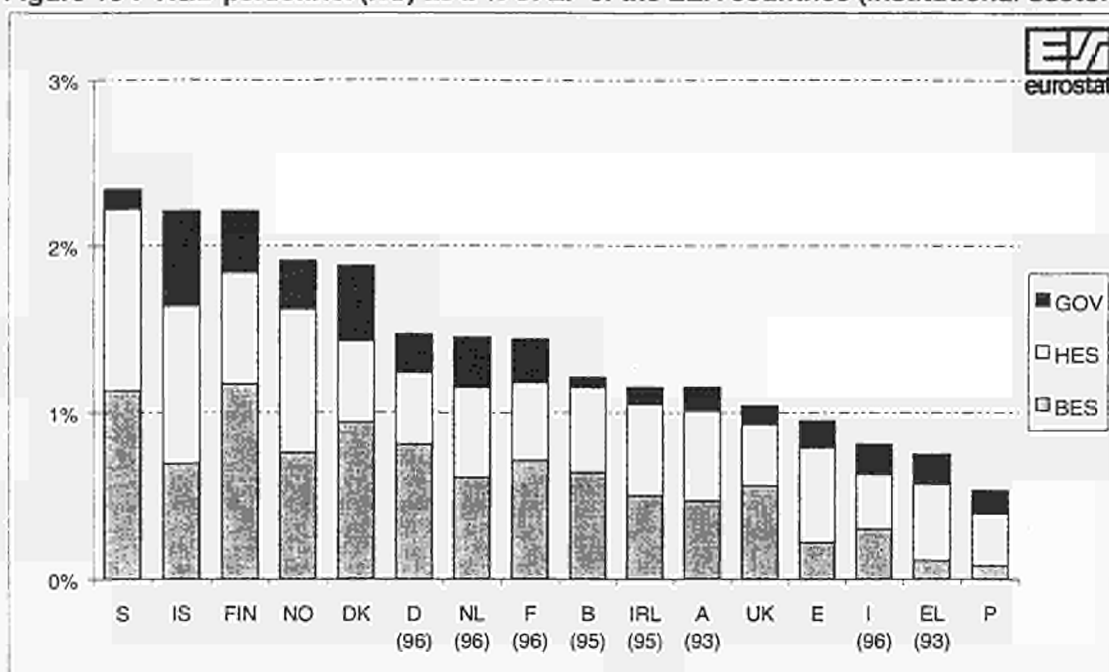


Figure 13 : R&D personnel (HC) as a % of LF of the EEA countries (institutional sectors)



## 2.2. R&D EXPENDITURE AND PERSONNEL AT REGIONAL LEVEL

### Introductory remark

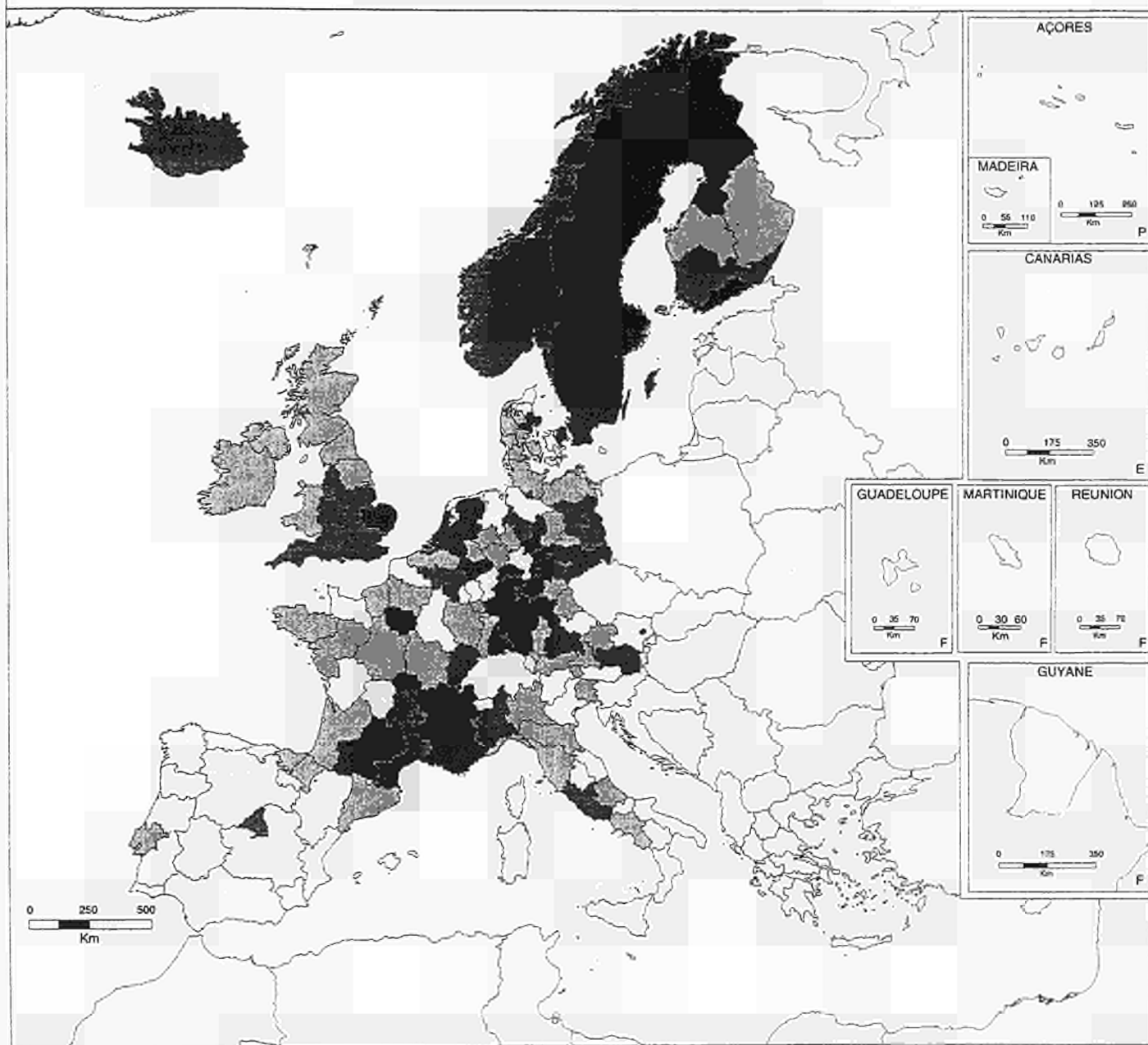
R&D expenditure and R&D personnel are broken down by region. Regional breakdowns of the R&D expenditures and R&D personnel are time-consuming and problematic. In the case of R&D expenditures, there is a particular problem in the case of units, particularly enterprises, which consist of two or more local units in different regions. If, in extreme cases, there is no additional information, all the intramural R&D expenditure (or R&D personnel) of the unit must be attributed to the region in which its headquarters are located, including any R&D expenditures incurred (or employee working) in other local units in other regions. The extent of such errors varies according to the economic structure and size of the country, and according to their survey methods.

The size of each region must be taken into account when interpreting regional intramural R&D expenditures or R&D personnel and most particularly when comparing regions. For this reason, such comparisons are based on derived indicators such as the intramural R&D expenditure of a region as a percentage of its respective GDP or R&D personnel of a region as a percentage of the labour force.

French regional R&D data should be treated with slight caution because they are under estimated due to the fact 16.1% of R&D expenditure and 29.2% of R&D personnel could not be registered to any particular region.

R&D data for the East Anglia region (United Kingdom) is an over estimation and should be treated with caution, this is due to the regional data which is shown against East Anglia now includes a number of other companies located within the Eastern region.

# Regional R&D expenditure \*



## Expenditure by region, all sectors, as % of GDP (NUTS 95 level 2\*\*)

French regional data are underestimated because 16.1% of the data are not allocated to any specific regions



\* Data for 1995 except:  
1993: EL, A  
1996: F, UK, NO

\*\* NUTS level 0: NL, IS, NO  
NUTS level 1: B, S, UK  
NUTS level 3 (aggregated): DK



Statistical data: Eurostat, A4.  
Cartography and geographic information management: Eurostat A4, based on GISCO - 7/99.


## 2.2.A. R&D EXPENDITURE AT REGIONAL LEVEL

There are significant disparities in the R&D expenditure between regions (NUTS level 1), even within the EU Member States. In absolute terms, Île de France (France) is the leading region within the EU Member States, followed by Baden-Württemberg and Bayern (both Germany) and South East (UK). According to the latest figures, the R&D expenditure of the five leading regions amounted to approximately MECU 44 123, representing a third of the EEA total.

For a more comparable regional portrait, R&D expenditure is expressed as a % of regional GDP, which show East Anglia (UK) to be the leading region, followed by Baden-Württemberg (Germany), Berlin (Germany), Île de France (France) and Bremen (Germany) (table 10).


Madeira is the leading Portuguese region in terms of R&D expenditure (table 11), but in comparison to East Anglia, Madeira's R&D expenditure (as % of GDP) is some six times below that of East Anglia. As can be seen from table 11, there are significant disparities between regions within individual EU Member States and the disparities between the regions have remained more or less stable over time.

**Table 10 : R&D expenditure of the five leading regions (latest available year)**

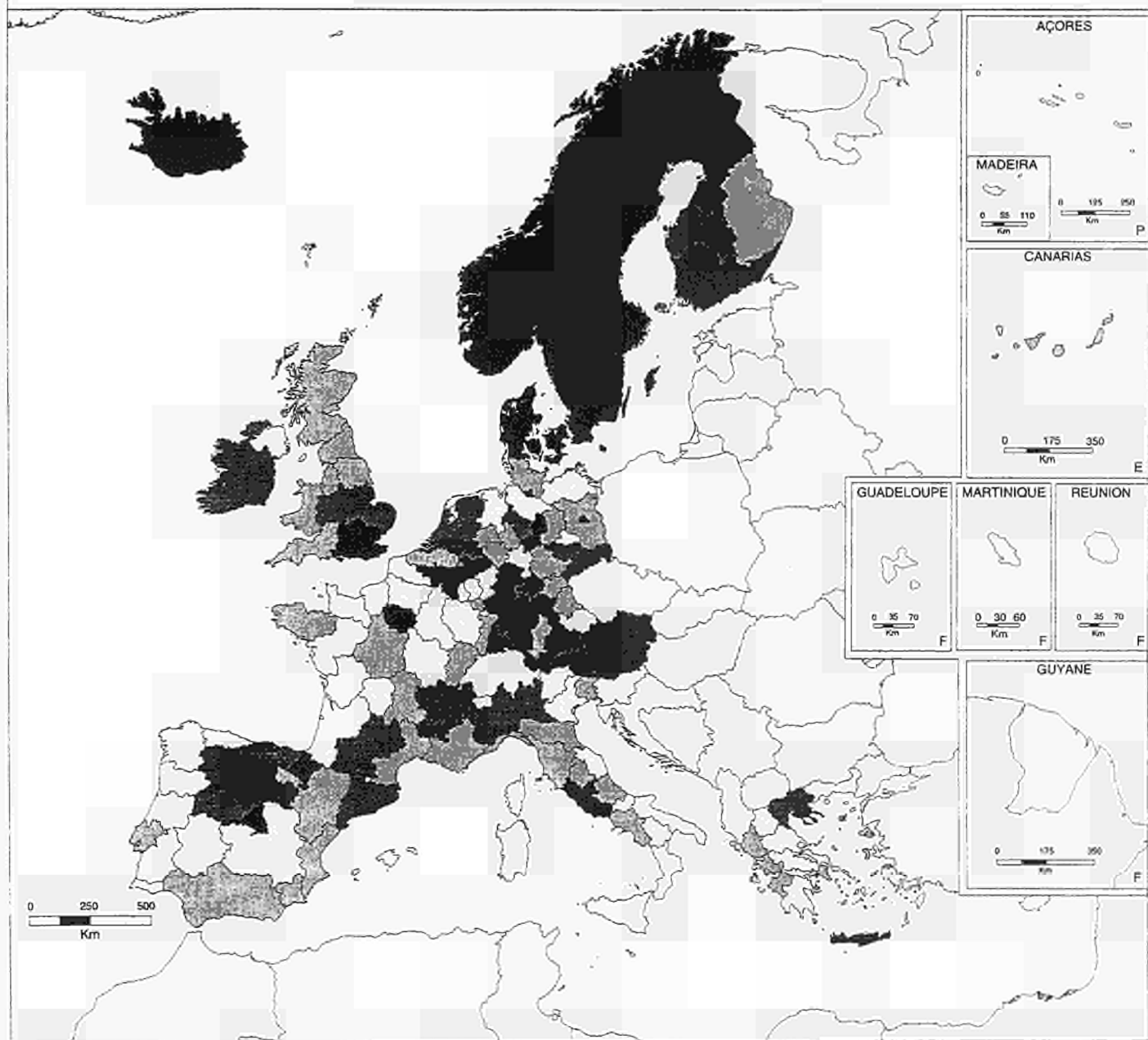
 Region	Country	Rank	R&D expenditure as a % of GDP	Rank	R&D expenditure (MECU)
East Anglia	UK	1	3.80%	7	3 130
Baden-Württemberg	D	2	3.65%	2	9 711
Berlin	D	3	3.36%	12	2 516
Île de France	F	4	3.29%	1	11 530
Bremen	D	5	2.84%	38	607

Note: 1996 data for France and the UK and 1995 data for Germany.

**Table 11 : Regional disparities of the R&D expenditure as % of GDP (latest available year)**

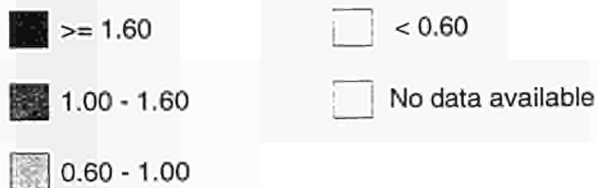
	High R&D expenditure regions	R&D Expenditure / GDP	Low R&D expenditure regions	R&D Expenditure / GDP
B (95)	Bruxelles-Brussel	1.69%	Region Wallonne	1.42%
D (95)	Baden-Württemberg	3.65%	Saarland	0.88%
EL (93)	Attiki	0.67%	Kentriki Ellada	0.26%
E (96)	Madrid	1.74%	Centro (E)	0.45%
F (96)	Île de France	3.29%	Nord-Pas-de-Calais	0.47%
I (96)	Lazio	1.95%	Sud	0.39%
A (93)	Ostösterreich	1.79%	Westösterreich	1.02%
P (95)	Madeira	0.66%	Acores	0.51%
FIN (95)	Manner-Suomi	2.36%	Ahvenanmaa-Åland	0.12%
UK (96)	East Anglia	3.80%	Wales	0.81%

# Regional R&D personnel \*



R&D personnel (HC) by region, all sectors, as % of labour force (NUTS 95 level 2\*\*)

French regional data are underestimated because 29.2% of the data are not allocated to any specific regions



\* Data for 1995 except:  
1993: EL, A, UK  
1996: DK, E, I, IS

\*\* NUTS level 0: NL, A, IS, NO  
NUTS level 1: B, S, UK



Statistical data: Eurostat, A4.  
Cartography and geographic information management: Eurostat A4, based on GISCO - 7/99.


## 2.2.B. R&D PERSONNEL AT REGIONAL LEVEL

Similar to the R&D expenditure, there are significant disparities in the R&D personnel between regions (NUTS level 1), even within the countries. In absolute terms, the largest numbers of R&D personnel (HC) are located in the South East (UK), followed by Île de France (France) and Baden-Württemberg. The latest available R&D personnel figures shows that around 30% of the EEA R&D personnel are located within the leading five regions.

Once R&D personnel figures are expressed as a percentage of the LF, Brussels becomes the leading region, followed by Île de France and Baden-Württemberg (table 12). The reason behind the high ranking of Brussels is that its labour force is relative small. The number of R&D personnel located within South East (UK) are some seventeen times higher than that of Brussels but due to the relatively large labour force located within the South East (UK) it does not appear in the top five ranking.


The regional disparities within individual EU Member States for R&D personnel are almost identical to the R&D expenditure disparities. The disparities between high R&D personnel and low R&D personnel regions ranges from 2.1% point (Finland) to 0.1% point (Portugal) (table 13).

**Table 12 : R&D personnel (as % of LF) of the five leading regions (latest available year)**

 Region	Country	Rank	R&D personnel as a % of LF	Rank	R&D Personnel
Bruxelles-Brussel	B	1	2.39%	48	9 191
Île de France	F	2	2.31%	2	121 910
Baden-Württemberg	D	3	2.26%	3	113 479
Manner-Suomi	FIN	4	2.24%	6	55 476
Berlin	D	5	2.13%	12	38 937

Note: 1997 data for Finland, 1996 data for France and 1995 data for Belgium and Germany.

**Table 13 : Regional disparities of the R&D personnel (as % of LF) (latest available year)**

	High R&D Personnel regions	R&D Personnel / LF	Low R&D Personnel regions	R&D Personnel / LF
B (95)	Bruxelles-Brussel	2.39%	Region Wallonne	0.91%
D (95)	Baden-Württemberg	2.26%	Mecklenburg-Vorpommern	0.59%
EL (93)	Attiki	0.96%	Kentriki Ellada	0.50%
E (97)	Madrid	2.05%	Canarias	0.70%
F (96)	Île de France	2.31%	Nord-Pas-de-Calais	0.29%
I (96)	Lazio	1.64%	Sud	0.33%
P (97)	Madeira	0.67%	Acores	0.54%
FIN (97)	Manner-Suomi	2.24%	Ahvenanmaa-Åland	0.12%
UK (93)	South East (UK)	1.77%	Northern Ireland	0.53%

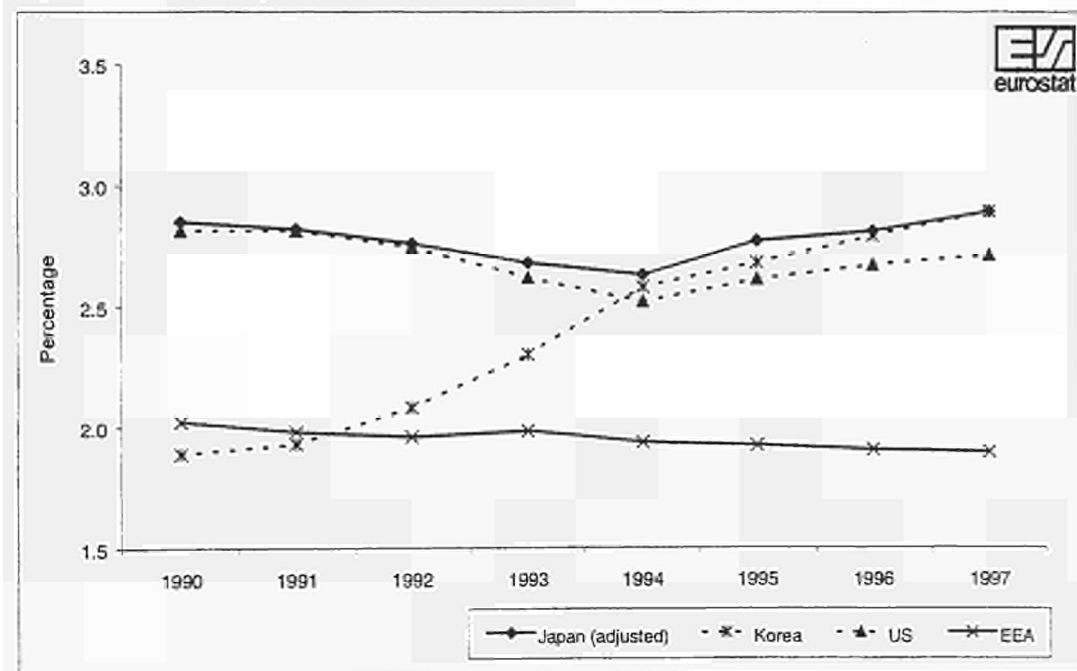
### 2.3. GLOBAL COMPARISONS

The latest available figure shows that the R&D expenditure of the United States in 1997 amounted to 168 BECU, which is approximately 22% higher than that of the EEA total. Both Japanese and Korean R&D expenditure are relatively small in comparison to that of the United States or EEA; however in recent years their average annual growth rate have been higher than that of the United States or EEA.

Once the size of the economy is taken into consideration, it shows that both Japan and Korea are at the forefront of R&D activities and the EEA is lagging behind. Japan and Korea devoted approximately 2.9% of their respective gross domestic product towards R&D expenditure in 1997, whereas only 1.9% of the EEAs' gross domestic product was allocated towards R&D expenditure (Figure 14).


From 1990 onwards, R&D expenditure as a % of GDP of both the United States and Japan declined continuously but since 1994 the R&D expenditure has been on an upward trend, but their respective 1997 ratios are below that of 1990. Korean R&D expenditure as a % of GDP on the other hand increased dramatically over the same period and since 1994 it has been higher than that of the United States. The R&D expenditure of the EEA, as a % of GDP, is far below its major competitors and since 1993 has been on a downturn path.

Figure 14 : R&D expenditure as a % of GDP



Most of the R&D expenditure of the triad is undertaken within the business enterprise sector (BES), followed by the higher education and government sectors. The 1997 BES R&D expenditure (as a % of GDP) of the United States and Japan are some five times larger than that of the higher education sector, whereas for the EEA the ratio is some three times greater (table 14). BES R&D expenditure of the triad has been in decline since 1990 and the largest decrease is observed for the EEA, whose R&D expenditure as a proportion of GDP declined from 1.31% (1990) to 1.19% (1997).

**Table 14 : R&D expenditure (as a % of GDP) by institutional sector**

		1990	1991	1992	1993	1994	1995	1996	1997
<b>All Sectors*</b>	EEA	2.02	1.98	1.96	1.98	1.94	1.93	1.91	1.90
	US	2.81	2.81	2.74	2.62	2.52	2.61	2.67	2.71
	JP	3.04	3.00	2.95	2.88	2.84	2.98	2.83	2.92
	<i>Adjusted</i>	<i>2.85</i>	<i>2.82</i>	<i>2.76</i>	<i>2.68</i>	<i>2.63</i>	<i>2.77</i>	<i>2.81</i>	<i>2.89</i>
<b>Business Enterprise Sector</b>	EEA	1.31	1.26	1.24	1.24	1.21	1.20	1.19	1.19
	US	2.00	2.05	1.98	1.85	1.78	1.88	1.96	2.01
	JP	2.15	2.13	2.03	1.90	1.87	1.94	2.01	2.10
<b>Higher Education Sector</b>	EEA	0.36	0.38	0.38	0.40	0.40	0.40	0.40	0.40
	US	0.43	0.40	0.40	0.41	0.40	0.40	0.39	0.39
	JP	0.53	0.53	0.55	0.58	0.57	0.62	0.42	0.42
	<i>Adjusted</i>	<i>0.35</i>	<i>0.34</i>	<i>0.35</i>	<i>0.38</i>	<i>0.37</i>	<i>0.40</i>	<i>0.39</i>	<i>0.39</i>
<b>Government Sector</b>	EEA	0.33	0.33	0.32	0.33	0.32	0.31	0.30	0.29
	US	0.30	0.28	0.27	0.27	0.25	0.25	0.23	0.22
	JP	0.23	0.23	0.25	0.27	0.26	0.29	0.27	0.26

Source: OECD and Eurostat.

\* PNP included.

1997 R&D expenditure (as a proportion of GDP) by the higher education sector of the United States and Japan are below that of the 1990 level, whereas the EEA's R&D expenditure has been increasing over time and its 1997 figure is above the 1990 level. Government sector R&D expenditure accounts for the smallest share of the three sectors. The general trends for the United States and the EEA have been a downturn path of R&D expenditure (as % of GDP) of this sector whereas Japan has experienced a slight increase.

## 2.4. SPECIFIC DEVELOPMENTS IN THE MEMBER STATES

### BELGIUM

#### R&D expenditure

The results of the 1996 survey for 1994 and 1995 show that gross domestic expenditure on R&D (GERD) in Belgium represented 1.61% of GDP in 1995. Most of this expenditure was by Belgian undertakings (1.09% of GDP). The rate of R&D activity in the business enterprise sector, as a percentage of gross regional products, was highest in the Flemish region, followed by the Walloon and Brussels-Capital regions.

The non-markets sectors in Belgium (public authorities, private non-profit organisations and higher education) accounted for 0.52% of GDP. The rate of R&D activity per region in this sector, as a percentage of gross regional product, was highest in the Brussels-Capital region, followed by the Walloon and Flemish regions.

### SPAIN

#### R&D expenditure

The concentration of R&D expenditure in the Madrid region continued to decline. While, in 1987, Madrid accounted for 45% of the total Spanish R&D expenditure, by 1997 it had declined to 32%.



This decrease is observed both in the business enterprise sector (following the privatisation of the former State-owned enterprises, which pursued R&D in the capital) and in the government sector. The decrease in the government sector is not real but the result of better regional distribution of public resources for R&D.

Catalonia's share of R&D expenditure (20%) has remained virtually stable over the last ten years. Regions with a comparable ranking are Andalusia (10% of total expenditure on R&D) and the Basque Country (9%).

Within each autonomous Community, however, the operators are different. Thus, in Madrid in 1997, 52% of R&D was conducted by BES and 27% by the government sector. In Catalonia, most R&D is pursued by BES (63% of Catalan R&D) and universities (24%) sector. In Andalusia, given its sparse industrial fabric, the universities are the driving force behind R&D activity (58% of R&D in Andalusia). In the Basque Country, R&D is particularly concentrated in BES (78% of Basque R&D), while the public sector accounts for a mere 2.7% of R&D pursued in that Community. This peculiar sectoral breakdown in the Basque Country is due to the Basque government's policy of overseeing and financing research companies and associations instead of setting up public regional research bodies.

When regional R&D expenditure is expressed as a proportion of its respective GDP, Madrid still remains the most active region in pursuing R&D activities. In 1996, Madrid allocated 1.80% of its GDP to R&D expenditure, followed by the Basque Country (1.31%) and Catalonia (0.95%). They are the only regions above the national average (0.87%).

Nevertheless, examining the development of the different Autonomous Communities over the period 1987-1996, a greater degree of convergence is observed between the various regions and the national average for R&D. If national expenditure on R&D set against Spain's GDP equals 100, in 1987 eight regions were below 50% of the national average, whereas, in 1996, only four Communities (Balearics, Castilla-La Mancha, Extremadura and La Rioja) fell below half of the national average.

## **FRANCE**

### **R&D expenditure**

Concentration of R&D work in Île de France continues to decline. In 1996, this region accounts for 40.5% of all R&D expenditure (the non-distributed part represents 16.1% of gross domestic expenditure on R&D (GERD)) compared with 43.3% in 1992. A number of sectors contribute to this trend, particularly businesses whose expenditure is decreasing in this region for the second year.

In 1996, the Paris region accounted for 49% of BES R&D (BERD) compared with 51% in 1995. The concentration of R&D activities in Île de France has therefore declined, which is further evidence of the trend observed for several years. In 1995, the region saw, for a second year, its domestic R&D expenditure decreasing in terms of value. Most of the other regions benefit from an increase in the relative share of their R&D expenditure in the national total, but it is mainly in the regions Rhône-Alpes and Provence-Alpes-Côte d'Azur where the share has increased regularly since 1992.

### **R&D personnel**

For publicly funded research, it is preferable to base the calculation on the number of research staff, since the distribution by region of R&D expenditure by universities is not available.

37.6% of the almost 70,000 researchers, researcher-teachers and grant holders in publicly funded research are remunerated in Île de France (excluding Defence and non-profit-making associations). This rate was 39.9% in 1992. This average rate is due to the fact that there are more researchers in the region working for the CNRS group and public bodies (just under half in both cases) than there are researcher-teachers at the universities (a quarter of the staff). The establishment of universities is in fact much more uniform than that of research bodies.

The concentration of R&D staff in the various regions is actually much the same in the public sector as it is in businesses. In both cases, the leading region is Île de France (more than 110,000 R&D

staff), where there is an even greater concentration of business-based researchers (51.1% in this region alone compared with 37.6% for the public sector). The Rhône-Alpes region includes 10.6% of all R&D staff. Provence-Alpes-Côte d'Azur (6.5%) and Midi-Pyrénées (5.1%) come second, followed by Languedoc-Roussillon, Aquitaine and Brittany with 3 to 4% of the staff. These are followed by regions such as Alsace, Pays de la Loire, Lorraine, Nord-Pas-de-Calais, Centre and the Auvergne, each with between 2 and 3% of the total research staff.

## **FINLAND**

### **R&D expenditure**

A total of approximately FIM 17.3 billion was spent on R&D in 1997. From 1995 to 1997, the average annual nominal increase was 16%. The growth in the R&D expenditure continued through 1998, when it is estimated to reach FIM 19.7 billion.

In 1997, the R&D expenditure of enterprises amounted to slightly under FIM 11.4 billion, or two thirds of all R&D expenditure. The enterprises sector experienced a rapid growth in R&D expenditure. From 1995 to 1997, the annual nominal increase was 18%. Enterprises' R&D expenditure is estimated to grow by a further 17% and reach a total of FIM 13.3 billion in 1998.

In 1997, the R&D expenditure of universities and central university hospitals amounted to FIM 3.4 billion, i.e. one fifth of all R&D expenditure. The R&D expenditure of the rest of the public sector amounted to FIM 2.4 billion.

Finnish R&D expenditure as a proportion of GDP has continuously been increasing since 1987. In 1997, 2.8% of the GDP was allocated to R&D activities as compared to 1.8% in 1987. The proportion of GDP allocated to R&D expenditure is expected to reach 3% by 1998.

In 1997, Finnish enterprises accounted for 61% of all R&D financing. This is 6% points more than in 1993. From 1993 to 1997, the proportion of foreign financing has increased even more, and has gone up from 1.8% to 5.4%. This is mainly attributable to growing EU financing.

In the electrical industry, R&D spending in 1997 amounted to a total of FIM 5.4 billion, which is nearly one half of all the R&D expenditure of enterprises. The annual nominal growth of R&D expenditure in the electrical industry is estimated to continue at 27% in 1998, which will raise the total R&D expenditure of this branch to approximately FIM 6.8 billion.

In the metal and engineering industry, R&D expenditure increased from FIM 1.3 billion to FIM 1.7 billion between 1995-97. R&D expenditure in the chemical industry totalled FIM 1.2 billion in 1997, with the annual nominal growth between 1995-97 amounting to an average of 4%.

### **R&D personnel**

In 1997, enterprises employed in R&D a total of 29,100 persons, who produced a total of 22,300 FTE. Compared with 1995, the number of R&D personnel increased by 20%, while FTE went up by 25%.

## **UNITED KINGDOM**

### **R&D expenditure**

In 1997, GBP 9.6 billion was spent on R&D performed within UK Businesses - a rise of 2% at current prices compared with the revised 1996 total. In real terms (using the GDP deflator) expenditure decreased by 1% and in 1997 represented approximately 1.2% of GDP.

The South East remained the area with the largest R&D expenditure within the Business Enterprise Sector, with 31% of the UK total of GBP 9,553 million. The second largest region was East Anglia with 24% of the UK total. In comparison, the areas with the smallest R&D expenditure in England were the North and also Yorkshire & Humberside. These regions represented 2% and 3% of the UK total, respectively.

The product group with the largest R&D expenditure was pharmaceuticals; expenditure in 1997 was GBP 2,151 million, 23% of all spending. Other major product groups were motor vehicles and parts accounting for GBP 963 million (10%) and aerospace GBP 893 million (9%).

Funding of R&D in UK businesses by the EU Commission through its schemes to support R&D in the European Union amounted to GBP 117 million in 1997. Other funding from overseas (i.e. excluding funds from the EU Commission) was GBP 1,739 million. Funding from the UK Government was GBP 927 million. Funding of R&D from businesses own funds was GBP 6,103 million in 1997 (64% of the total).

## **NORWAY**

### **R&D expenditure**

According to the latest survey Norwegian gross domestic expenditure on R&D (GERD) amounted to NOK 18,187 million in 1997, representing 6.5% increase from 1995 (at constant prices). Thus, Norwegian GERD makes up 1.68% GDP, which is a slight decrease from 1995 (1.71%).

Almost half of the Norwegian GERD in 1997 was performed in the central eastern part of Norway, i.e. in the capital, Oslo, and adjacent areas. The largest university and several large enterprises and government institutes are located here. Western Norway and Trondelag account for 12% and 13% respectively. The Trondelag share is mainly made up by the Technical University of Norway and the SINTEF Group. In the other end, the three northernmost counties account for only 5% of GERD.

Business enterprise expenditure R&D (BERD) accounted for 57% of Norwegian GERD in 1997, while the Higher Education and Government sectors held shares of 27% and 16% respectively.

## **2.5. STANDARD DEFINITIONS AND EXPLANATORY NOTES**

### **The standards used**

The basic methodological recommendations for R&D statistics are given in the "Proposed Standard Practice for Surveys of Research and Experimental Development – Frascati Manual" (OECD, 1994). This manual deals exclusively with the measurement of R&D "input". The regional aspects of R&D and innovation statistics are covered by "The Regional Dimension of R&D and Innovation Statistics – Regional Manual" (Eurostat, 1996). The following definitions are mainly derived from these manuals. In principle, the R&D data in this publication are being collected in line with these recommendations. The basic data are collected by the relevant authorities in the MS (National Statistical Offices, Research Councils, and Ministries responsible for R&D). These data are transmitted to Eurostat where the data are checked, transformed, and where the derived indicators are calculated.

## **Research and Development – R&D**

Research and experimental development (R&D) comprise creative work undertaken on a systematic basis in order to increase the stock of knowledge, including knowledge of man, culture and society and the use of this stock of knowledge to devise new applications (Frascati Manual, § 57). This term covers three activities: basic research, applied research, and experimental development.

### **Measures for R&D input**

According to the recommendations of the Frascati Manual and the Regional Manual, the following indicators for R&D input statistics are compiled in this publication:

- Government budget appropriations or outlays on R&D – GBAORD
- R&D expenditure
- R&D personnel

### **Comparability problem**

Although the R&D expenditures and R&D personnel data are collected by surveys which follow the guidelines and definitions outlined in the Frascati manual, the data are not completely comparable. Differences in interpreting the definitions, utilisation of different survey methodologies and peculiarities of national R&D systems.

R&D personnel problems occur mainly with calculations of full-time equivalent (FTE). In order to collect the FTE for certain employee groups such as R&D managers or graduate staff, the proportion of work undertaken on R&D has to be estimated for each individual, and the methods of estimation may differ from one country to another.

### **Full-time equivalent – FTE**

An FTE may be thought of as one person-year. Thus, a person who normally spends 30% of his or her time on R&D and the rest on other activities (e.g. teaching, administration or student counselling) should be counted as 0.3 of an FTE. Similarly, if a full-time R&D worker is employed by an R&D unit for only 6 months, he or she is counted as 0.5 of an FTE.

### **Head Count – HC**

HC data measure the total number of persons who are mainly or partially employed on R&D. This allows links to be made with other series of data (education, employment). In this publication, HC data are used to calculate the more comparable derived indicator “R&D personnel as a percentage of labour force”. Not all countries collect R&D personnel in HC. In this case, the HC data are estimated by Eurostat.

### **Breakdown by institutional sector**

Both intramural R&D expenditure and R&D personnel are broken down by institutional sector, i.e. the sectors in which the R&D is performed are specified. Four sectors are relevant in the context of this publication where indicators for R&D performance are compiled: the business enterprise sector, the government sector, the higher education sector, and the private non-profit sector.<sup>5</sup>

#### *Business enterprise sector – BES*

In the field of R&D the business enterprise sector includes (Frascati Manual, § 145):

- all firms, organisations and institutions whose primary activity is the market production of goods and services (other than higher education) for sale to the general public at a price intended approximately to cover at least the cost of production;
- the private non-profit institutes mainly serving them.

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<sup>5</sup> In other publications (e.g. by OECD) where data are also compiled by source of funds the sector “abroad” is also relevant.

### *Government sector – GOV*

In the field of R&D the government sector includes (Frascati Manual, § 168):

- all departments, offices and other bodies which furnish but normally do not sell to the community those common services (other than higher education) which cannot otherwise conveniently and economically be provided, and those which administer the state and the economic policy of the community (public enterprises are included in the business enterprise sector);
- the private non-profit institutes controlled and mainly financed by government.

### *Higher education sector – HES*

In the field of R&D, the higher education sector includes (Frascati Manual, § 190):

all universities, colleges of technology and other institutes of post-secondary education, whatever their source of finance or legal status. It also includes all research institutes, experimental stations and clinics operating under the direct control of or administered by or associated with a higher education establishment.

### *Private non-profit sector – PNP*

In the field of R&D the private non-profit sector includes (Frascati Manual, § 178):

- non-market, private non-profit institutions serving households (i.e. the general public);
- private individuals or households.

Due to its rather marginal relevance, there are no tables compiled for the PNP. The difference between the total of sectors and the sum of BES, GOV, and HES equals the PNP. For some countries, the PNP is included in the GOV.

## CHAPTER 3: European patent applications

### Introductory remark

Technological change and innovation are important factors for productivity and competitiveness. Within the innovation process, R&D is considered to be one decisive element. Patents are often linked to R&D and can be considered as indicators for R&D output, especially for application-oriented types of R&D. Patents give an indication of the structure and evolution of innovative activities in countries, regions, or industries. Although not all applications are granted, however, each application still represents technical effort by the inventor and is therefore considered to be an appropriate indicator for the inventive potential.

Patents are a means of protecting inventions, which have been developed by enterprises, institutions or organisations, in order to benefit from an invention or innovation. Over the years, many R&D output indicators have been developed, each of which have different characteristics. However, the most commonly used R&D output indicators are based on patents.<sup>6</sup>

Eurostat regional patent applications database contains data from 1989 to 1998. Both 1997 and 1998 data should be considered as provisional. Euro-PCT filings enter the EPO's database at the moment of publication, i.e. 18 months after priority date (Patent Co-operation Treaty –PCT, see below). A large part of the Euro-PCT applications filed in 1997 and 1998 has not been published yet. 1997 data are not fully available before the second half of 1999 and 1998 data will not be fully available until second half of 2000.

### 3.1. PATENT ACTIVITIES IN THE EU

#### EU-15 patent applications in 1998 are 24% above the 1990 level

The numbers of patent applications filed by the EU-15 with the EPO and Euro-PCT (applications in their international phase) have been increasing at a steady rate with the exception of 1991.<sup>7</sup> Since 1990, the EU-15 patent applications have grown at an average annual rate of 2.7% and in 1998, approximately 40,023 patent applications were filed by the EU-15. Figure 15 shows that in spite of a substantial decrease in 1991, the numbers of patent applications in 1998 are some 24% above the 1990 level. The long-term trend of the euro-zone is similar to the EU-15.

#### Germany, the most active Member State in European patent applications

Figure 16 shows the shares of the 1998 EU patent applications of the individual Member States. There are major disparities in the shares of the patent applications between the Member States. Germany clearly stands out from the rest of the EU Member States with its large share of 42.7%

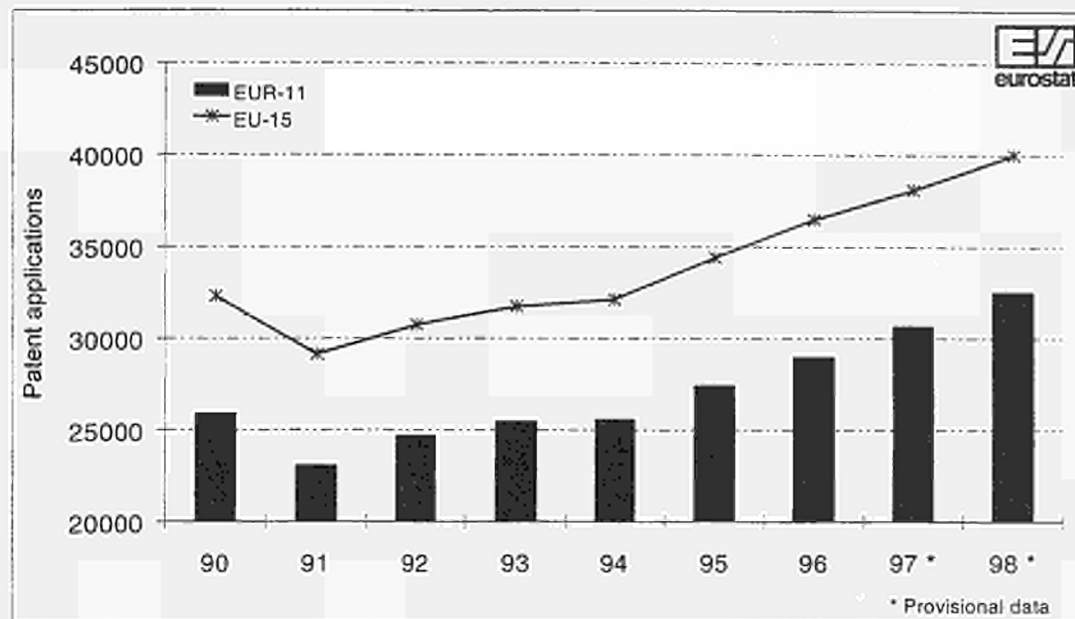
(17,090 patent applications), which is more than the combined total of the other three big EU countries (France, the United Kingdom, and Italy). Germany, France and the United Kingdom are the

<sup>6</sup> There are advantages and disadvantages in using data on patents as a science and technology indicator. The data relating to (European) patent applications in this publication refers to those filed with or designated to the European Patent Office (EPO). Using data from the EPO guarantees the comparability of the data as all applications filed with the EPO follow the harmonised procedure of the European Patent Convention (see below). Furthermore, due to the efforts and costs involved with patenting, the economic weight of the patent applications is guaranteed to a large extent. On the other hand, there are differences in the propensity to patent across enterprises, branches, and countries. Other means to reap market success from an invention, such as secrecy, rapid launching or low prices, also exist. For instance, in areas where developments change rapidly, patent protection may be of little value because inventions quickly become obsolete. Furthermore, not all inventions can apply for patent protection, for example, computer software. The requirement of novelty for the granting of patents means that although the indicators are particularly appropriate for advanced countries, they may not adequately portray technological activity in less developed countries and regions.

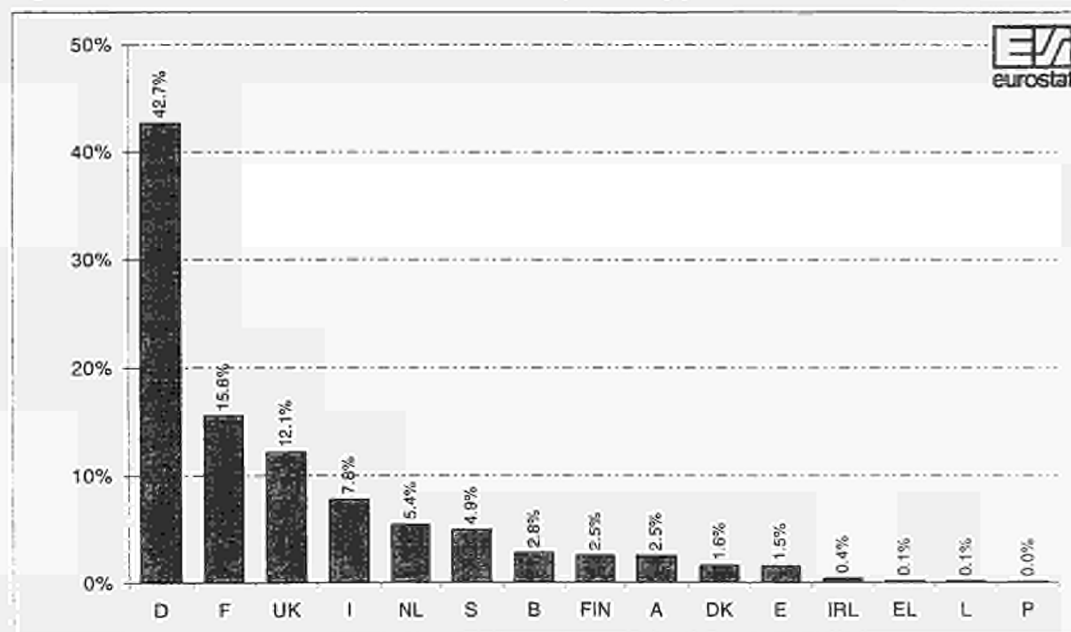
<sup>7</sup> The decrease in the number of patent applications in 1991 can be explained to a large extent by an increase in EPO fees on January 1, 1991 which led to a rush of applications in the previous year.

three dominant countries in EU patenting. In 1998 they accounted for 70.4% of the EU total. However their 1998 shares are lower than their respective 1990 shares, which is in contrast to the performance of the rest of the EU Member States.

**Figure 15 : Trends of the EU patent applications (EPO), 1990-98**



**Figure 16 : Member States share of the EU patent applications at EPO, 1998**



Average annual growth rates of patent applications (figure 17) of most EU countries are well above that of the EU-15 average. Between 1990 and 1998 Portugal (17.8%) recorded the largest increase in patent applications, followed by Spain (10.4%) and Finland (8.9%). In contrast, the growth rates of the big three large EU Member States (France, Italy and UK) are below the EU average. Low patenting countries such as Spain, Ireland and Finland have performed exceptionally well during the 1990-98 period. In 1990 Portugal and Spain accounted for a mere 0.02% and 0.87% of the EU patent applications, but they achieved high annual growth rates over the 1990-98 period. In contrast Germany, France and the United Kingdom accounted for 42%, 17% and 15% of EU patent applications, but their growth rates were a mere 2.8%, 1.6% and 0.3% respectively.

Figure 17 : Average annual growth rates of patent applications at EPO, 1990-98

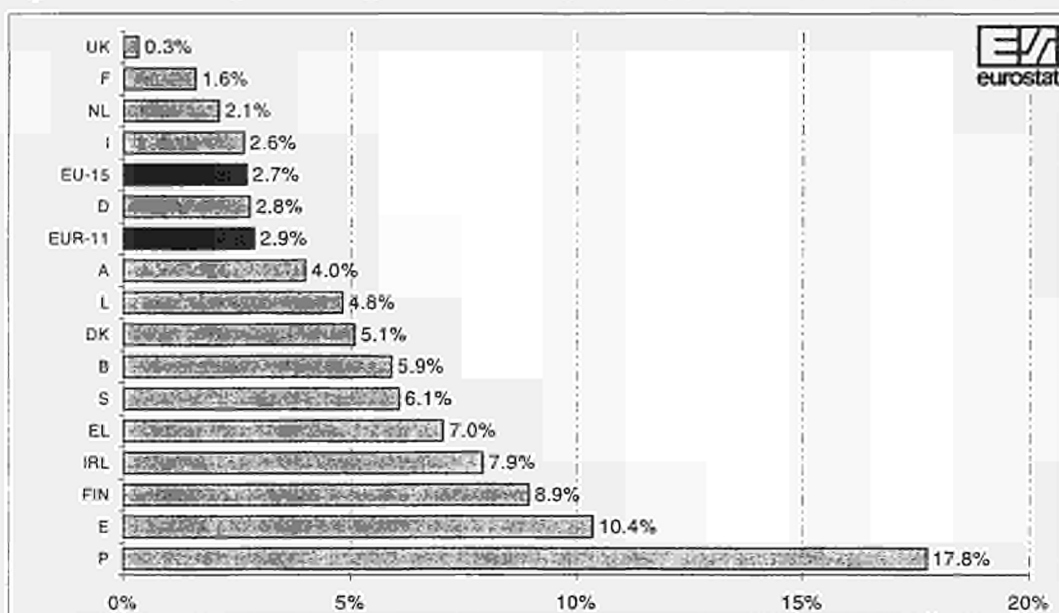


Table 15 : Ranking (number) of patent applications in 1998

Country/Region	Rank	Number of patent applications per MLF	Rank	Number of patent applications
S	1	453	6	1 977
D	2	420	1	17 090
FIN	3	400	8	998
NL	4	285	5	2 167
L	5	276	14	48
B	6	262	7	1 106
A	7	262	9	997
F	8	246	2	6 227
DK	9	223	10	629
UK	10	169	3	4 850
I	11	136	4	3 104
IRL	12	94	12	144
E	13	38	11	618
EL	14	12	13	50
P	15	4	15	20
EU-15	-	234	-	40 023
EUR-11	-	249	-	32 517

Note: 1998 Patent applications per million labour force indicator is an Eurostat estimation.

### 234 European patent applications per million labour force were filed by the EU in 1998

Analysing patent applications in terms of absolute numbers may not give an unbiased indication of patenting activities of the EU Member States. For a more comparable portrait of patent activities data are expressed in terms of per million labour force (MLF) and per million population (MP). Ranking of the European patent applications in terms of labour force and population are almost identical.



Comparing the ranking in terms of labour force rather than absolute numbers depicts a different picture for the high patenting countries, but for the low patenting countries the ranking remains the same. Sweden (453, MLF) is the most active EU Member States, followed by Germany (420, MLF) and Finland (400, MLF). The ranking of France declined from second to eighth, although its' 1998 figure (246 MLF) is above the EU-15 average. In contrast, the UK declines from third position to tenth and its recorded figure (169 MLF) is well below the EU-15 average (see table 15).

### 3.2. PATENT APPLICATIONS BY IPC SECTIONS

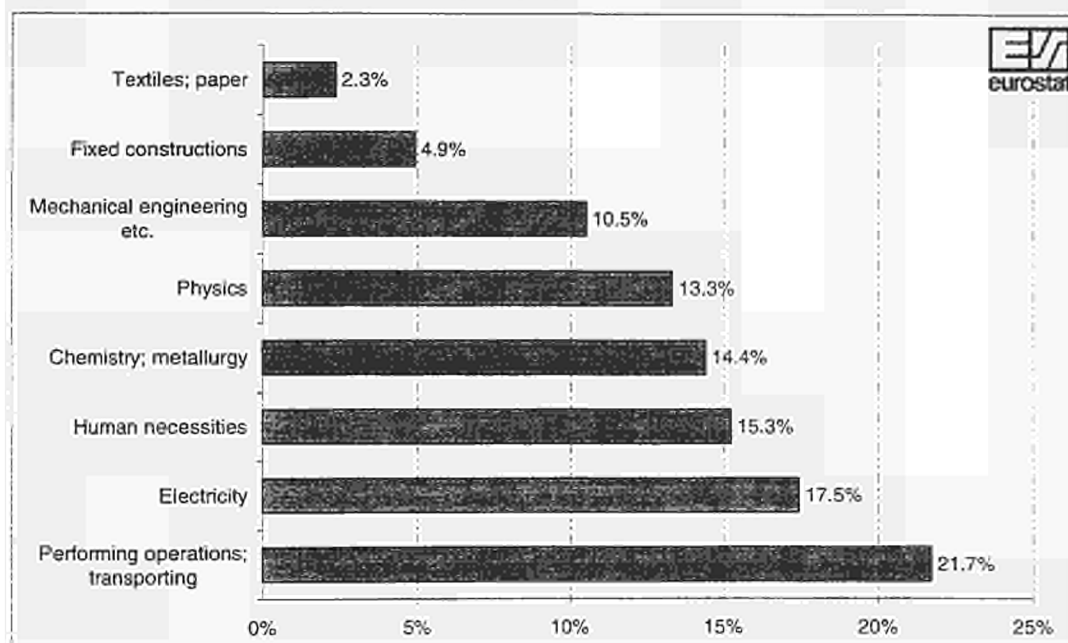
The International Patent Classification (IPC) is used to classify patent applications by field of technology. The IPC divides all technological fields into eight sections. To a considerable extent, the IPC employs the principle of classifying inventions according to their intrinsic nature (the functional-oriented), rather than their possible applications.

#### Performing operations & Transporting (21.7%) is still the dominant sector

In 1998 the largest numbers of patent applications filed by the EU-15 appear in Performing Operations & Transporting, followed by Electricity and Human Necessities section. Patenting activities of the EU-15 in the Chemistry & Metallurgy also appear quite strong; in contrast, Fixed Constructions and Textiles & Paper sectors account for a relatively small proportion of the EU total (figure 18).

Shares of each IPC-sectors have remained more or less stable since 1990. At individual EU country level, most EU Member States filed the largest proportion of their patent applications either for the human necessities section or for the performing operations transport section. The exceptions being the Netherlands, Finland and Sweden, whose largest share was accounted by the electricity section. The share of the patent applications accounted by the largest IPC section varies from 40% (Luxembourg and Finland) to 18% (Belgium and the United Kingdom).

Figure 18 : EU patent applications (EPO) by IPC sections, 1998



### 3.3. REGIONAL DISTRIBUTION OF THE EU PATENT APPLICATIONS

#### Introductory remark


To obtain an indication of the regional potential of innovation within the EU, the regional distribution of the patent applications is assigned according to the address of the inventor, i.e. the inventor's place of residence. This approach follows the methodological recommendations as given in "The Regional Dimension of R&D and Innovation Statistics – Regional Manual" (Eurostat, 1996). The assignment by the inventor's place of residence has been chosen in order to measure the inventive capacity of a region in contrast to the regional R&D performance.<sup>8</sup>

#### Baden-Württemberg filed for 794 patent application per MLF in 1998

There are significant disparities in the patenting activities between EU regions even within a country. In terms of absolute patenting numbers, the five most active regions (NUTS level 1) accounted for around 38% of the total EU-15 patent applications. German regions tend to be dominant force in European patenting (four German regions in the top five). Of the five leading regions, Bayern recorded the largest average annual growth rate (4.5%), whereas Île de France (the only non German region in the top five) recorded the smallest growth rate (0.9%) between 1990-98.

For a more comparable regional portrait, patent applications are expressed in terms of per million labour forces (MLF), which show a similar picture of the German regions (four German regions in top five – see table 16).

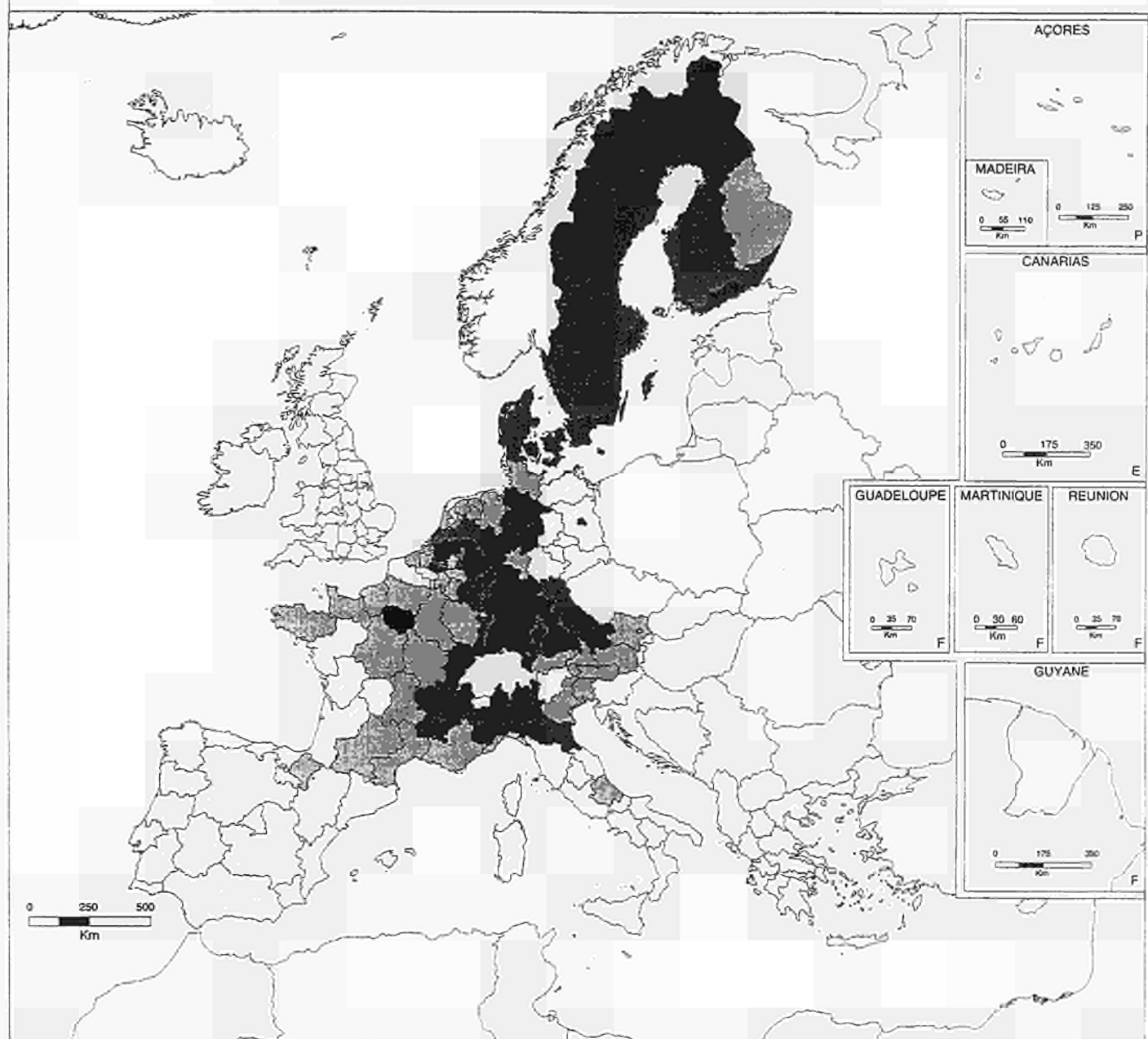
**Table 16 : The five most active patenting regions in 1998 (patent applications per MLF)**

 Region	Country	Rank	No. of patent applications / MLF	Rank	No. of patent applications
Baden-Württemberg	D	1	794	2	4 018
Bayern	D	2	677	1	4 071
Zuid-Nederland	NL	3	583	10	985
Hessen	D	4	563	5	1 611
Rheinland-Pfalz	D	5	495	11	904

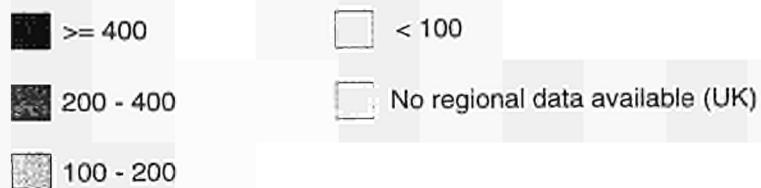
Large regional disparities for patent applications within individual EU Member States also exist. Este is the most active Spanish region (66 patent applications per MLF), but in comparison to Baden-Württemberg, it is approximately twelve times less active. The propensity to patent between the most active and least active regions within individual countries varies from a factor of 23.3 (Germany) to 1.6 (Austria).

<sup>8</sup> The regional R&D performance could be indicated by allocating the patents to the region of the institution in which R&D is performed and where inventions are developed. However, for institutions with several branches located in different regions, patent applications are generally filed through the headquarters and, therefore, an over-estimation in favour of the region of the headquarters could be expected. The approach used here avoids this. However, some underestimation of the regional potential of innovation is still possible, as not every inventor will register under the address where he is resident but rather the address of his enterprise or institution. If one application has more than one inventor, the application is divided equally among the inventors and therefore subsequently among the regions. This might lead to some over- or underestimation of some regions as the different contributions of several inventors cannot be considered to have the same weight. In this report, only applications with at least one inventor having his place of residence within the EU are considered. Shares of applications assigned to inventors with an address outside the EU are disregarded.

# Regional European patent applications \*



European patent applications per 1 million labour force per region (NUTS 95 level 2)




\* 1996 data.

Statistical data: Eurostat, A4.  
Cartography and geographic information management: Eurostat A4, based on GISCO - 7/99.



**Table 17 : Regional disparities within Member States (patent applications per MLF, 1998)**

 eurostat	Most active region	Number	Least active region	Number
B	Vlaams Gewest	293	Region Wallonne	191
D	Baden-Württemberg	794	Mecklenburg-Vorpommern	34
E	Este	66	Canarias	10
F	Île de France	470	Nord-Pas-de-Calais	86
I	Lombardia	282	Sardegna	13
NL	Zuid-Nederland	583	Noord-Nederland	126
A	Westösterreich	321	Ostösterreich	205
FIN	Manner-Suomi	400	Ahvenanmaa-Åland	28

### 3.4. STANDARD DEFINITION AND EXPLANATORY NOTES

#### Overview on the database used for patent application statistics

The data on patent applications compiled in this publication is an extraction from the database of the European Patent Office (EPO). The criteria used for the data extraction refer especially to the regional potential for innovation. Therefore, the national totals of European patent applications presented in this report are somewhat different from those presented in the EPO's annual report.

#### Differences of definition between statistics on European patent applications presented by the EPO and by Eurostat

A short overview of the differences of definition between the statistics on European patent applications compiled in this publication and the statistics on European patent applications presented in the EPO's Annual Report is given below.

As already mentioned, Eurostat's regional statistics refer to applications filed directly under the European Patent Convention or to applications filed under the Patent Convention Treaty and designating the EPO (Euro-PCT). Applications are counted according to the date of filing. The EPO annual report presents statistics on applications filed directly under the European Patent Convention, counted according to the date of filing, and applications filed under the Patent Convention Treaty counted according to the date of filing or according to the date of entrance in the regional (European) phase.

According to the regional statistics, a patent application is allocated to the region where the inventor is resident. If one application has more than one inventor, the application is divided equally among the inventors and subsequently among the regions (fractional counting). This allocation procedure is different from the one used for the EPO's report, where the statistics are recorded by the country of residence of the first applicant. The entire application is assigned to the first applicant.

The data on European patent applications contain information on the field of technology by the IPC. Eurostat statistics divide an application among all IPC-subclasses indicated (fractional counting). The EPO statistics are different. Here, one application is fully counted in the first subclass indicated.

#### The patent application procedure

There are different ways to file a patent application. Usually, a patent application is initially filed with the national patent office of the country in which the inventor's laboratory or company is located. The patent application is then provisionally protected until examination of the application is complete, and the patent is either granted, rejected or withdrawn.

For various reasons, it could be worthwhile to apply for patent protection in other countries as well. Within one year, the same invention can also be filed in other countries. This can either be done by filing for a patent in each desired country, or by filing a regional application (e.g. with the EPO), or by filing an international application (under the Patent Co-operation Treaty - PCT) to obtain protection in various countries. The PCT-system is superimposed upon the national and European systems. Therefore, a PCT-application may designate either to national patent offices or to a regional one like the EPO. These so called Euro-PCT filings apply for protection in a set of European countries.

Besides the possibilities outlined above, direct filing for several countries either under the PCT-route or with the EPO (Euro-direct application) is also possible. In all cases, the protection starts from the date of filing the application.

### **Patent applications covered**

The regional statistics refer to applications filed directly under the European Patent Convention or to applications filed under the Patent Convention Treaty and designating the EPO (Euro-PCT). Applications are counted according to the date of filing.

### **Coverage**

Data on patent applications are compiled for all 15 EU countries that were Member States of the European Patent Convention in 1998.

Filings are indicated yearly from 1990 to 1998. The 1998 figures should be considered as provisional. Euro-PCT filings enter the EPO's database at the moment of publication, i.e. 18 months after priority date (Patent Co-operation Treaty - PCT, see below). A large part of the Euro-PCT applications filed in 1998 have not been published yet. 1998 data are not fully available before the second half of 1999.

### **Classification of patent applications**

The applications are classified according to the International Patent Classification (IPC, see below). Usually, one application is assigned to more than one IPC-code. The most detailed reference class for our purposes is at subclass level. If more than one subclass is mentioned, the application is divided equally between all indicated subclasses.

#### *IPC – International Patent Classification*

The International Patent Classification (IPC) is a retrieval system for inventions claimed in patent documents. The classification is designed so that each technical object to which a patent relates can be classified as a whole. A patent may contain several technical objects and therefore be designated to several IPC-classes. The IPC-class indicates the field of technology. An invention is assigned to an IPC-class by its function or intrinsic nature, or by its field of application. IPC is therefore a combined function-application classification system in which the function takes precedence. Its structure is tiered into sections, classes, subclasses, groups and subgroups.

### **PCT – Patent Co-operation Treaty**

The PCT allows for a filing of an international application to have the same effect as a national application in each of the contracting countries designated in the application. However, patents are still granted nationally. The PCT system is superimposed upon the national and European systems. In PCT-applications, the applicant may either designate a country, or a regional office such as the European Patent Office (EPO). These so called Euro-PCT filings may then apply for protection in a number of European countries.

For a patent application filed under the Euro-PCT route, two phases are identified - the *international phase* and the *regional (European) phase*. During the international phase, a search is carried out and, on the request of the applicant, a preliminary examination can be done. Eighteen months after priority date (the date of the very first filing), the application is published, and two to three years after the priority date (one to two years in most of the cases), the application, if not withdrawn, enters the

regional (European) phase. Here, formal search and substantive examination are undertaken, ending with the application being either granted, refused, or withdrawn by the applicant.

### **European Patent Convention (Munich Convention)**

The European Patent Convention, signed in Munich in October 1973, establishes a uniform patenting system for all countries signatory to the Convention. The European patenting procedure consists of two parts; firstly, the search followed by publication of the application, and secondly, the examination which is only conducted after a formal request by the applicant. The applicant can designate as many contracting states as he wants at the moment of filing the application or at the moment the Euro-PCT enters the regional (European) phase. A granted European patent is protected under national law in each of the countries designated in the application.

Twenty-one countries attended the Munich Diplomatic Conference in 1973 on which the Convention is based. Up to 1997, eighteen countries were Member States of the European Patent Convention: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Liechtenstein, Luxembourg, Monaco, Portugal, The Netherlands, Spain, Sweden, Switzerland, and The United Kingdom. In December 1997, the Cypriot parliament approved the country's accession to the EPC and since April 1998 Cyprus has been the nineteenth country of the organisation. Norway has signed the Convention but not yet ratified it. On November 1997 the former Yugoslav Republic of Macedonia became the sixth country to join the extension system after Albania, Latvia, Lithuania, Romania and Slovenia.

**PART B:**

**TABLES AND NOTES RELATING TO THE TABLES**

## NOTES RELATING TO THE TABLES

### T.1. TABLES ON GOVERNMENT R&D APPROPRIATIONS

Because of national revisions, some of the data shown for government R&D appropriations deviate from the figures in previous issues of this publication. Even in the case of derived indicators there are differences compared with previous issues, since the values of the reference parameters, such as the implicit GDP price index or the volume of the central government budget, have been revised for at least some countries and years. In interpreting the tables, some (national) peculiarities still have to be borne in mind, and the most important of these are indicated below.

- Denmark: Up until 1992, GBAORD data also contain some non-government resources. This has been changed in 1993. The effects of this methodological change are not known, but comparison of the data for the period before 1992 with the data from 1993 should be treated with caution. Data by NABS are being translated from the NORDFORSK chapters; therefore, the data cannot be divided into NABS-subchapters. GBAORD on Biotechnology, Information Technology, and on Developing Countries are underestimated as it is not always possible to separate all funds devoted to these objectives.
- Germany: As a result of the unification and the restructuring of the research landscape afterwards, there are breaks between 1990 and 1991 (final budgets) as well as 1991 and 1992 (provisional budgets) in the time series for government R&D appropriations. Another break in series occurs between 1995 and 1996 (final budgets) and 1996 and 1997 respectively (provisional budgets). This refers mainly to methodological improvements of the allocation of funds to and within NABS chapter 7, 10, and 12. The negative value in NABS chapter 12 is explained by a budgetary correction.
- Spain: Up until 1993, government R&D appropriations on general university funds have been estimated by applying a figure of 16% of total university budgets. This factor has been adapted in several steps to bring it closer to reality (20% in 1994, 25% in 1995). For 1997, "Energy" (NABS 5) includes the Spanish contributions to CERN.
- France: There is a break in series between 1991 and 1992. The figures for the period up until 1991 are not fully comparable with those of the following years because of two reasons: An improved methodology for compiling GBAORD data has been introduced, and the legal status of the France-Télécom and the GIAT industries has been changed.
- Ireland: The figures for government R&D appropriations in Ireland contain some non-government resources.
- Austria: Data on R&D appropriations are collected according to the OECD classification and translated to NABS; therefore, the data cannot be divided into NABS-subchapters.
- Finland: As a result of changes in methodology, there are breaks in the time series for Finland between 1990 and 1991 (due to the inclusion of pension fees in the labour costs), and between 1994 and 1995 (since 1995, universities and research organisations have to pay a rent for government buildings which was not the case before). Data on R&D appropriations are collected according to the OECD classification and translated to NABS, therefore the data cannot be divided into NABS-subchapters.
- Sweden: The methodology for measuring government R&D appropriations in Sweden has been subject to annual changes since 1991, so that a comparison of the data from 1990 to 1994 should be treated with caution. Up until 1994, the Swedish budgetary year refers to the period July - June. In 1995/96, the budgetary year has been changed to the calendar year (January - December). Due to this change, the budgets for 1995 and 1996 are estimations based on the budget for the period July 1995 until December 1996. The 1997 budget has not been analysed; therefore, the analyses of the 1998 provisional budget are compiled in the tables. Data on R&D



appropriations are collected according to the NORDFORSK classification and translated to NABS and therefore the data cannot be divided into NABS sub-chapters.

- UK: The budgetary year for central government differs from the calendar year.
- Norway: Data on R&D appropriations are collected according to the NORDFORSK classification and translated to NABS and therefore the data cannot be divided into NABS sub-chapters.
- United States of America: Because of differences in methodology, the figures for the United States of America are systematically underestimated, so that comparisons with other countries should be treated with caution. For instance, they contain no data on expenditure on general university funds and no capital expenditure.
- Japan: The figures for Japan are estimates made by the OECD Secretariat and recognised as official data by the Japanese Government. They underestimate expenditure on the social and human sciences and are thus only to some extent comparable with the data for other countries.
- European Commission: The European Commission's budgets for R&D do not include the European Development Fund's resources for technological research. These funds are shown in the national budgets of the Member States of the EU. Moreover, there is a break between 1989 and 1990 in the time series for the final budgets of the European Commission, since from 1990 onwards the *pro rata* administrative costs are no longer included in the data. An improved methodology has been adopted for the Fourth Framework Programme (1994-1998) data which allows for the distribution by NABS sub-chapter of data previously included in chapter 12 and the sub-chapters for General Research.

## T.2. TABLES ON R&D EXPENDITURE

Because of national revisions, some of the data shown for intramural R&D expenditure deviate from the figures in previous issues of this publication. Even in the case of derived indicators, there are differences compared with previous issues where the values of reference parameters have been changed. In interpreting the tables, some national peculiarities still have to be borne in mind, and the most important of these are indicated below.

- Belgium: The R&D expenditure of the "Centres Sectoriels de Recherche Collective", a subsector of the business enterprise sector, could not be disaggregated to regional level up until 1993. It should also be noted that up until 1993, no figures were available for public undertakings in Belgium. However, from 1994 on, public undertakings do make part of the BES.
- Denmark: The delimitation of the government sector in Denmark does not agree entirely with the international methodological recommendations. Not all GOV data can be disaggregated to regions. Moreover, it should be noted that, in the BES, the figures for some regions of Denmark are combined with those of neighbouring regions for data protection reasons.
- Germany: Because of German unification, there is a break in the time series between 1990 and 1991. In general, the R&D expenditure is broken down in accordance with the location of employment of the R&D personnel. As an exception, the GOV data up until 1991 are broken down by the main location of the research institution. In 1992, a new survey concept including additional survey units has been introduced in the GOV; therefore, there is another break in series between 1991 and 1992. The total of GOV expenditure includes R&D expenditure of German research institutions located abroad. From 1992 onwards, data for the PNP are included in the GOV. Not all data can be allocated to regions. Due to modifications of the survey method, there is a break in the HES series between 1994 and 1995.
- Spain: The survey unit in the business enterprise sector is the undertaking. If an undertaking has several establishments in at least two different regions, the intramuros R&D expenditure of the undertaking is allocated to the regions concerned in accordance with the regional breakdown of the personnel. Only in 1986, the R&D expenditure of undertakings was allocated exclusively to the region in which the head office was situated. Part of the R&D expenditure in Spain cannot be

disaggregated to regional level. For the HES from 1992 onwards the personnel costs of technicians and other staff are included, and the estimation procedure for other current and capital expenditure has been improved. Both these changes result in a break in the time series.

- France: Due to the change of the legal status of France Télécom and the GIAT industries, there is a break in the time series between 1991 and 1992 so that comparisons of the figures for the period before and after 1992 should be treated with caution. Not all of the intramuros R&D expenditure (defence sector, some expenditure of the HES) can be disaggregated to regional level.
- Ireland: Regional data in the HES refer to NUTS 92.
- Italy: There is a break in the time series for Italy between 1990 and 1991. Up until 1990 the figures of the BES and the GOV represent the sum of intramuros and extramuros R&D expenditure, but from 1991 onwards only the intramuros R&D expenditure. The pre-1991 data for Italy are thus only partly comparable with those of other countries. The PNP sector does not exist in Italy.
- Austria: Not all data can be disaggregated to the regional level.
- Portugal: 1995 data have been revised. The revision of the data for 1995 is due to all the private non-profit institutes (PNP) which serve the BES have been reallocated to this sector of performance. Data have thus been revised for the PNP and BES in what concerns R&D expenditure and R&D personnel
- Finland: Between 1990 and 1991, there is a break in the GOV and in the HES due to the inclusion of pension fees attached to salaries. PNP data are included in the GOV.
- Sweden: The data of GOV and HES before 1997 refer to the fiscal year (July - June).
- UK: Sufficiently reliable regional data can only be produced at NUTS 1. The regional figures for the government sector are estimated on the basis of the data on R&D personnel in the individual regions. R&D of the National Health Service is included in GOV expenditure since 1991. In 1994, a new methodology has been introduced in the BES to improve the collection of regional data; therefore, no direct comparisons can be made between data up until 1993 and from 1994 onwards. Another methodological change occurred between 1995 and 1996.
- Norway: The regional breakdown is based on a national classification. No regional GDP data are currently available. PNP data are included in the GOV.
- United States of America: The intramuros R&D expenditure of the United States of America is slightly underestimated in comparison to the corresponding figures for other countries (due to differences in methodology). The US methodology is slightly different from the international recommendations. In the business enterprise sector, for instance, depreciation is shown instead of the gross capital expenditure.

### **T.3. TABLES ON R&D PERSONNEL**

In comparison to earlier issues of this publication, there is a marked improvement in the data on which this issue is based. Some figures which previously had to be estimated are now available from surveys, while for others it was possible to improve the estimation procedure - for instance by using national conversion factors for the country in question. Because of these improvements and national revisions, some of the data shown for R&D personnel might deviate from the figures in previous issues of this publication. Even in the case of derived indicators there are differences compared with previous issues where the values of reference parameters have been changed.

In accordance with international recommendations, figures for R&D personnel are indicated not only in full-time equivalent but also in head count. Since information in both measures at the regional level *and* for each sector is only available for a few Member States (Denmark, Greece, Italy, Portugal,

Finland, Norway), the figures for the other countries have to be estimated in one or other of the two measures (full-time equivalent or head count).

The estimation procedure applied is based on sectoral factors for conversion between head count and full-time equivalent. In the case of some countries (Spain, France, Ireland, Sweden, Iceland) these factors can be calculated at national level for at least some sectors and some years, i.e. data are available at national level in both full-time equivalent and head count for these sectors and years. In this case the unknown data for the regions are estimated on the basis of the national factors without further modifications, i.e. it is assumed that the structure of the R&D personnel in the individual regions is the same as the structure in the Member State as a whole.

In all other countries, where sectors or years in which factors for conversion between head count and full-time equivalent cannot even be calculated at national level, the estimates have to be arrived at on the basis of factors for other years or countries. If these factors are missing for some - but not all - years for a particular country, factors from other years are used, i.e. it is assumed that the structures in that country have not changed - or at least not substantially - over the course of time. In those cases in which absolutely no information on the (average) relationship between head count and full-time equivalent is available for a particular country or sector, weighted arithmetic means of the factors for the other (available) countries and years are used. It is assumed that the structures do not differ fundamentally amongst the individual countries. Empirical studies of the data available, in particular from Denmark and Portugal, have shown that this assumption is by no means unrealistic.

In the case of those countries for which only data at national level in full-time equivalent are indicated, the information was taken from OECD sources.

In interpreting the tables, national peculiarities must again be borne in mind, and the most important of these are summarised below.

- Belgium: The R&D personnel of the "Centres Sectoriels de Recherche Collective", a subsector of the business enterprise sector, could not be disaggregated to regional level up until 1993. It should also be noted that up until 1993, no information was available on R&D personnel in public undertakings. However, from 1994 on, public undertakings do make part of the BES.
- Denmark: The delimitation of the government sector in Denmark does not agree entirely with the international methodological recommendations. There are currently no regional labour force data available at NUTS 3 level. This means that, for the Danish regions, no proportions of R&D personnel in the total labour force in the various sectors can be calculated. Some of the R&D personnel in the GOV cannot be allocated to the individual regions.
- Germany: There is a break in the time series between 1990 and 1991 because of German unification. In general, the regional breakdown is done in accordance with the location of employment of the R&D personnel. The GOV data up until 1991 are an exception as they are broken down by the main location of the research institution. In 1992, a new survey concept including additional survey units has been introduced in the GOV, therefore there is another break in series between 1991 and 1992. The total of GOV personnel includes R&D personnel in German research institutions located abroad. From 1992 onwards, data for the PNP are included in the GOV. Not all data can be allocated to regions. Due to modifications of the survey method, there is a break in the HES series between 1994 and 1995.
- Greece: There are duplications in the case of Greece because some R&D personnel are employed in more than one institute.
- Spain: Not all data can be allocated to the individual regions.
- France: The national and the regional data on R&D personnel refer to the personnel "remunerated by" the institutional sector. The total for all regions for the GOV and the HES (and hence the total of all sectors) thus differs from the values normally indicated for France as a whole (e.g. in OECD publications where the national totals are indicated as "working in"). Not all personnel data can be broken down by region (defence sector, some personnel in the HES). Due to the change of the legal status of France Télécom and the GIAT industries, there is a methodological break in the

time series between 1991 and 1992 so that comparisons of the figures for the period before and after 1992 are of very little value.

- Ireland: No regional labour force data are currently available at NUTS level 3. This means that, for the Irish regions, no proportions of R&D personnel in the total labour force in the various sectors can be calculated. Regional data in the HES refer to NUTS 92.
- Italy: The PNP sector does not exist in Italy.
- Austria: Before 1995, no regional labour force data are available. This means that no proportions of R&D personnel in the total labour force can be calculated.
- Portugal: 1995 data have been revised. The revision of the data for 1995 is due to some minor errors that were found in internal data on human resources in R&D in the GOV sector, which have been amended.
- Finland: There is a break in the series of the HES between 1990 and 1991 due to revised time budget coefficients. PNP data are included in the GOV.
- Sweden: Before 1995, no regional labour force data are available. This means that no proportions of R&D personnel in the total labour force can be calculated. Before 1997, the data of the HES and GOV refer to the fiscal year (July to June). Not all data can be broken down by region.
- UK: Sufficiently reliable regional data can only be produced at NUTS 1. The figures for the government sector do not include R&D personnel in the National Health Service and local authorities. In 1994, a new methodology has been introduced in the BES to improve the collection of regional data and, therefore, no direct comparisons can be made between data up until 1993 and from 1994 onwards. This applies also for 1995 to 1996.
- Norway: The regional breakdown is based on a national classification and not on the NUTS. No regional labour force data are currently available. This means that no proportions of R&D personnel in the total labour force can be calculated. PNP data are included in the GOV.

#### **T.4. TABLES ON EUROPEAN PATENT APPLICATIONS**

All data on European patent applications refer to the databases of the EPO. Therefore, the comparability of the data can directly be guaranteed. In this print publication, statistical tables are provided at NUTS level 1 and by IPC-sections. The data at NUTS level 2 and 3 and by IPC-subclasses (4-digit) are available in the CD-Rom version of this publication.

At an operational level, a patent application is assigned to a region by using relation tables from postal codes to NUTS level 3 codes. A new improved regional data processing method has been applied to regionalise the European patent applications data; hence the regional data reported in this publication may differ from the data reported in the previous publications.

Due to the differences in national postal code systems, the following particularities have to be considered:

- Denmark: A unique link between postal codes and NUTS regions does not exist for Denmark, therefore data are only available at the national level.
- Ireland: Due to the lack of postal codes for the whole of Ireland, data can only be provided at national level.
- UK: The UK uses a rather unique system of postal codes. The established relation table for the UK showed a lack of reliability and, therefore, no regional data are currently published.

In national currencies or  
ECU at current prices

		1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1997 <sup>1</sup>	1998 <sup>1</sup>
<b>TOTAL GOVERNMENT R&amp;D APPROPRIATIONS</b>													
EU-15 <sup>3</sup>	Mio ECU <sup>5</sup>	42 760	45 544	48 629	52 735	54 062	53 136	52 711	53 927	55 309	56 483	54 965	56 936
EUR-11 <sup>3</sup>	Mio ECU <sup>5</sup>	33 249	35 517	38 617	42 211	43 866	43 255	42 976	43 868	44 606	44 555	43 164	45 049
CEC	Mio ECU	972	1 216	1 314	1 646	1 762	2 047	2 026	2 298	2 591	2 664	2 570	2 539
B	Mio BEF	28 887	38 976	39 138	41 457	42 344	46 021	47 100	49 266	52 551 <sup>1</sup>	55 918	55 591	59 322
DK	Mio DKK	6 093	6 101	6 058	6 253	5 969	5 751	6 308	7 156	7 550	8 066 <sup>1</sup>	8 066	:
D	Mio DEM	22 258	23 636	25 118	29 450	31 103	31 382	30 932	31 639	32 194	31 312	31 145	31 455
EL	Mio GRD	18 894	28 320	29 712	34 241	35 068	42 992	51 200	78 333	91 712 <sup>1</sup>	:	:	:
E	Mio ESP	171 350	233 414	277 731	297 118	307 576	305 931	316 674	353 503	365 332	406 249	388 011	473 756
F	Mio FRF	81 481	84 455	90 088	93 132	90 381	89 434	89 472	86 537	85 963	85 257	85 920	84 385
IRL	Mio IEP	82	80	80	89	99	111	107	147	160	164	158	181
I	Bio ITL	8 753	8 745	9 681	10 776	12 069	10 763	10 304	10 976 <sup>1</sup>	11 056	12 047	9 906	11 890
NL	Mio NLG	4 304	4 408	4 721	4 659	4 785	4 800	4 852	5 040	5 343	5 802	5 327	5 927
A	Mio ATS	8 912	9 709	10 063	12 121	13 062	14 291	15 851	15 830	15 462	15 589	15 632	16 689
P	Mio PTE	20 412	24 543	36 381	44 823	62 551	66 926	68 023	72 963	87 362	95 562	95 562 <sup>2</sup>	108 543 <sup>2</sup>
FIN	Mio FIM	3 240	3 772	4 239	4 755	4 993	5 240	5 275	5 532	5 582	7 039	7 039 <sup>2</sup>	7 430
S	Mio SEK	13 727	14 602	16 413	18 373	18 464	18 769	18 493	19 578	19 578 <sup>1</sup>	:	:	15 357
UK	Mio GBP	4 476	4 749	4 934	4 995	5 044	5 387	5 200	5 575	5 759	5 892	5 774	5 936
IS	Mio ISK	:	:	:	2 270	1 853	3 046	3 387	3 727	3 814	4 371	4 371 <sup>2</sup>	:
NO	Mio NOK	5 006	5 664	6 188	6 668	7 462	7 548	7 573	7 555	7 939	8 276	8 361	8 688
EEA <sup>4</sup>	Mio ECU <sup>5</sup>	43 410	46 289	49 408	53 598	55 014	54 083	53 656	54 883	56 322	57 569	56 062	58 021
<b>GOVERNMENT R&amp;D APPROPRIATIONS ON CIVIL R&amp;D</b>													
EU-15 <sup>3</sup>	Mio ECU <sup>5</sup>	32 578	34 859	37 530	41 477	43 441	42 984	43 051	44 753	46 041	46 710	45 486	47 680
EUR-11 <sup>3</sup>	Mio ECU <sup>5</sup>	26 473	28 513	31 058	34 782	36 655	36 529	36 312	37 566	38 461	38 553	37 272	39 370
CEC	Mio ECU	972	1 216	1 314	1 646	1 762	2 047	2 026	2 298	2 591	2 664	2 570	2 539
B	Mio BEF	28 694	38 825	38 977	41 371	42 260	45 938	47 014	49 101	52 312 <sup>1</sup>	55 648	55 325	59 065
DK	Mio DKK	6 069	6 076	6 033	6 217	5 933	5 716	6 273	7 120	7 516	8 030 <sup>1</sup>	8 030	:
D	Mio DEM	19 499	20 613	21 734	26 215	27 982	28 708	28 283	28 773	28 991	28 314	28 147	28 711
EL	Mio GRD	18 535	27 745	29 044	33 745	34 556	42 143	50 290	77 351	90 622 <sup>1</sup>	:	:	:
E	Mio ESP	146 516	184 203	223 954	246 885	262 291	267 255	282 936	316 482	325 702	326 710	309 256	331 781
F	Mio FRF	49 071	51 475	55 388	59 532	58 225	59 644	59 888	60 594	60 399	61 392	62 152	63 481
IRL	Mio IEP	82	80	80	89	99	111	107	147	160	164	158	181
I	Bio ITL	7 846	8 151	9 087	9 923	11 217	9 845	9 389	9 990 <sup>1</sup>	10 718	11 516	9 556	11 574
NL	Mio NLG	4 176	4 266	4 564	4 497	4 610	4 631	4 683	4 878	5 173	5 616	5 144	5 747
A	Mio ATS	8 912	9 708	10 061	12 119	13 060	14 291	15 849	15 829	15 461	15 589	15 629	16 688
P	Mio PTE	20 412	24 543	36 381	44 507	62 107	66 725	67 002	72 040	86 250	95 115	95 115 <sup>2</sup>	108 014 <sup>2</sup>
FIN	Mio FIM	3 189	3 713	4 177	4 687	4 917	5 129	5 164	5 417	5 468	6 931	6 931 <sup>2</sup>	7 329
S	Mio SEK	10 434	10 997	12 537	13 353	13 972	14 360	15 001	15 489	15 489 <sup>1</sup>	:	:	14 235
UK	Mio GBP	2 519	2 617	2 779	2 786	2 974	3 097	3 179	3 564	3 616	3 580	3 596	3 589
IS	Mio ISK	:	:	:	2 270	1 853	3 046	3 387	3 727	3 814	4 371	4 371 <sup>2</sup>	:
NO	Mio NOK	4 578	5 233	5 782	6 257	7 043	7 129	7 149	7 125	7 482	7 820	7 891	8 214
EEA <sup>4</sup>	Mio ECU <sup>5</sup>	33 173	35 547	38 258	42 288	44 342	43 880	43 946	45 657	46 999	47 740	46 524	48 709

<sup>1</sup> Provisional.

<sup>2</sup> Final.

<sup>3</sup> Luxembourg not included.

<sup>4</sup> Luxembourg and Liechtenstein not included, Iceland not included from 1988 to 1990.

<sup>5</sup> Current exchange rates.

**Table 2**  
**GOVERNMENT R&D APPROPRIATIONS**

in Mio ECU at current prices  
and current exchange rates

	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1997 <sup>1</sup>	1998 <sup>1</sup>
<b>TOTAL GOVERNMENT R&amp;D APPROPRIATIONS</b>												
EU-15 <sup>3</sup>	42 760	45 544	48 629	52 735	54 062	53 136	52 711	53 927	55 309	56 483	54 965	56 936
EUR-11 <sup>3</sup>	33 249	35 517	38 617	42 211	43 866	43 255	42 976	43 868	44 606	44 555	43 164	45 049
CEC	972	1 216	1 314	1 646	1 762	2 047	2 026	2 298	2 591	2 664	2 570	2 539
B	665	898	922	982	1 018	1 137	1 188	1 278	1 337 <sup>1</sup>	1 380	1 372	1 460
DK	766	758	771	791	764	757	836	976	1 026	1 078 <sup>1</sup>	1 078	:
D	10 730	11 418	12 240	14 360	15 395	16 206	16 072	16 885	16 860	15 940	15 890	15 967
EL	113	158	148	152	142	160	178	259	300 <sup>1</sup>	:	:	:
E	1 245	1 790	2 146	2 313	2 321	2 052	1 993	2 169	2 273	2 449	2 339	2 834
F	11 580	12 024	13 030	13 356	13 197	13 482	13 592	13 262	13 239	12 893	12 998	12 786
IRL	106	103	104	116	130	139	134	178	201	219	210	230
I	5 693	5 789	6 361	7 028	7 564	5 845	5 380	5 153 <sup>1</sup>	5 644	6 244	5 135	6 117
NL	1 843	1 888	2 042	2 016	2 103	2 207	2 248	2 401	2 497	2 624	2 410	2 670
A	611	666	697	840	919	1 049	1 171	1 201	1 151	1 128	1 131	1 205
P	120	142	201	251	358	355	345	372	446	481	481 <sup>2</sup>	538 <sup>2</sup>
FIN	655	799	873	951	860	782	852	969	958	1 197	1 197 <sup>2</sup>	1 242
S	1 895	2 057	2 182	2 457	2 451	2 058	2 018	2 098	2 299 <sup>1</sup>	:	:	1 722
UK	6 736	7 054	6 911	7 125	6 838	6 906	6 702	6 726	7 077	8 511	8 368	8 729
IS	:	:	:	31	25	38	41	44	45	54	54 <sup>2</sup>	:
NO	650	745	779	832	928	908	904	912	968	1 032	1 042	1 026
EEA <sup>4</sup>	43 410	46 289	49 408	53 598	55 014	54 083	53 656	54 883	56 322	57 569	56 062	58 021
<b>GOVERNMENT R&amp;D APPROPRIATIONS ON CIVIL R&amp;D</b>												
EU-15 <sup>3</sup>	32 578	34 859	37 530	41 477	43 441	42 984	43 051	44 753	46 041	46 710	45 486	47 680
EUR-11 <sup>3</sup>	26 473	28 513	31 058	34 782	36 655	36 529	36 312	37 566	38 461	38 553	37 272	39 370
CEC	972	1 216	1 314	1 646	1 762	2 047	2 026	2 298	2 591	2 664	2 570	2 539
B	661	895	919	980	1 016	1 135	1 186	1 274	1 331 <sup>1</sup>	1 373	1 365	1 454
DK	763	755	768	786	760	753	832	972	1 021	1 073 <sup>1</sup>	1 074	:
D	9 400	9 957	10 591	12 783	13 851	14 826	14 696	15 356	15 182	14 413	14 361	14 574
EL	111	155	144	150	140	157	175	255	297 <sup>1</sup>	:	:	:
E	1 065	1 413	1 731	1 922	1 979	1 792	1 780	1 942	2 026	1 969	1 864	1 985
F	6 974	7 329	8 011	8 537	8 502	8 991	9 098	9 286	9 302	9 284	9 403	9 618
IRL	106	103	104	116	130	139	134	178	201	219	210	230
I	5 104	5 396	5 970	6 472	7 030	5 347	4 903	4 690 <sup>1</sup>	5 471	5 969	4 953	5 955
NL	1 789	1 827	1 974	1 946	2 027	2 129	2 170	2 324	2 417	2 540	2 328	2 589
A	611	666	697	840	919	1 049	1 171	1 201	1 151	1 128	1 131	1 205
P	120	142	201	249	355	354	340	367	441	479	479 <sup>2</sup>	536 <sup>2</sup>
FIN	645	786	860	937	847	766	834	949	938	1 179	1 179 <sup>2</sup>	1 226
S	1 441	1 549	1 667	1 785	1 855	1 574	1 637	1 660	1 819 <sup>1</sup>	:	:	1 596
UK	3 791	3 886	3 893	3 974	4 031	3 971	4 097	4 300	4 443	5 172	5 211	5 278
IS	:	:	:	31	25	38	41	44	45	54	54 <sup>2</sup>	:
NO	595	688	727	780	876	858	854	860	912	975	984	970
EEA <sup>4</sup>	33 173	35 547	38 258	42 288	44 342	43 880	43 946	45 657	46 999	47 740	46 524	48 709

<sup>1</sup> Provisional.

<sup>2</sup> Final.

<sup>3</sup> Luxembourg not included.

<sup>4</sup> Luxembourg and Liechtenstein not included, Iceland not included from 1988 to 1990.

In Mio PPS at 1990 prices

	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1997 <sup>1</sup>	1998 <sup>1</sup>
<b>TOTAL GOVERNMENT R&amp;D APPROPRIATIONS</b>												
EU-15 <sup>3</sup>	45 333	46 039	47 074	48 520	48 105	46 511	45 070	45 353	45 198	45 325	43 902	45 104
EUR-11 <sup>3</sup>	35 059	35 862	37 178	38 978	38 887	37 071	35 987	35 790	35 623	35 935	34 638	35 993
B	735	948	922	947	932	975	976	1 006	1 055 <sup>1</sup>	1 108	1 101	1 155
DK	651	620	596	600	561	538	585	652	674	708 <sup>1</sup>	708	:
D	10 457	10 841	11 164	12 597	12 601	12 224	11 770	11 777	11 864	11 463	11 402	11 403
EL	172	226	196	189	168	180	193	269	292 <sup>1</sup>	:	:	:
E	1 671	2 126	2 360	2 355	2 282	2 177	2 165	2 305	2 306	2 512	2 399	2 867
F	12 226	12 254	12 653	12 663	12 021	11 620	11 424	10 891	10 675	10 476	10 558	10 279
IRL	116	107	108	118	128	138	131	179	192	193	186	204
I	6 558	6 164	6 340	6 552	7 013	5 988	5 545	5 620 <sup>1</sup>	5 395	5 725	4 708	5 495
NL	1 910	1 933	2 026	1 943	1 956	1 925	1 911	1 940	2 029	2 154	1 978	2 154
A	625	663	664	771	797	848	916	897	859	853	855	901
P	232	248	326	358	454	455	435	443	513	547	547 <sup>2</sup>	599 <sup>2</sup>
FIN	528	579	615	673	702	719	715	733	733	904	904 <sup>2</sup>	937
S	1 602	1 576	1 628	1 694	1 684	1 668	1 605	1 639	1 623 <sup>1</sup>	:	:	1 245
UK	7 849	7 754	7 475	7 059	6 806	7 054	6 700	7 004	6 987	6 959	6 819	6 850
IS	:	:	:	25	20	32	35	38	38	42	42 <sup>2</sup>	:
NO	565	604	636	669	752	744	748	724	730	741	749	782
EEA <sup>4</sup>	45 898	46 643	47 710	49 215	48 877	47 288	45 854	46 115	45 967	46 107	44 692	45 929
<b>GOVERNMENT R&amp;D APPROPRIATIONS ON CIVIL R&amp;D</b>												
EU-15 <sup>3</sup>	34 360	35 047	36 114	37 979	38 436	37 331	36 557	37 313	37 391	37 423	36 263	37 672
EUR-11 <sup>3</sup>	27 908	28 748	29 874	32 028	32 427	31 287	30 389	30 626	30 762	31 070	29 876	31 361
B	730	944	918	945	930	973	974	1 002	1 051 <sup>1</sup>	1 103	1 096	1 150
DK	649	618	594	597	557	534	581	648	671	704 <sup>1</sup>	704	:
D	9 161	9 454	9 660	11 214	11 337	11 183	10 762	10 710	10 684	10 366	10 305	10 408
EL	169	221	192	186	166	177	190	266	288 <sup>1</sup>	:	:	:
E	1 429	1 677	1 903	1 957	1 946	1 902	1 934	2 064	2 056	2 020	1 912	2 008
F	7 363	7 469	7 779	8 094	7 744	7 749	7 647	7 626	7 500	7 544	7 637	7 733
IRL	116	107	108	118	128	138	131	179	192	193	186	204
I	5 879	5 746	5 951	6 034	6 518	5 478	5 052	5 115 <sup>1</sup>	5 230	5 473	4 541	5 349
NL	1 853	1 870	1 959	1 876	1 884	1 858	1 844	1 878	1 965	2 085	1 910	2 088
A	625	663	664	771	797	848	916	897	859	852	855	901
P	232	248	326	355	451	454	429	437	506	545	545 <sup>2</sup>	596 <sup>2</sup>
FIN	520	570	606	664	692	704	700	717	718	890	890 <sup>2</sup>	924
S	1 218	1 187	1 244	1 231	1 274	1 277	1 302	1 297	1 284 <sup>1</sup>	:	:	1 154
UK	4 417	4 272	4 210	3 937	4 012	4 056	4 095	4 477	4 386	4 228	4 247	4 141
IS	:	:	:	25	20	32	35	38	38	42	42 <sup>2</sup>	:
NO	517	558	594	628	710	703	707	683	688	700	706	739
EEA <sup>4</sup>	34 877	35 605	36 708	38 633	39 166	38 066	37 299	38 034	38 118	38 165	37 011	38 455

<sup>1</sup> Provisional.

<sup>2</sup> Final.

<sup>3</sup> Luxembourg not included.

<sup>4</sup> Luxembourg and Liechtenstein not included, Iceland not included from 1988 to 1990.

# Table 4 GOVERNMENT R&D APPROPRIATIONS BY CHAPTERS OF NABS



In national currencies or ECU at current prices

	EU-15 <sup>2</sup> Mio Ecu <sup>4</sup>	EUR-11 <sup>2</sup> Mio Ecu <sup>4</sup>	CEC Mio Ecu	B Mio BEF	DK <sup>1</sup> Mio DKK	D Mio DEM	EL Mio GRD	E Mio ESP	F Mio FRF	IRL Mio IEP
<b>1997</b>										
1. EXPLORATION AND EXPLOITATION OF THE EARTH	784	627	60	365	110	636	:	8 814	635	1
2. INFRASTRUCTURE AND GENERAL PLANNING OF LAND-USE	869	589	176	481	123	533	:	1 633	553	4
3. CONTROL AND CARE OF THE ENVIRONMENT	1 496	1 209	168	1 210	231	1 100	:	8 778	1 711	2
4. PROTECTION AND IMPROVEMENT OF HUMAN HEALTH	3 307	2 018	197	747	131	1 037	:	20 072	4 595	6
5. PRODUCTION, DISTRIBUTION AND RATIONAL UTILISATION OF ENERGY	1 868	1 714	356	1 568	213	1 101	:	17 702	3 966	0
6. AGRICULTURAL PRODUCTION AND TECHNOLOGY	2 058	1 506	160	1 709	710	845	:	16 298	3 129	33
7. INDUSTRIAL PRODUCTION AND TECHNOLOGY	5 103	4 684	1 007	9 942	842	3 990	:	70 373	3 890	56
8. SOCIAL STRUCTURES AND RELATIONSHIPS	1 393	1 002	86	1 537	619	774	:	2 878	774	10
9. EXPLORATION AND EXPLOITATION OF SPACE	3 514	3 214	49	6 770	234	1 492	:	26 415	9 582	5
10. RESEARCH FINANCED FROM GENERAL UNIVERSITY FUNDS (GUF)	17 529	14 720	-	17 218	2 925	12 049	:	116 704	14 038	35
11. NON-ORIENTED RESEARCH	8 241	6 755	174	11 656	1 892	4 844	:	31 626	16 467	11
12. OTHER CIVIL RESEARCH	547	516	231	2 443	-	-89	:	5 418	2 053	-
13. DEFENCE	9 773	6 002	-	270	36	2 998	:	79 539	23 864	-
<b>TOTAL EXPENDITURE</b>	<b>56 483</b>	<b>44 555</b>	<b>2 664</b>	<b>55 918</b>	<b>8 066</b>	<b>31 312</b>	:	<b>406 249</b>	<b>85 257</b>	<b>164</b>
<b>1998<sup>1</sup></b>										
1. EXPLORATION AND EXPLOITATION OF THE EARTH	786	642	57	383	:	597	:	8 686	740	1
2. INFRASTRUCTURE AND GENERAL PLANNING OF LAND-USE	845	600	143	502	:	536	:	2 919	532	5
3. CONTROL AND CARE OF THE ENVIRONMENT	1 512	1 295	155	997	:	1 096	:	11 357	1 847	2
4. PROTECTION AND IMPROVEMENT OF HUMAN HEALTH	3 220	1 940	181	784	:	1 004	:	21 893	4 661	7
5. PRODUCTION, DISTRIBUTION AND RATIONAL UTILISATION OF ENERGY	1 974	1 846	277	1 513	:	1 128	:	16 764	4 308	0
6. AGRICULTURAL PRODUCTION AND TECHNOLOGY	1 908	1 499	150	1 702	:	849	:	18 434	3 232	19
7. INDUSTRIAL PRODUCTION AND TECHNOLOGY	4 932	4 772	966	11 695	:	3 838	:	71 539	4 826	62
8. SOCIAL STRUCTURES AND RELATIONSHIPS	1 353	1 045	65	2 367	:	805	:	2 534	991	11
9. EXPLORATION AND EXPLOITATION OF SPACE	3 355	3 090	53	6 703	:	1 483	:	25 775	9 208	5
10. RESEARCH FINANCED FROM GENERAL UNIVERSITY FUNDS (GUF)	17 593	15 154	-	17 589	:	12 340	:	120 788	14 415	40
11. NON-ORIENTED RESEARCH	8 212	6 966	215	12 465	:	4 961	:	25 489	17 233	29
12. OTHER CIVIL RESEARCH	552	521	276	2 366	:	76	:	5 603	1 488	-
13. DEFENCE	9 256	5 679	-	258	:	2 744	:	141 976	20 904	-
<b>TOTAL EXPENDITURE</b>	<b>56 936</b>	<b>45 049</b>	<b>2 539</b>	<b>59 322</b>	:	<b>31 455</b>	:	<b>473 756</b>	<b>84 385</b>	<b>181</b>

<sup>1</sup> Provisional (final for Portugal).

<sup>2</sup> Luxembourg not included.

<sup>3</sup> Luxembourg and Liechtenstein not included.

<sup>4</sup> Current exchange rates.



**Table 4**  
**GOVERNMENT R&D APPROPRIATIONS**  
**BY CHAPTERS OF NABS**

In national currencies or ECU at current prices

I	NL	A	P	FIN	S	UK	IS	NO	EEA <sup>3</sup>	
Bio ITL	Mio NLG	Mio ATS	Mio PTE	Mio FIM	Mio SEK	Mio GBP	Mio ISK	Mio NOK	Mio Ecu <sup>4</sup>	
<b>1997</b>										
164	25	277	2 823	81	:	81	-	217	811	1. EXPLORATION AND EXPLOITATION OF THE EARTH
55	231	316	3 089	205	:	99	27	172	891	2. INFRASTRUCTURE AND GENERAL PLANNING OF LAND-USE
294	170	328	4 657	162	:	136	161	264	1 531	3. CONTROL AND CARE OF THE ENVIRONMENT
846	116	479	5 628	558	:	846	251	571	3 381	4. PROTECTION AND IMPROVEMENT OF HUMAN HEALTH
490	194	139	1 494	286	:	41	134	199	1 894	5. PRODUCTION, DISTRIBUTION AND RATIONAL UTILISATION OF ENERGY
267	232	511	12 218	448	:	269	1 000	770	2 167	6. AGRICULTURAL PRODUCTION AND TECHNOLOGY
1 082	703	1 013	8 097	1 924	:	103	110	1 159	5 249	7. INDUSTRIAL PRODUCTION AND TECHNOLOGY
492	122	336	4 708	378	:	115	1 989	627	1 496	8. SOCIAL STRUCTURES AND RELATIONSHIPS
1 054	206	3	569	177	:	164	-	217	3 541	9. EXPLORATION AND EXPLOITATION OF SPACE
5 465	2 677	10 105	39 166	1 861	:	1 033	-	3 065	17 912	10. RESEARCH FINANCED FROM GENERAL UNIVERSITY FUNDS (GUF)
1 309	648	2 057	7 940	851	:	671	700	559	8 319	11. NON-ORIENTED RESEARCH
-	292	24	4 725	-	:	22	-	-	547	12. OTHER CIVIL RESEARCH
531	186	0	447	108	:	2 312	-	457	9 830	13. DEFENCE
<b>12 047</b>	<b>5 802</b>	<b>15 589</b>	<b>95 562</b>	<b>7 039</b>	<b>:</b>	<b>5 892</b>	<b>4 371</b>	<b>8 276</b>	<b>57 569</b>	<b>TOTAL EXPENDITURE</b>
<b>1998<sup>1</sup></b>										
190	29	295	3 343	95	191	84	:	238	:	1. EXPLORATION AND EXPLOITATION OF THE EARTH
75	211	329	3 658	213	912	97	:	172	:	2. INFRASTRUCTURE AND GENERAL PLANNING OF LAND-USE
408	163	359	5 513	166	130	137	:	284	:	3. CONTROL AND CARE OF THE ENVIRONMENT
671	136	436	6 664	562	144	859	:	595	:	4. PROTECTION AND IMPROVEMENT OF HUMAN HEALTH
592	184	99	1 769	476	666	36	:	215	:	5. PRODUCTION, DISTRIBUTION AND RATIONAL UTILISATION OF ENERGY
220	224	533	14 466	465	275	257	:	787	:	6. AGRICULTURAL PRODUCTION AND TECHNOLOGY
964	783	971	9 587	1 990	769	50	:	1 165	:	7. INDUSTRIAL PRODUCTION AND TECHNOLOGY
431	120	360	5 574	409	1 061	129	:	621	:	8. SOCIAL STRUCTURES AND RELATIONSHIPS
989	179	3	673	143	372	152	:	232	:	9. EXPLORATION AND EXPLOITATION OF SPACE
5 713	2 748	10 976	41 771	1 927	7 689	1 073	:	3 349	:	10. RESEARCH FINANCED FROM GENERAL UNIVERSITY FUNDS (GUF)
1 321	667	2 303	9 401	884	2 026	692	:	557	:	11. NON-ORIENTED RESEARCH
-	302	25	5 594	-	-	22	:	-	:	12. OTHER CIVIL RESEARCH
316	180	1	529	102	1 122	2 347	:	474	:	13. DEFENCE
<b>11 890</b>	<b>5 927</b>	<b>16 689</b>	<b>108 543</b>	<b>7 430</b>	<b>15 357</b>	<b>5 936</b>	<b>:</b>	<b>8 688</b>	<b>58 021</b>	<b>TOTAL EXPENDITURE</b>

**Table 5**  
**GOVERNMENT R&D APPROPRIATIONS**  
**BY CHAPTERS OF NABS**



In millions of ECU at current prices  
and current exchange rates

	EU-15 <sup>2</sup>	EUR-11 <sup>2</sup>	CEC	B	DK <sup>1</sup>	D	EL	E	F	IRL
<b>1997</b>										
1. EXPLORATION AND EXPLOITATION OF THE EARTH	784	627	60	9	15	324	:	53	96	1
2. INFRASTRUCTURE AND GENERAL PLANNING OF LAND-USE	869	589	176	12	16	272	:	10	84	5
3. CONTROL AND CARE OF THE ENVIRONMENT	1 496	1 209	168	30	31	560	:	53	259	3
4. PROTECTION AND IMPROVEMENT OF HUMAN HEALTH	3 307	2 018	197	18	17	528	:	121	695	8
5. PRODUCTION, DISTRIBUTION AND RATIONAL UTILISATION OF ENERGY	1 868	1 714	356	39	29	560	:	107	600	0
6. AGRICULTURAL PRODUCTION AND TECHNOLOGY	2 058	1 506	160	42	95	430	:	98	473	45
7. INDUSTRIAL PRODUCTION AND TECHNOLOGY	5 103	4 684	1 007	245	113	2 031	:	424	588	75
8. SOCIAL STRUCTURES AND RELATIONSHIPS	1 393	1 002	86	38	83	394	:	17	117	13
9. EXPLORATION AND EXPLOITATION OF SPACE	3 514	3 214	49	167	31	759	:	159	1 449	6
10. RESEARCH FINANCED FROM GENERAL UNIVERSITY FUNDS (GUF)	17 529	14 720	-	425	391	6 134	:	704	2 123	47
11. NON-ORIENTED RESEARCH	8 241	6 755	174	288	253	2 466	:	191	2 490	15
12. OTHER CIVIL RESEARCH	547	516	231	60	-	-45	:	33	310	-
13. DEFENCE	9 773	6 002	-	7	5	1 526	:	479	3 609	-
<b>TOTAL EXPENDITURE</b>	<b>56 483</b>	<b>44 555</b>	<b>2 664</b>	<b>1 380</b>	<b>1 078</b>	<b>15 940</b>	:	<b>2 449</b>	<b>12 893</b>	<b>219</b>
<b>1998<sup>1</sup></b>										
1. EXPLORATION AND EXPLOITATION OF THE EARTH	786	642	57	9	:	303	:	52	112	1
2. INFRASTRUCTURE AND GENERAL PLANNING OF LAND-USE	845	600	143	12	:	272	:	17	81	6
3. CONTROL AND CARE OF THE ENVIRONMENT	1 512	1 295	155	25	:	556	:	68	280	2
4. PROTECTION AND IMPROVEMENT OF HUMAN HEALTH	3 220	1 940	181	19	:	510	:	131	706	9
5. PRODUCTION, DISTRIBUTION AND RATIONAL UTILISATION OF ENERGY	1 974	1 846	277	37	:	572	:	100	653	0
6. AGRICULTURAL PRODUCTION AND TECHNOLOGY	1 908	1 499	150	42	:	431	:	110	490	24
7. INDUSTRIAL PRODUCTION AND TECHNOLOGY	4 932	4 772	966	288	:	1 948	:	428	731	78
8. SOCIAL STRUCTURES AND RELATIONSHIPS	1 353	1 045	65	58	:	409	:	15	150	14
9. EXPLORATION AND EXPLOITATION OF SPACE	3 355	3 090	53	165	:	753	:	154	1 395	6
10. RESEARCH FINANCED FROM GENERAL UNIVERSITY FUNDS (GUF)	17 593	15 154	-	433	:	6 264	:	723	2 184	51
11. NON-ORIENTED RESEARCH	8 212	6 966	215	307	:	2 518	:	152	2 611	37
12. OTHER CIVIL RESEARCH	552	521	276	58	:	38	:	34	225	-
13. DEFENCE	9 256	5 679	-	6	:	1 393	:	849	3 167	-
<b>TOTAL EXPENDITURE</b>	<b>56 936</b>	<b>45 049</b>	<b>2 539</b>	<b>1 460</b>	:	<b>15 967</b>	:	<b>2 834</b>	<b>12 786</b>	<b>230</b>

<sup>1</sup> Provisional (final for Portugal).

<sup>2</sup> Luxembourg not included.

<sup>3</sup> Luxembourg and Liechtenstein not included.

## Table 5 GOVERNMENT R&D APPROPRIATIONS BY CHAPTERS OF NABS

In millions of ECU at current prices  
and current exchange rates

I	NL	A	P	FIN	S	UK	IS	NO	EEA <sup>3</sup>	
<b>1997</b>										
85	11	20	14	14	:	117	-	27	811	1. EXPLORATION AND EXPLOITATION OF THE EARTH
28	105	23	16	35	:	143	0	21	891	2. INFRASTRUCTURE AND GENERAL PLANNING OF LAND-USE
152	77	24	23	28	:	197	2	33	1 531	3. CONTROL AND CARE OF THE ENVIRONMENT
438	53	35	28	95	:	1 222	3	71	3 381	4. PROTECTION AND IMPROVEMENT OF HUMAN HEALTH
254	88	10	8	49	:	59	2	25	1 894	5. PRODUCTION, DISTRIBUTION AND RATIONAL UTILISATION OF ENERGY
138	105	37	62	76	:	388	12	96	2 167	6. AGRICULTURAL PRODUCTION AND TECHNOLOGY
561	318	73	41	327	:	148	1	145	5 249	7. INDUSTRIAL PRODUCTION AND TECHNOLOGY
255	55	24	24	64	:	166	25	78	1 496	8. SOCIAL STRUCTURES AND RELATIONSHIPS
546	93	0	3	30	:	237	-	27	3 541	9. EXPLORATION AND EXPLOITATION OF SPACE
2 833	1 211	731	197	316	:	1 493	-	382	17 912	10. RESEARCH FINANCED FROM GENERAL UNIVERSITY FUNDS (GUF)
678	293	149	40	145	:	969	9	70	8 319	11. NON-ORIENTED RESEARCH
-	132	2	24	-	:	31	-	-	547	12. OTHER CIVIL RESEARCH
275	84	0	2	18	:	3 340	-	57	9 830	13. DEFENCE
<b>6 244</b>	<b>2 624</b>	<b>1 128</b>	<b>481</b>	<b>1 197</b>	:	<b>8 511</b>	<b>54</b>	<b>1 032</b>	<b>57 569</b>	<b>TOTAL EXPENDITURE</b>
<b>1998<sup>1</sup></b>										
98	13	21	17	16	21	123	:	28	:	1. EXPLORATION AND EXPLOITATION OF THE EARTH
39	95	24	18	36	102	143	:	20	:	2. INFRASTRUCTURE AND GENERAL PLANNING OF LAND-USE
210	73	26	27	28	15	202	:	34	:	3. CONTROL AND CARE OF THE ENVIRONMENT
345	61	31	33	94	16	1 264	:	70	:	4. PROTECTION AND IMPROVEMENT OF HUMAN HEALTH
305	83	7	9	80	75	54	:	25	:	5. PRODUCTION, DISTRIBUTION AND RATIONAL UTILISATION OF ENERGY
113	101	38	72	78	31	378	:	93	:	6. AGRICULTURAL PRODUCTION AND TECHNOLOGY
496	353	70	48	333	86	73	:	138	:	7. INDUSTRIAL PRODUCTION AND TECHNOLOGY
222	54	26	28	68	119	190	:	73	:	8. SOCIAL STRUCTURES AND RELATIONSHIPS
509	81	0	3	24	42	223	:	27	:	9. EXPLORATION AND EXPLOITATION OF SPACE
2 939	1 238	792	207	322	862	1 578	:	395	:	10. RESEARCH FINANCED FROM GENERAL UNIVERSITY FUNDS (GUF)
680	301	166	47	148	227	1 018	:	66	:	11. NON-ORIENTED RESEARCH
-	136	2	28	-	-	32	:	-	:	12. OTHER CIVIL RESEARCH
162	81	0	3	17	126	3 452	:	56	:	13. DEFENCE
<b>6 117</b>	<b>2 670</b>	<b>1 205</b>	<b>538</b>	<b>1 242</b>	<b>1 722</b>	<b>8 729</b>	:	<b>1 026</b>	<b>58 021</b>	<b>TOTAL EXPENDITURE</b>

**Table 6**  
**GOVERNMENT R&D APPROPRIATIONS**

In national currencies or  
ECU at current prices

		1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
<b>on Biotechnology</b>											
CEC	Mio ECU	18.3	29.6	26.8	60.8	67.1	93.0	112.0	104.0	163.0	168.0
B	Mio BEF	:	:	:	:	:	:	:	:	:	:
DK	Mio DKK	137.0	148.3	153.6	123.8	:	:	:	:	69.5	:
D	Mio DEM	306.4	305.6	316.7	341.3	496.8	673.7	828.6	864.1	879.2	872.7
EL	Mio GRD	1 149.0	1 277.0	1 649.7	1 440.0	1 469.0	3 982.3	4 261.0	5 284.9	:	:
E	Mio ESP	:	1.5	6.7	7.2	7.9	7.8	12.8	15.0	14.9	16.2
F	Mio FRF	:	:	:	:	:	:	:	:	:	:
IRL	Mio IEP	5.4	6.1	6.4	6.5	7.1	10.1	8.5	10.7	12.8	:
I	Bio ITL	31.1	17.2	:	32.4	31.5	24.2	22.4	:	53.9	54.4
NL	Mio NLG	11.6	:	:	:	:	:	:	:	:	:
A	Mio ATS	:	:	:	:	:	:	:	:	:	:
P	Mio PTE	:	:	:	:	:	:	:	:	:	:
FIN	Mio FIM	:	:	:	:	:	:	:	:	:	:
S	Mio SEK	:	:	:	:	:	:	:	:	:	:
UK	Mio GBP	37.2	23.0	:	34.3	101.6	100.4	128.4	123.5	148.2	145.9
IS	Mio ISK	:	:	:	:	:	:	:	:	:	:
NO	Mio NKR	:	:	:	:	:	:	:	:	:	:
<b>on Information Technology</b>											
CEC	Mio ECU	175.0	408.0	466.0	593.3	600.8	699.0	637.0	810.0	697.0	734.0
B	Mio BEF	:	:	:	:	:	:	:	:	:	:
DK	Mio DKK	215.0	139.9	67.9	67.1	:	:	:	:	1.5	:
D	Mio DEM	1 034.2	1 023.3	1 063.8	1 211.8	1 460.6	1 340.3	1 171.8	1 155.8	1 288.1	1203.4
EL	Mio GRD	1 343.3	1 971.6	2 736.9	2 252.0	2 265.0	1 558.2	3 372.0	6 909.4	:	:
E	Mio ESP	:	2.9	10.6	7.1	8.3	7.8	7.4	7.8	9.5	5.7
F	Mio FRF	:	:	:	:	:	:	:	:	:	:
IRL	Mio IEP	7.9	6.2	8.3	10.6	6.8	12.7	11.4	20.8	14.6	:
I	Bio ITL	2.7	30.1	:	108.9	111.1	145.6	27.0	:	19.7	22.6
NL	Mio NLG	54.4	54.4	:	:	:	:	:	:	:	:
A	Mio ATS	:	:	:	:	:	:	:	:	:	:
P	Mio PTE	:	:	:	:	:	:	:	:	:	:
FIN	Mio FIM	:	:	:	:	:	:	:	:	:	:
S	Mio SEK	:	:	:	:	:	:	:	:	:	:
UK	Mio GBP	101.3	83.2	:	76.2	88.5	89.5	103.8	88.7	125.1	143.0
IS	Mio ISK	:	:	:	:	:	:	:	:	:	:
NO	Mio NKR	:	:	:	:	:	:	:	:	:	:
<b>on Developing Countries</b>											
CEC <sup>1</sup>	Mio ECU	24.2	36.1	30.8	39.5	59.9	64.0	57.0	63.0	80.0	78.0
B	Mio BEF	:	:	:	:	:	:	:	:	:	:
DK	Mio DKK	83.7	103.2	123.9	104.8	:	:	:	:	55.0	:
D	Mio DEM	163.9	164.3	186.3	183.2	182.0	186.0	171.6	186.0	268.8	258.0
EL	Mio GRD	:	:	:	:	:	:	:	:	:	:
E	Mio ESP	:	0.2	0.5	0.3	1.5	0.9	0.5	0.6	0.4	0.3
F	Mio FRF	2.3	:	:	:	:	:	:	:	:	:
IRL	Mio IEP	:	:	:	:	:	:	:	:	:	:
I	Bio ITL	:	0.9	:	0.7	0.3	:	:	:	11.9	0.6
NL	Mio NLG	100.5	100.5	:	:	:	:	:	:	:	:
A	Mio ATS	:	:	:	:	:	:	:	:	:	:
P	Mio PTE	:	:	:	:	:	:	:	:	:	:
FIN	Mio FIM	:	:	:	:	:	:	:	:	:	:
S	Mio SEK	:	:	:	:	:	:	:	:	:	:
UK	Mio GBP	35.0	38.5	:	52.4	86.7	116.0	11.1	117.7	106.1	112.1
IS	Mio ISK	:	:	:	:	:	:	:	:	:	:
NO	Mio NKR	:	:	:	:	:	:	:	:	:	:

<sup>1</sup> Central and Eastern European countries not included.

**R&D EXPENDITURE**
**ALL SECTORS <sup>2</sup>**

Mio national currencies

		1990	1991	1992	1993	1994	1995	1996	1997	1998
BELGIQUE-BELGIË	BEF	:	112 065	:	116 773	121 493 <sup>1</sup>	127 725 <sup>1</sup>	:	:	:
DANMARK	DKK	12 996	14 101	14 897	15 695	:	18 543	20 399	21 656	22 908
DEUTSCHLAND	DEM	66 724	74 518	76 355	76 721	77 323	79 520	80 899	:	:
ELLADA	GRD	:	59 507	:	100 458	:	:	:	:	:
ESPAÑA	ESP	425 830	479 372	539 918	557 403	548 154	590 686	641 024	672 017	726 264
FRANCE	FRF	:	163 092	169 376	173 720	175 561	179 093	182 588	:	:
IRELAND	IEP	244	289	318	404	485	564	:	:	:
ITALIA <sup>3</sup>	ITL	17 001 221	17 657 269	17 957 958	17 613 239	17 388 858	17 863 901	19 155 413	21 152 041	22 501 374 <sup>1</sup>
NEDERLAND	NLG	11 108	11 115	11 186	11 647	12 486	13 251	14 114	:	:
ÖSTERREICH	ATS	25611	28962	30326	31694	35089	36986	38453	40110	42629
PORTUGAL	PTE	52 032	:	80 398	:	:	92 229	:	115 864 <sup>1</sup>	:
SUOMI-FINLAND	FIM	9 843	10 172	10 388	10 677	11 941	12 916	14 886	17 272	:
SVERIGE	SEK	:	41 761	:	46 221	:	59 357	:	67 026	:
UNITED KINGDOM	GBP	11 991	12 132	12 688	13 541	14 046	14 170	14 401	14 648	:
ICELAND	ISK	3 613	4 619	5 309	5 497	6 047	6 958	7 317 <sup>1</sup>	8 163 <sup>1</sup>	:
NORWAY	NOK	:	12 306	:	14 263	:	15 908	:	18 187	:

<sup>1</sup> Provisional.

<sup>2</sup> PNP included.

<sup>3</sup> PNP not existing.

# Table 7A

## R&D EXPENDITURE BY REGION

ALL SECTORS <sup>3</sup>

Mio national currencies

		1989	1990	1991	1992	1993	1994	1995	1996	1997
<b>BELGIQUE-BELGIË</b>	<b>BEF</b>	<b>102 438</b>	:	<b>112 065</b>	:	<b>116 773</b> <sup>1</sup>	<b>121 493</b> <sup>1</sup>	<b>127 725</b> <sup>1</sup>	:	:
Bruxelles-Brussel		:	:	:	:	:	18 133	19 155	:	:
Vlaams Gewest		:	:	:	:	:	75 500	79 065	:	:
Région Wallonne		:	:	:	:	:	27 858	29 504	:	:
<b>DANMARK</b>	<b>DKK</b>	<b>11 893</b>	<b>12 996</b>	<b>14 101</b>	<b>14 897</b>	<b>15 695</b>	:	<b>18 543</b>	<b>20 399</b>	<b>21 656</b>
<b>DEUTSCHLAND</b>	<b>DEM</b>	<b>63 872</b>	<b>66 724</b>	<b>74 518</b>	<b>76 355</b>	<b>76 721</b>	<b>77 323</b>	<b>79 520</b>	<b>80 899</b>	:
Baden-Württemberg		:	:	15 829	:	17 849	:	18 159	:	:
Bayern		:	:	16 355	:	15 272	:	16 093	:	:
Berlin		:	:	:	:	4 872	:	4 705	:	:
Brandenburg		:	:	:	:	783	:	987	:	:
Bremen		:	:	1 049	:	973	:	1 136	:	:
Hamburg		:	:	1 777	:	2 057	:	2 403	:	:
Hessen		:	:	6 786	:	6 894	:	7 087	:	:
Mecklenburg-Vorpom.		:	:	:	:	415	:	485	:	:
Niedersachsen		:	:	4 798	:	4 869	:	5 406	:	:
Nordrhein-Westfalen		:	:	14 560	:	13 580	:	13 132	:	:
Rheinland-Pfalz		:	:	2 929	:	2 733	:	2 842	:	:
Saarland		:	:	338	:	393	:	397	:	:
Sachsen		:	:	:	:	2 047	:	2 557	:	:
Sachsen-Anhalt		:	:	:	:	913	:	978	:	:
Schleswig-Holstein		:	:	1 231	:	1 314	:	1 244	:	:
Thüringen		:	:	:	:	852	:	1 056	:	:
Not registered by region		:	:	8 866 <sup>5</sup>	:	906	:	852	:	:
<b>ELLADA</b>	<b>GRD</b>	<b>40 997</b>	:	<b>59 507</b>	:	<b>100 458</b>	:	:	:	:
Voreia Ellada		9 886	:	12 374	:	24 767	:	:	:	:
Kentriki Ellada		5 428	:	7 379	:	11 748	:	:	:	:
Attiki		21 563	:	33 189	:	53 294	:	:	:	:
Nisia Aigaiou, Kriti		4 120	:	6 565	:	10 649	:	:	:	:
<b>ESPAÑA</b>	<b>ESP</b>	<b>339 324</b>	<b>425 830</b>	<b>479 372</b>	<b>539 918</b>	<b>557 403</b>	<b>548 154</b>	<b>590 686</b>	<b>641 024</b>	<b>672 017</b>
Noroeste		15 439	18 074	22 255	28 704	28 478	26 810	34 283	36 178	39 643
Noreste		41 460	53 355	60 916	66 423	70 487	65 277	79 146	85 580	86 431
Madrid		146 118	188 676	203 369	208 613	202 702	203 251	200 716	213 454	216 480
Centro (E)		16 422	21 046	23 462	28 789	35 885	35 252	36 972	39 749	45 527
Este		77 382	98 579	116 860	140 525	142 503	146 334	161 846	179 791	194 312
Sur		30 724	36 928	40 949	50 183	60 441	52 445	65 801	71 896	75 954
Canarias		3 736	4 801	6 240	11 172	11 222	13 357	11 922	14 372	13 666
Not registered by region		8 043	4 371	5 323	5 509	5 685	5 428	-	-	-
<b>FRANCE</b>	<b>FRF</b>	:	:	<b>163 092</b>	<b>169 376</b>	<b>173 720</b>	<b>175 561</b>	<b>179 093</b>	<b>182 588</b>	:
Île de France		:	:	70 886	73 359	73 779	74 353	74 598	73 958	:
Bassin Parisien		:	:	9 695	10 608	10 833	11 142	11 826	11 954	:
Nord-Pas-de-Calais		:	:	1 681	1 762	1 984	1 986	2 012	2 065	:
Est		:	:	5 891	6 451	6 903	6 626	7 151	7 129	:
Ouest		:	:	6 523	6 986	7 693	8 270	8 163	8 521	:
Sud-Ouest		:	:	12 672	13 777	13 434	12 985	13 425	13 937	:
Centre-Est		:	:	14 192	15 312	16 389	17 082	17 307	18 532	:
Méditerranée		:	:	12 099	11 619	11 979	11 968	13 695	16 050	:
Dépts. d'Outre-Mer <sup>2</sup>		:	:	:	:	:	:	:	:	:
Not registered by region		:	:	26 899	28 940	30 102	30 112	29 845	29 414	:

Mio national currencies

		1989	1990	1991	1992	1993	1994	1995	1996	1997
<b>IRELAND</b>	<b>IEP</b>	215	244	289	318	404	485	564	:	:
<b>ITALIA <sup>4</sup></b>	<b>ITL</b>	14 800 669	17 001 221	17 657 269	17 957 958	17 613 239	17 388 858	17 863 901	19 155 413	21 152 041 <sup>1</sup>
Nord Ovest		:	:	:	:	:	3 291 493	3 263 272	3 515 929	3 893 746
Lombardia		:	:	:	:	:	4 106 764	4 347 167	4 646 952	5 145 628
Nord Est		:	:	:	:	:	1 392 571	1 496 493	1 508 096	1 661 495
Emilia-Romagna		:	:	:	:	:	1 286 739	1 278 836	1 396 541	1 536 499
Centro (I)		:	:	:	:	:	1 358 105	1 464 359	1 579 888	1 731 853
Lazio		:	:	:	:	:	3 304 210	3 457 835	3 660 415	4 066 391
Abruzzo-Molise		:	:	:	:	:	317 964	305 743	476 371	525 051
Campania		:	:	:	:	:	931 325	886 149	989 394	1 085 535
Sud		:	:	:	:	:	572 026	573 143	564 887	616 816
Sicilia		:	:	:	:	:	600 533	557 226	545 828	592 994
Sardegna		:	:	:	:	:	227 128	233 678	271 112	296 033
<b>NEDERLAND</b>	<b>NLG</b>	10 273	11 108	11 115	11 186	11 647	12 486	13 251	14 114	:
<b>ÖSTERREICH</b>	<b>ATS</b>	22 967	:	:	:	31 694	:	:	:	:
Ostösterreich		12 806	:	:	:	18 151	:	:	:	:
Südösterreich		4 109	:	:	:	4 996	:	:	:	:
Westösterreich		6 053	:	:	:	7 546	:	:	:	:
Not registered by region		-	:	:	:	1 002	:	:	:	:
<b>PORTUGAL</b>	<b>PTE</b>	:	52 032	:	80 398	:	:	92 229	:	115 864 <sup>1</sup>
Continente		:	51 240	:	79 362	:	:	89 004	:	112 296
Açores		:	585	:	743	:	:	1 277	:	1 703
Madeira		:	208	:	291	:	:	1 948	:	1 865
<b>SUOMI-FINLAND</b>	<b>FIM</b>	8 926	9 843	10 172	10 388	10 677	11 941	12 916	14 886	17 272
Manner-Suomi		:	:	:	:	:	:	12 912	:	17 270
Ahvenanmaa/Åland		:	:	:	:	:	:	4	:	2
<b>SVERIGE</b>	<b>SEK</b>	36 273	:	41 761	:	46 221	:	59 357	:	67 026
<b>UNITED KINGDOM</b>	<b>GBP</b>	11 068	11 991	12 132	12 688	13 541	14 046	14 170	14 401	14 648
North		:	:	:	:	224	392	386	302	334
Yorkshire and Humber.		:	:	:	:	418	499	534	554	540
East Midlands		:	:	:	:	965	796	822	925	899
East Anglia		:	:	:	:	523	780	832	2 535	2 767
South East (UK)		:	:	:	:	7 178	6 660	6 764	5 070	5 005
South West (UK)		:	:	:	:	879	1 129	1 122	1 101	1 146
West Midlands		:	:	:	:	977	908	985	970	988
North West (UK)		:	:	:	:	1 126	1 498	1 348	1 487	1 502
Wales		:	:	:	:	215	253	229	246	256
Scotland		:	:	:	:	711	838	841	872	876
Northern Ireland		:	:	:	:	93	127	131	162	145
<b>ICELAND</b>	<b>ISK</b>	3 150	3 613	4 619	5 309	5 497	6 047	6 958	7 317 <sup>1</sup>	8 163 <sup>1</sup>
<b>NORWAY</b>	<b>NOK</b>	11 533	:	12 306	:	14 263	:	15 908	:	18 187

<sup>1</sup> Provisional.

<sup>2</sup> Overseas departments not surveyed.

<sup>3</sup> PNP included.

<sup>4</sup> PNP not existing.

<sup>5</sup> New "Länder" included.

**Table 8****R&D EXPENDITURE****ALL SECTORS <sup>2</sup>**

Mio ECU at current prices and exchange rates

	1990	1991	1992	1993	1994	1995	1996	1997	1998
<b>EU-15 <sup>4</sup></b>	<b>105 500</b>	<b>112 200</b>	<b>115 600</b>	<b>117 000</b>	<b>120 300</b>	<b>124 200</b>	<b>129 400</b>	<b>135 300</b>	<b>140 600</b>
<b>EUR-11 <sup>4</sup></b>	<b>81 500</b>	<b>87 200</b>	<b>90 300</b>	<b>92 200</b>	<b>93 900</b>	<b>97 800</b>	<b>101 000</b>	<b>103 000</b>	<b>107 000</b>
BELGIQUE-BELGIË	:	2 654	:	2 885 <sup>1</sup>	3 063 <sup>1</sup>	3 313 <sup>1</sup>	:	:	:
DANMARK	1 653	1 783	1 907	2 068	:	2 530	2 772	2 895	3 055
DEUTSCHLAND	32 548	36 350	37 800	39 547	40 272	42 524	42 356	:	:
ELLADA	:	264	:	374	:	:	:	:	:
ESPAÑA	3 293	3 731	4 075	3 738	3 449	3 624	3 988	4 051	4 344
FRANCE	:	23 399	24 726	26 202	26 681	27 426	28 134	:	:
IRELAND	317	375	418	505	614	688	:	:	:
ITALIA <sup>3</sup>	11 171	11 516	11 257	9 566	9 080	8 386	9 778	10 964 <sup>1</sup>	11 577 <sup>1</sup>
NEDERLAND	4 809	4 812	4 928	5 343	5 781	6 310	6 595	:	:
ÖSTERREICH	1 774	2 007	2 133	2 327	2 592	2 806	2 863	2 902	3 077
PORTUGAL	287	:	460	:	:	470	:	583 <sup>1</sup>	:
SUOMI-FINLAND	2 029	2 034	1 788	1 594	1 929	2 263	2 553	2 937	:
SVERIGE	:	5 583	:	5 068	:	6 362	:	7 749	:
UNITED KINGDOM	16 889	17 331	17 146	17 360	18 008	17 072	17 779	21 229	:
<b>EEA <sup>5</sup></b>	<b>107 000</b>	<b>113 800</b>	<b>117 300</b>	<b>118 800</b>	<b>122 200</b>	<b>126 200</b>	<b>131 600</b>	<b>137 700</b>	<b>143 000</b>
ICELAND	49	63	71	69	73	82	86 <sup>1</sup>	101 <sup>1</sup>	:
NORWAY	:	1 572	:	1 716	:	1 919	:	2 268	:

<sup>1</sup> Provisional.<sup>2</sup> PNP included.<sup>3</sup> PNP not existing.<sup>4</sup> Luxembourg not included.<sup>5</sup> Luxembourg and Liechtenstein not included.



**Table 8A**  
**R&D EXPENDITURE BY REGION**  
**ALL SECTORS <sup>3</sup>**

Mio ECU at current prices and exchange rates

	1989	1990	1991	1992	1993	1994	1995	1996	1997
<b>BELGIQUE-BELGIË</b>	<b>2 361</b>	:	<b>2 654</b>	:	<b>2 885 <sup>1</sup></b>	<b>3 063 <sup>1</sup></b>	<b>3 313 <sup>1</sup></b>	:	:
Bruxelles-Brussel	:	:	:	:	:	457	497	:	:
Vlaams Gewest	:	:	:	:	:	1 904	2 051	:	:
Région Wallonne	:	:	:	:	:	702	765	:	:
<b>DANMARK</b>	<b>1 477</b>	<b>1 653</b>	<b>1 783</b>	<b>1 907</b>	<b>2 068</b>	:	<b>2 530</b>	<b>2 772</b>	<b>2 895</b>
<b>DEUTSCHLAND</b>	<b>30 856</b>	<b>32 548</b>	<b>36 350</b>	<b>37 800</b>	<b>39 547</b>	<b>40 272</b>	<b>42 524</b>	<b>42 356</b>	:
Baden-Württemberg	:	:	7 721	:	9 201	:	9 711	:	:
Bayern	:	:	7 978	:	7 872	:	8 606	:	:
Berlin	:	:	:	:	2 511	:	2 516	:	:
Brandenburg	:	:	:	:	403	:	528	:	:
Bremen	:	:	512	:	502	:	607	:	:
Hamburg	:	:	867	:	1 060	:	1 285	:	:
Hessen	:	:	3 310	:	3 554	:	3 790	:	:
Mecklenburg-Vorpommern	:	:	:	:	214	:	259	:	:
Niedersachsen	:	:	2 341	:	2 510	:	2 891	:	:
Nordrhein-Westfalen	:	:	7 102	:	7 000	:	7 022	:	:
Rheinland-Pfalz	:	:	1 429	:	1 409	:	1 520	:	:
Saarland	:	:	165	:	203	:	212	:	:
Sachsen	:	:	:	:	1 055	:	1 367	:	:
Sachsen-Anhalt	:	:	:	:	470	:	523	:	:
Schleswig-Holstein	:	:	601	:	677	:	665	:	:
Thüringen	:	:	:	:	439	:	565	:	:
Not registered by region	:	:	4 325 <sup>5</sup>	:	467	:	456	:	:
<b>ELLADA</b>	<b>229</b>	:	<b>264</b>	:	<b>374</b>	:	:	:	:
Voreia Ellada	55	:	55	:	92	:	:	:	:
Kentriki Ellada	30	:	33	:	44	:	:	:	:
Attiki	121	:	147	:	198	:	:	:	:
Nisia Aigaiou, Kriti	23	:	29	:	40	:	:	:	:
<b>ESPAÑA</b>	<b>2 602</b>	<b>3 293</b>	<b>3 731</b>	<b>4 075</b>	<b>3 738</b>	<b>3 449</b>	<b>3 624</b>	<b>3 968</b>	<b>4 051</b>
Noroeste	118	140	173	217	191	169	210	225	239
Noreste	318	413	474	501	473	411	486	532	521
Madrid	1 120	1 459	1 583	1 574	1 359	1 279	1 231	1 328	1 305
Centro (E)	126	163	183	217	241	222	227	247	274
Este	593	762	910	1 060	956	921	993	1 118	1 171
Sur	236	286	319	379	405	330	404	447	458
Canarias	29	37	49	84	75	84	73	89	82
Not registered by region	62	34	41	42	38	34	-	-	-
<b>FRANCE</b>	:	:	<b>23 399</b>	<b>24 726</b>	<b>26 202</b>	<b>26 681</b>	<b>27 426</b>	<b>28 134</b>	:
Île de France	:	:	10 170	10 709	11 128	11 300	11 424	11 396	:
Bassin Parisien	:	:	1 391	1 549	1 634	1 693	1 811	1 842	:
Nord-Pas-de-Calais	:	:	241	257	299	302	308	318	:
Est	:	:	845	942	1 041	1 007	1 095	1 098	:
Ouest	:	:	936	1 020	1 160	1 257	1 250	1 313	:
Sud-Ouest	:	:	1 818	2 011	2 026	1 973	2 056	2 148	:
Centre-Est	:	:	2 036	2 235	2 472	2 596	2 650	2 855	:
Méditerranée	:	:	1 736	1 696	1 807	1 819	2 097	2 473	:
Départements d'Outre-Mer <sup>2</sup>	:	:	:	:	:	:	:	:	:
Not registered by region	:	:	3 859	4 225	4 540	4 576	4 570	4 532	:

# Table 8A

## R&D EXPENDITURE BY REGION



ALL SECTORS <sup>3</sup>

Mio ECU at current prices and exchange rates

	1989	1990	1991	1992	1993	1994	1995	1996	1997
<b>IRELAND</b>	275	317	375	418	505	614	688	:	:
<b>ITALIA <sup>4</sup></b>	9 799	11 171	11 516	11 257	9 566	9 080	8 386	9 778	10 964 <sup>1</sup>
Nord Ovest	:	:	:	:	:	1 719	1 532	1 795	2 018
Lombardia	:	:	:	:	:	2 144	2 041	2 372	2 667
Nord Est	:	:	:	:	:	727	703	770	861
Emilia-Romagna	:	:	:	:	:	672	600	713	796
Centro (I)	:	:	:	:	:	709	687	806	898
Lazio	:	:	:	:	:	1 725	1 623	1 869	2 108
Abruzzo-Molise	:	:	:	:	:	166	144	243	272
Campania	:	:	:	:	:	486	416	505	563
Sud	:	:	:	:	:	299	269	288	320
Sicilia	:	:	:	:	:	314	262	279	307
Sardegna	:	:	:	:	:	119	110	138	153
<b>NEDERLAND</b>	4 390	4 809	4 812	4 928	5 343	5 781	6 310	6 595	:
<b>ÖSTERREICH</b>	1 576	:	:	:	2 327	:	:	:	:
Ostösterreich	879	:	:	:	1 333	:	:	:	:
Südösterreich	282	:	:	:	367	:	:	:	:
Westösterreich	415	:	:	:	554	:	:	:	:
Not registered by region	-	:	:	:	74	:	:	:	:
<b>PORTUGAL</b>	:	287	:	460	:	:	470	:	583 <sup>1</sup>
Continente	:	283	:	454	:	:	454	:	565
Açores	:	3	:	4	:	:	7	:	9
Madeira	:	1	:	2	:	:	10	:	9
<b>SUOMI-FINLAND</b>	1 891	2 029	2 034	1 788	1 594	1 929	2 263	2 553	2 937
Manner-Suomi	:	:	:	:	:	:	2 262	:	2 937
Ahvenanmaa/Åland	:	:	:	:	:	:	1	:	0
<b>SVERIGE</b>	5 109	:	5 583	:	5 068	:	6 362	:	7 749
<b>UNITED KINGDOM</b>	16 519	16 889	17 331	17 146	17 360	18 008	17 072	17 779	21 229
North	:	:	:	:	287	503	465	373	484
Yorkshire and Humberside	:	:	:	:	536	640	643	684	783
East Midlands	:	:	:	:	1 237	1 021	990	1 142	1 303
East Anglia	:	:	:	:	671	1 000	1 002	3 130	4 010
South East (UK)	:	:	:	:	9 203	8 538	8 149	6 259	7 254
South West (UK)	:	:	:	:	1 127	1 447	1 352	1 359	1 661
West Midlands	:	:	:	:	1 253	1 164	1 187	1 198	1 432
North West (UK)	:	:	:	:	1 444	1 921	1 624	1 836	2 177
Wales	:	:	:	:	276	324	276	304	371
Scotland	:	:	:	:	912	1 074	1 013	1 077	1 270
Northern Ireland	:	:	:	:	119	163	158	200	210
<b>ICELAND</b>	50	49	63	71	69	73	82	86 <sup>1</sup>	101 <sup>1</sup>
<b>NORWAY</b>	1 517	:	1 572	:	1 716	:	1 919	:	2 268

<sup>1</sup> Provisional.

<sup>2</sup> Overseas departments not surveyed for BES.

<sup>3</sup> PNP included.

<sup>4</sup> PNP not existing.

<sup>5</sup> New "Länder" included.

**R&D EXPENDITURE**
**ALL SECTORS <sup>2</sup>**
**Mio PPS at 1990 prices**

	1990	1991	1992	1993	1994	1995	1996	1997	1998
<b>EU-15 <sup>4</sup></b>	<b>101 400</b>	<b>102 700</b>	<b>102 300</b>	<b>101 600</b>	<b>102 000</b>	<b>102 900</b>	<b>104 400</b>	<b>106 800</b>	<b>109 400</b>
<b>EUR-11 <sup>4</sup></b>	<b>77 700</b>	<b>80 000</b>	<b>79 300</b>	<b>77 800</b>	<b>77 200</b>	<b>77 900</b>	<b>79 400</b>	<b>81 600</b>	<b>83 900</b>
BELGIQUE-BELGIË	:	2 561	:	2 474 <sup>1</sup>	2 517 <sup>1</sup>	2 607 <sup>1</sup>	:	:	:
DANMARK	1 279	1 354	1 399	1 467	:	1 688	1 822	1 900	1 968
DEUTSCHLAND	29 655	31 876	30 935	29 885	29 423	29 600	29 814	:	:
ELLADA	:	328	:	421	:	:	:	:	:
ESPAÑA	3 618	3 799	4 006	3 966	3 747	3 852	4 046	4 155	4 386
FRANCE	:	22 174	22 527	22 571	22 416	22 539	22 674	:	:
IRELAND	330	383	413	502	596	690	:	:	:
ITALIA <sup>3</sup>	11 134	10 737	10 435	9 800	9 357	9 147	9 348	10 052 <sup>1</sup>	10 451 <sup>1</sup>
NEDERLAND	4 767	4 645	4 572	4 672	4 916	5 101	5 361	:	:
ÖSTERREICH	1 690	1 843	1 850	1 881	2 028	2 096	2 136	2 193	2 306
PORTUGAL	466	:	583	:	:	560	:	663 <sup>1</sup>	:
SUOMI-FINLAND	1 429	1 440	1 461	1 476	1 620	1 710	1 955	2 218	:
SVERIGE	:	3 850	:	4 109	:	4 969	:	5 486	:
UNITED KINGDOM	18 168	17 147	17 119	17 733	18 097	17 802	17 470	17 298	:
<b>EEA <sup>5</sup></b>	<b>102 700</b>	<b>104 000</b>	<b>103 600</b>	<b>103 000</b>	<b>103 400</b>	<b>104 300</b>	<b>105 900</b>	<b>108 300</b>	<b>111 300</b>
ICELAND	44	52	58	58	63	70	72 <sup>1</sup>	78 <sup>1</sup>	:
NORWAY	:	1 265	:	1 407	:	1 521	:	1 662	:

<sup>1</sup> Provisional.

<sup>2</sup> PNP included.

<sup>3</sup> PNP not existing.

<sup>4</sup> Luxembourg not included.

<sup>5</sup> Luxembourg and Liechtenstein not included.

# Table 9A

## R&D EXPENDITURE BY REGION



ALL SECTORS <sup>3</sup>

Mio PPS at 1990 prices

	1989	1990	1991	1992	1993	1994	1995	1996	1997
<b>BELGIQUE-BELGIË</b>	<b>2 483</b>	:	<b>2 561</b>	:	<b>2 474</b> <sup>1</sup>	<b>2 517</b> <sup>1</sup>	<b>2 607</b> <sup>1</sup>	:	:
Bruxelles-Brussel	:	:	:	:	:	376	391	:	:
Vlaams Gewest	:	:	:	:	:	1 564	1 614	:	:
Région Wallonne	:	:	:	:	:	577	602	:	:
<b>DANMARK</b>	<b>1 202</b>	<b>1 279</b>	<b>1 354</b>	<b>1 399</b>	<b>1 467</b>	:	<b>1 688</b>	<b>1 822</b>	<b>1 900</b>
<b>DEUTSCHLAND</b>	<b>29 296</b>	<b>29 655</b>	<b>31 876</b>	<b>30 935</b>	<b>29 885</b>	<b>29 423</b>	<b>29 600</b>	<b>29 814</b>	:
Baden-Württemberg	:	:	6 771	:	6 953	:	6 759	:	:
Bayern	:	:	6 996	:	5 949	:	5 990	:	:
Berlin	:	:	:	:	1 898	:	1 751	:	:
Brandenburg	:	:	:	:	305	:	367	:	:
Bremen	:	:	449	:	379	:	423	:	:
Hamburg	:	:	760	:	801	:	894	:	:
Hessen	:	:	2 903	:	2 685	:	2 638	:	:
Mecklenburg-Vorpommern	:	:	:	:	162	:	181	:	:
Niedersachsen	:	:	2 052	:	1 896	:	2 012	:	:
Nordrhein-Westfalen	:	:	6 228	:	5 290	:	4 888	:	:
Rheinland-Pfalz	:	:	1 253	:	1 064	:	1 058	:	:
Saarland	:	:	145	:	153	:	148	:	:
Sachsen	:	:	:	:	798	:	952	:	:
Sachsen-Anhalt	:	:	:	:	356	:	364	:	:
Schleswig-Holstein	:	:	527	:	512	:	463	:	:
Thüringen	:	:	:	:	332	:	393	:	:
Not registered by region	:	:	3 793 <sup>5</sup>	:	353	:	317	:	:
<b>ELLADA</b>	<b>326</b>	:	<b>328</b>	:	<b>421</b>	:	:	:	:
Voreia Ellada	79	:	68	:	104	:	:	:	:
Kentriki Ellada	43	:	41	:	49	:	:	:	:
Attiki	172	:	183	:	223	:	:	:	:
Nisia Aigaiou, Kriti	33	:	36	:	45	:	:	:	:
<b>ESPAÑA</b>	<b>3 093</b>	<b>3 618</b>	<b>3 799</b>	<b>4 006</b>	<b>3 966</b>	<b>3 747</b>	<b>3 852</b>	<b>4 046</b>	<b>4 155</b>
Noroeste	141	154	176	213	203	183	224	228	245
Noreste	378	453	483	493	502	446	516	540	534
Madrid	1 332	1 603	1 612	1 548	1 442	1 389	1 309	1 347	1 339
Centro (E)	150	179	186	214	255	241	241	251	282
Este	705	838	926	1 043	1 014	1 000	1 055	1 135	1 202
Sur	280	314	325	372	430	358	429	454	470
Canarias	34	41	49	83	80	91	78	91	85
Not registered by region	73	37	42	41	40	37	-	-	-
<b>FRANCE</b>	:	:	<b>22 174</b>	<b>22 527</b>	<b>22 571</b>	<b>22 416</b>	<b>22 539</b>	<b>22 674</b>	:
Île de France	:	:	9 638	9 757	9 586	9 493	9 388	9 184	:
Bassin Parisien	:	:	1 318	1 411	1 407	1 423	1 488	1 484	:
Nord-Pas-de-Calais	:	:	229	234	258	254	253	256	:
Est	:	:	801	858	897	846	900	885	:
Ouest	:	:	887	929	1 000	1 056	1 027	1 058	:
Sud-Ouest	:	:	1 723	1 832	1 745	1 658	1 690	1 731	:
Centre-Est	:	:	1 930	2 037	2 129	2 181	2 178	2 301	:
Méditerranée	:	:	1 645	1 545	1 556	1 528	1 724	1 993	:
Départements d'Outre-Mer <sup>2</sup>	:	:	:	:	:	:	:	:	:
Not registered by region	:	:	3 657	3 849	3 911	3 845	3 756	3 653	:

Mio PPS at 1990 prices

	1989	1990	1991	1992	1993	1994	1995	1996	1997
<b>IRELAND</b>	288	330	383	413	502	596	690	:	:
<b>ITALIA <sup>4</sup></b>	10 433	11 134	10 737	10 435	9 800	9 357	9 147	9 348	10 052 <sup>1</sup>
Nord Ovest	:	:	:	:	:	1 771	1 671	1 716	1 850
Lombardia	:	:	:	:	:	2 210	2 226	2 268	2 445
Nord Est	:	:	:	:	:	749	766	736	790
Emilia-Romagna	:	:	:	:	:	692	655	681	730
Centro (I)	:	:	:	:	:	731	750	771	823
Lazio	:	:	:	:	:	1 778	1 770	1 786	1 933
Abruzzo-Molise	:	:	:	:	:	171	157	232	250
Campania	:	:	:	:	:	501	454	483	516
Sud	:	:	:	:	:	308	293	276	293
Sicilia	:	:	:	:	:	323	285	266	282
Sardegna	:	:	:	:	:	122	120	132	141
<b>NEDERLAND</b>	4 513	4 767	4 645	4 572	4 672	4 916	5 101	5 361	:
<b>ÖSTERREICH</b>	1 569	:	:	:	1 881	:	:	:	:
Ostösterreich	875	:	:	:	1 077	:	:	:	:
Südösterreich	281	:	:	:	297	:	:	:	:
Westösterreich	414	:	:	:	448	:	:	:	:
Not registered by region	-	:	:	:	59	:	:	:	:
<b>PORTUGAL</b>	:	466	:	583	:	:	560	:	663 <sup>1</sup>
Continente	:	459	:	576	:	:	540	:	643
Açores	:	5	:	5	:	:	8	:	10
Madeira	:	2	:	2	:	:	12	:	11
<b>SUOMI-FINLAND</b>	1 371	1 429	1 440	1 461	1 476	1 620	1 710	1 955	2 218
Manner-Suomi	:	:	:	:	:	:	1 710	:	2 218
Ahvenanmaa/Åland	:	:	:	:	:	:	1	:	0
<b>SVERIGE</b>	3 916	:	3 850	:	4 109	:	4 969	:	5 486
<b>UNITED KINGDOM</b>	17 840	18 168	17 147	17 119	17 733	18 097	17 802	17 470	17 298
North	:	:	:	:	293	505	485	366	394
Yorkshire and Humberside	:	:	:	:	547	643	671	672	638
East Midlands	:	:	:	:	1 264	1 026	1 033	1 122	1 062
East Anglia	:	:	:	:	685	1 005	1 045	3 075	3 268
South East (UK)	:	:	:	:	9 400	8 581	8 498	6 150	5 911
South West (UK)	:	:	:	:	1 151	1 455	1 410	1 336	1 353
West Midlands	:	:	:	:	1 279	1 170	1 238	1 177	1 167
North West (UK)	:	:	:	:	1 475	1 930	1 694	1 804	1 774
Wales	:	:	:	:	282	326	288	298	302
Scotland	:	:	:	:	931	1 080	1 057	1 058	1 035
Northern Ireland	:	:	:	:	122	164	165	197	171
<b>ICELAND</b>	45	44	52	58	58	63	70	72 <sup>1</sup>	78 <sup>1</sup>
<b>NORWAY</b>	1 231	:	1 265	:	1 407	:	1 521	:	1 662

<sup>1</sup> Provisional.

<sup>2</sup> Overseas departments not surveyed for BES.

<sup>3</sup> PNP included.

<sup>4</sup> PNP not existing.

<sup>5</sup> New "Länder" included.

**Table 10****R&D EXPENDITURE**ALL SECTORS <sup>2</sup>

As % of GDP

	1990	1991	1992	1993	1994	1995	1996	1997	1998
<b>EU-15</b> <sup>4</sup>	<b>2.03</b>	<b>1.99</b>	<b>1.96</b>	<b>1.98</b>	<b>1.94</b>	<b>1.93</b>	<b>1.91</b>	<b>1.90</b>	<b>1.88</b>
<b>EUR-11</b> <sup>4</sup>	<b>2.00</b>	<b>1.96</b>	<b>1.92</b>	<b>1.94</b>	<b>1.89</b>	<b>1.88</b>	<b>1.86</b>	<b>1.86</b>	<b>1.85</b>
BELGIQUE-BELGIE	:	1.63	:	1.58 <sup>1</sup>	1.59 <sup>1</sup>	1.60 <sup>1</sup>	:	:	:
DANMARK	1.66	1.74	1.77	1.83	:	1.96	1.99	2.06	2.05
DEUTSCHLAND	2.75	2.61	2.48	2.42	2.33	2.30	2.29	:	:
ELLADA	:	0.37	:	0.48	:	:	:	:	:
ESPAÑA	0.83	0.85	0.89	0.89	0.82	0.82	0.85	0.86	0.88
FRANCE	:	2.41	2.43	2.47	2.39	2.35	2.33	:	:
IRELAND	0.88	1.00	1.04	1.22	1.31	1.34	:	:	:
ITALIA <sup>3</sup>	1.30	1.24	1.20	1.14	1.07	1.01	1.03	1.09 <sup>1</sup>	1.09 <sup>1</sup>
NEDERLAND	2.16	2.05	1.99	2.01	2.05	2.08	2.12	:	:
ÖSTERREICH	1.41	1.49	1.47	1.49	1.57	1.59	1.60	1.60	1.63
PORTUGAL	0.53	:	0.63	:	:	0.63	:	0.65 <sup>1</sup>	:
SUOMI-FINLAND	1.91	2.07	2.18	2.23	2.34	2.35	2.59	2.78	:
SVERIGE	:	2.87	:	3.19	:	3.58	:	3.82	:
UNITED KINGDOM	2.19	2.12	2.12	2.15	2.10	2.02	1.95	1.87	:
<b>EEA</b> <sup>5</sup>	<b>2.02</b>	<b>1.98</b>	<b>1.96</b>	<b>1.98</b>	<b>1.94</b>	<b>1.93</b>	<b>1.91</b>	<b>1.90</b>	<b>1.87</b>
ICELAND	0.99	1.16	1.34	1.34	1.39	1.54	1.51 <sup>1</sup>	1.58 <sup>1</sup>	:
NORWAY	:	1.65	:	1.73	:	1.71	:	1.72	:

<sup>1</sup> Provisional.<sup>2</sup> PNP included.<sup>3</sup> PNP not existing.<sup>4</sup> Luxembourg not included.<sup>5</sup> Luxembourg and Liechtenstein not included.

**Table 10A**  
**R&D EXPENDITURE BY REGION**  
**ALL SECTORS <sup>3</sup>**  
As % of GDP

	1989	1990	1991	1992	1993	1994	1995	1996	1997
<b>BELGIQUE-BELGIË</b>	<b>1.66</b>	:	<b>1.63</b>	:	<b>1.58</b>	<b>1.59</b> <sup>1</sup>	<b>1.60</b> <sup>1</sup>	:	:
Bruxelles-Brussel	:	:	:	:	:	1.64	1.69	:	:
Vlaams Gewest	:	:	:	:	:	1.66	1.66	:	:
Région Wallonne	:	:	:	:	:	1.40	1.42	:	:
<b>DANMARK</b>	<b>1.58</b>	<b>1.66</b>	<b>1.74</b>	<b>1.77</b>	<b>1.83</b>	:	<b>1.96</b>	<b>1.99</b>	<b>2.06</b>
<b>DEUTSCHLAND</b>	<b>2.87</b>	<b>2.75</b>	<b>2.61</b>	<b>2.48</b>	<b>2.42</b>	<b>2.33</b>	<b>2.30</b>	<b>2.29</b>	:
Baden-Württemberg	:	:	3.60	:	3.87	:	3.65	:	:
Bayern	:	:	3.35	:	2.85	:	2.78	:	:
Berlin	:	:	:	:	3.73	:	3.36	:	:
Brandenburg	:	:	:	:	1.45	:	1.54	:	:
Bremen	:	:	2.91	:	2.60	:	2.84	:	:
Hamburg	:	:	1.64	:	1.76	:	1.89	:	:
Hessen	:	:	2.34	:	2.15	:	2.05	:	:
Mecklenburg-Vorpommern	:	:	:	:	1.16	:	1.13	:	:
Niedersachsen	:	:	1.82	:	1.69	:	1.74	:	:
Nordrhein-Westfalen	:	:	2.17	:	1.91	:	1.70	:	:
Rheinland-Pfalz	:	:	2.22	:	1.96	:	1.90	:	:
Saarland	:	:	0.85	:	0.96	:	0.88	:	:
Sachsen	:	:	:	:	2.25	:	2.30	:	:
Sachsen-Anhalt	:	:	:	:	1.63	:	1.52	:	:
Schleswig-Holstein	:	:	1.34	:	1.29	:	1.13	:	:
Thüringen	:	:	:	:	1.75	:	1.82	:	:
<b>ELLADA</b>	<b>0.38</b>	:	<b>0.37</b>	:	<b>0.48</b>	:	:	:	:
Voreia Ellada	0.29	:	0.24	:	0.38	:	:	:	:
Kentriki Ellada	0.23	:	0.20	:	0.26	:	:	:	:
Attiki	0.54	:	0.56	:	0.67	:	:	:	:
Nisia Aigaiou, Kriti	0.39	:	0.41	:	0.51	:	:	:	:
<b>ESPAÑA</b>	<b>0.73</b>	<b>0.83</b>	<b>0.85</b>	<b>0.89</b>	<b>0.89</b>	<b>0.82</b>	<b>0.82</b>	<b>0.85</b>	<b>0.86</b>
Noroeste	0.34	0.37	0.42	0.50	0.48	0.43	0.51	0.51	:
Noreste	0.71	0.84	0.87	0.90	0.93	0.81	0.91	0.94	:
Madrid	2.04	2.34	2.29	2.16	2.03	1.91	1.74	1.74	:
Centro (E)	0.30	0.36	0.36	0.41	0.49	0.46	0.45	0.45	:
Este	0.54	0.62	0.67	0.74	0.73	0.70	0.72	0.76	:
Sur	0.42	0.44	0.44	0.51	0.60	0.49	0.58	0.60	:
Canarias	0.22	0.25	0.30	0.49	0.47	0.52	0.44	0.49	:
<b>FRANCE <sup>5</sup></b>	:	:	<b>2.41</b>	<b>2.43</b>	<b>2.47</b>	<b>2.39</b>	<b>2.35</b>	<b>2.33</b>	:
Île de France	:	:	3.66	3.62	3.54	3.43	3.36	3.25	:
Bassin Parisien	:	:	0.87	0.94	0.96	0.95	0.97	0.95	:
Nord-Pas-de-Calais	:	:	0.45	0.45	0.50	0.48	0.46	0.47	:
Est	:	:	1.08	1.16	1.23	1.12	1.16	1.13	:
Ouest	:	:	0.88	0.91	1.00	1.03	0.98	0.98	:
Sud-Ouest	:	:	2.09	2.21	2.16	2.01	1.97	1.99	:
Centre-Est	:	:	1.86	1.97	2.09	2.10	2.03	2.13	:
Méditerranée	:	:	1.76	1.65	1.70	1.63	1.78	2.05	:
Départements d'Outre-Mer <sup>2</sup>	:	:	:	:	:	:	:	:	:

**Table 10A**  
**R&D EXPENDITURE BY REGION**

ALL SECTORS <sup>3</sup>

As % of GDP

	1989	1990	1991	1992	1993	1994	1995	1996	1997
<b>IRELAND</b>	<b>0.84</b>	<b>0.88</b>	<b>1.00</b>	<b>1.04</b>	<b>1.22</b>	<b>1.31</b>	<b>1.34</b>	:	:
<b>ITALIA <sup>4</sup></b>	<b>1.24</b>	<b>1.30</b>	<b>1.24</b>	<b>1.20</b>	<b>1.14</b>	<b>1.07</b>	<b>1.01</b>	<b>1.03 <sup>1</sup></b>	<b>1.09 <sup>1</sup></b>
Nord Ovest	:	:	:	:	:	1.67	1.51	1.55	:
Lombardia	:	:	:	:	:	1.26	1.23	1.24	:
Nord Est	:	:	:	:	:	0.63	0.61	0.58	:
Emilia-Romagna	:	:	:	:	:	0.91	0.83	0.85	:
Centro (I)	:	:	:	:	:	0.79	0.79	0.80	:
Lazio	:	:	:	:	:	2.00	1.96	1.95	:
Abruzzo-Molise	:	:	:	:	:	0.82	0.73	1.08	:
Campania	:	:	:	:	:	0.86	0.78	0.82	:
Sud	:	:	:	:	:	0.45	0.42	0.39	:
Sicilia	:	:	:	:	:	0.63	0.55	0.51	:
Sardegna	:	:	:	:	:	0.64	0.63	0.71	:
<b>NEDERLAND</b>	<b>2.12</b>	<b>2.16</b>	<b>2.05</b>	<b>1.99</b>	<b>2.01</b>	<b>2.05</b>	<b>2.08</b>	<b>2.12</b>	:
<b>ÖSTERREICH</b>	<b>1.37</b>	:	:	:	<b>1.49</b>	:	:	:	:
Ostösterreich	1.63	:	:	:	1.79	:	:	:	:
Südösterreich	1.37	:	:	:	1.35	:	:	:	:
Westösterreich	1.02	:	:	:	1.02	:	:	:	:
<b>PORTUGAL</b>	:	<b>0.53</b>	:	<b>0.63</b>	:	:	<b>0.63</b>	:	<b>0.65 <sup>1</sup></b>
Continente	:	0.54	:	0.65	:	:	0.64	:	:
Açores	:	0.34	:	0.33	:	:	0.51	:	:
Madeira	:	0.12	:	0.12	:	:	0.66	:	:
<b>SUOMI-FINLAND</b>	<b>1.83</b>	<b>1.91</b>	<b>2.07</b>	<b>2.18</b>	<b>2.23</b>	<b>2.34</b>	<b>2.35</b>	<b>2.59</b>	<b>2.78</b>
Manner-Suomi	:	:	:	:	:	:	2.36	:	:
Ahvenanmaa/Åland	:	:	:	:	:	:	0.12	:	:
<b>SVERIGE</b>	<b>2.93</b>	:	<b>2.87</b>	:	<b>3.19</b>	:	<b>3.58</b>	:	<b>3.82</b>
<b>UNITED KINGDOM</b>	<b>2.16</b>	<b>2.19</b>	<b>2.12</b>	<b>2.12</b>	<b>2.15</b>	<b>2.10</b>	<b>2.02</b>	<b>1.95</b>	<b>1.87</b>
North	:	:	:	:	0.77	1.28	1.21	0.89	:
Yorkshire and Humberside	:	:	:	:	0.86	0.97	0.98	0.98	:
East Midlands	:	:	:	:	2.30	1.79	1.77	1.89	:
East Anglia	:	:	:	:	2.30	3.21	3.27	3.80	:
South East (UK)	:	:	:	:	3.15	2.73	2.67	1.89	:
South West (UK)	:	:	:	:	1.79	2.16	2.02	1.91	:
West Midlands	:	:	:	:	1.86	1.62	1.67	1.55	:
North West (UK)	:	:	:	:	1.81	2.26	1.97	2.06	:
Wales	:	:	:	:	0.84	0.92	0.79	0.81	:
Scotland	:	:	:	:	1.31	1.44	1.37	1.38	:
Northern Ireland	:	:	:	:	0.65	0.84	0.82	0.95	:
<b>ICELAND</b>	<b>1.02</b>	<b>0.99</b>	<b>1.16</b>	<b>1.34</b>	<b>1.34</b>	<b>1.39</b>	<b>1.54</b>	<b>1.51 <sup>1</sup></b>	<b>1.58 <sup>1</sup></b>
<b>NORWAY</b>	<b>1.69</b>	:	<b>1.65</b>	:	<b>1.73</b>	:	<b>1.71</b>	:	<b>1.72</b>

<sup>1</sup> Provisional.

<sup>2</sup> Overseas departments not surveyed for BES.

<sup>3</sup> PNP included.

<sup>4</sup> PNP not existing.

<sup>5</sup> Between 16-17% of the R&D expenditure is not registered by region.



**R&D EXPENDITURE  
BUSINESS ENTERPRISE SECTOR**  
Mio national currencies

		1990	1991	1992	1993	1994	1995	1996	1997	1998
BELGIQUE-BELGIË	BEF	:	74 516	:	74 505 <sup>1</sup>	80 959 <sup>1</sup>	86 139 <sup>1</sup>	:	:	:
DANMARK	DKK	7 397	8 254	8 703	9 151	:	10 641	12 639	13 537	14 436
DEUTSCHLAND	DEM	48 000	51 675	52 285	51 236	51 190	52 835	53 600	:	:
ELLADA	GRD	:	15 532	:	26 924	:	:	:	:	:
ESPAÑA	ESP	246 239	268 434	272 708	266 176	256 317	284 891	309 914	327 922	356 812
FRANCE	FRF	94 956	100 271	105 833	107 182	108 568	109 213	112 373	:	:
IRELAND	IEP	142	176	199	271	334	397	:	:	:
ITALIA	ITL	9 914 291	9 853 634	10 021 744	9 450 383	9 206 050	9 540 714	10 246 771	11 369 609 <sup>1</sup>	12 081 264 <sup>1</sup>
NEDERLAND	NLG	5 873	5 520	5 458	5 749	6 428	6 913	7 364	:	:
ÖSTERREICH	ATS	:	:	:	17 715	:	:	:	:	:
PORTUGAL	PTE	13 586	:	17 452	:	:	19 292	:	25 976 <sup>1</sup>	:
SUOMI-FINLAND	FIM	6 158	5 798	5 896	6 234	7 431	8 166	9 850	11 396	:
SVERIGE	SEK	:	28 598	:	33 457	:	44 029	:	50 151	:
UNITED KINGDOM	GBP	8 318	8 135	8 489	9 069	9 204	9 254	9 362	9 553	:
ICELAND	ISK	701	1 005	1 167	1 710	1 882	2 216	2 277 <sup>1</sup>	2 948 <sup>1</sup>	:
NORWAY	NOK	:	6 877	:	7 632	:	9 021	:	10 352	:

<sup>1</sup> Provisional.

**Table 11A**  
**R&D EXPENDITURE BY REGION**  
**BUSINESS ENTERPRISE SECTOR**

Mio national currencies

		1989	1990	1991	1992	1993	1994	1995	1996	1997
<b>BELGIQUE-BELGIË</b>	<b>BEF</b>	<b>68 623</b>		<b>74 516</b>		<b>74 505</b>	<b>80 959</b>	<b>86 139</b>		
Bruxelles-Brussel		13 241		13 439			7 809	8 597		
Vlaams Gewest		39 511		43 857			54 628	57 477		
Région Wallonne		13 918		14 956			18 522	20 064		
Not registered by region		1 954		2 264			-	-		
<b>DANMARK</b>	<b>DKK</b>	<b>6 541</b>	<b>7 397</b>	<b>8 254</b>	<b>8 703</b>	<b>9 151</b>		<b>10 641</b>	<b>12 639</b>	<b>13 537</b>
<b>DEUTSCHLAND</b>	<b>DEM</b>	<b>46 086</b>	<b>48 000</b>	<b>51 675</b>	<b>52 285</b>	<b>51 236</b>	<b>51 190</b>	<b>52 835</b>	<b>53 600</b>	
Baden-Württemberg		10 762		11 931		13 512		13 755		
Bayern		12 286		13 547		12 037		12 440		
Berlin		1 436		1 615		2 002		1 932		
Brandenburg				200		307		355		
Bremen		687		772		629		740		
Hamburg		845		879		1 071		1 420		
Hessen		5 003		5 405		5 404		5 531		
Mecklenburg-Vorpom.				83		70		104		
Niedersachsen		2 718		2 760		2 693		3 235		
Nordrhein-Westfalen		9 013		9 744		8 827		8 103		
Rheinland-Pfalz		2 543		2 264		2 053		2 188		
Saarland		101		94		106		130		
Sachsen				722		787		1 134		
Sachsen-Anhalt				381		329		366		
Schleswig-Holstein		642		630		576		512		
Thüringen				305		318		501		
Not registered by region		50		343		515		386		
<b>ELLADA</b>	<b>GRD</b>	<b>9 147</b>		<b>15 532</b>		<b>26 924</b>				
Voreia Ellada		1 332		1 689		5 878				
Kentriki Ellada		1 357		2 628		3 238				
Attiki		6 190		11 004		17 360				
Nisia Aigaiou, Kriti		268		211		448				
<b>ESPAÑA</b>	<b>ESP</b>	<b>191 153</b>	<b>246 239</b>	<b>268 434</b>	<b>272 708</b>	<b>266 176</b>	<b>256 317</b>	<b>284 891</b>	<b>309 914</b>	<b>327 922</b>
Noroeste		5 829	6 807	7 361	9 174	8 078	7 778	7 067	7 688	10 804
Noreste		31 795	39 185	45 335	42 604	44 204	42 567	53 404	58 094	60 043
Madrid		83 414	113 070	117 611	115 657	108 111	104 107	103 851	112 973	113 061
Centro (E)		8 883	10 916	11 335	13 018	14 093	13 571	14 807	16 106	18 306
Este		50 705	64 202	74 151	78 788	78 247	75 349	86 542	94 142	104 307
Sur		10 406	11 820	12 235	13 277	13 218	12 728	17 738	19 296	19 544
Canarias		120	239	406	190	225	217	1 482	1 612	1 857
<b>FRANCE</b>	<b>FRF</b>	<b>86 623</b>	<b>94 956</b>	<b>100 271</b>	<b>105 833</b>	<b>107 182</b>	<b>108 568</b>	<b>109 213</b>	<b>112 373</b>	
Île de France		48 176	52 197	54 667	56 339	56 401	56 717	55 689	55 093	
Bassin Parisien		6 777	7 851	8 500	9 545	9 687	9 924	10 545	10 610	
Nord-Pas-de-Calais		1 096	1 209	1 408	1 380	1 587	1 568	1 544	1 614	
Est		3 405	3 901	4 564	5 105	5 462	5 152	5 594	5 546	
Ouest		3 338	3 606	4 134	5 294	5 916	6 411	6 261	6 563	
Sud-Ouest		7 789	9 052	9 433	9 699	8 735	8 884	8 933	9 127	
Centre-Est		9 898	10 451	10 755	11 492	12 250	12 879	12 624	13 817	
Méditerranée		6 144	6 690	6 810	6 981	7 141	7 033	8 023	10 004	
Dépts. d'Outre-Mer <sup>2</sup>										

**Table 11A**  
**R&D EXPENDITURE BY REGION**  
**BUSINESS ENTERPRISE SECTOR**

Mio national currencies

		1989	1990	1991	1992	1993	1994	1995	1996	1997
<b>IRELAND</b>	<b>IEP</b>	124	142	176	199	271	334	397	:	:
<b>ITALIA</b>	<b>ITL</b>	8 698 468	9 914 291	9 853 634	10 021 744	9 450 383	9 206 050	9 540 714	10 246 771	11 369 609 <sup>1</sup>
Nord Ovest		:	:	3 455 588	3 283 661	2 936 994	2 573 024	2 543 587	2 614 633	2 901 144
Lombardia		:	:	3 119 221	3 292 750	3 149 384	3 107 108	3 320 413	3 491 008	3 873 552
Nord Est		:	:	542 507	498 872	468 171	671 226	742 263	780 066	865 545
Emilia-Romagna		:	:	563 341	543 683	491 458	593 180	648 941	724 519	803 912
Centro (I)		:	:	462 551	496 816	448 304	454 515	461 773	485 327	538 508
Lazio		:	:	1 039 833	1 099 356	1 056 989	1 005 859	1 136 333	1 288 491	1 429 683
Abruzzo-Molise		:	:	126 471	168 955	164 815	162 189	155 513	303 437	336 688
Campania		:	:	280 609	344 059	444 536	364 783	303 396	341 499	378 920
Sud		:	:	152 070	162 200	177 653	156 600	156 657	146 865	162 959
Sicilia		:	:	78 044	94 482	73 522	81 360	41 503	32 838	36 436
Sardegna		:	:	33 399	36 910	38 557	36 206	30 335	38 088	42 262
<b>NEDERLAND</b>	<b>NLG</b>	6 079	5 873	5 520	5 458	5 749	6 428	6 913	7 364	:
Noord-Nederland		:	:	:	:	:	:	:	449	:
Oost-Nederland		:	:	:	:	:	:	:	1 172	:
West-Nederland		:	:	:	:	:	:	:	2 712	:
Zuid-Nederland		:	:	:	:	:	:	:	3 030	:
<b>ÖSTERREICH</b>	<b>ATS</b>	13 453	:	:	:	17 715	:	:	:	:
Ostösterreich		6 972	:	:	:	10 080	:	:	:	:
Südösterreich		2 385	:	:	:	2 443	:	:	:	:
Westösterreich		4 096	:	:	:	4 711	:	:	:	:
Not registered by region		-	:	:	:	481	:	:	:	:
<b>PORTUGAL</b>	<b>PTE</b>	:	13 586	:	17 452	:	:	19 292	:	25 976 <sup>1</sup>
Continente		:	13 570	:	17 452	:	:	19 221	:	25 939
Açores		:	-	:	-	:	:	15	:	5
Madeira		:	16	:	-	:	:	56	:	31
<b>SUOMI-FINLAND</b>	<b>FIM</b>	5 499	6 158	5 798	5 896	6 234	7 431	8 166	9 850	11 396
Manner-Suomi		:	:	:	:	:	:	8 165	:	11 395
Ahvenanmaa/Åland		:	:	:	:	:	:	1	:	1
<b>SVERIGE</b>	<b>SEK</b>	23 732	:	28 598	:	33 457	:	44 029	:	50 151
<b>UNITED KINGDOM</b>	<b>GBP</b>	7 650	8 318	8 135	8 489	9 069	9 204	9 254	9 362	9 553
North		:	:	:	:	132	280	270	189	216
Yorkshire and Humber.		:	:	:	:	230	256	279	279	256
East Midlands		:	:	:	:	790	595	615	710	679
East Anglia		:	:	:	:	257	466	518	2 085	2 303
South East (UK)		:	:	:	:	5 098	4 528	4 618	3 029	2 955
South West (UK)		:	:	:	:	553	769	754	717	760
West Midlands		:	:	:	:	721	611	663	628	647
North West (UK)		:	:	:	:	892	1 209	1 052	1 173	1 187
Wales		:	:	:	:	112	115	96	109	113
Scotland		:	:	:	:	245	318	328	361	356
Northern Ireland		:	:	:	:	39	58	61	82	81
<b>ICELAND</b>	<b>ISK</b>	611	701	1 005	1 167	1 710	1 882	2 216	2 277 <sup>1</sup>	2 948 <sup>1</sup>
<b>NORWAY</b>	<b>NOK</b>	6 524	:	6 877	:	7 632	:	9 021	:	10 352

<sup>1</sup> Provisional.

<sup>2</sup> Overseas departments not surveyed.

**Table 12****R&D EXPENDITURE****BUSINESS ENTERPRISE SECTOR**

Mio ECU at current prices and exchange rates

	1990	1991	1992	1993	1994	1995	1996	1997	1998
<b>EU-15<sup>2</sup></b>	<i>68 600</i>	<i>71 500</i>	<i>73 200</i>	<i>73 200</i>	<i>75 200</i>	<i>77 700</i>	<i>81 000</i>	<i>85 300</i>	<i>89 200</i>
<b>EUR-11<sup>2</sup></b>	<i>52 400</i>	<i>54 900</i>	<i>56 400</i>	<i>56 600</i>	<i>57 800</i>	<i>60 300</i>	<i>62 100</i>	<i>63 700</i>	<i>66 500</i>
BELGIQUE-BELGIË	:	1 765	:	1 841 <sup>1</sup>	2 041 <sup>1</sup>	2 234 <sup>1</sup>	:	:	:
DANMARK	<i>941</i>	1 043	<i>1 114</i>	1 206	:	1 452	<i>1 717</i>	<i>1 810</i>	<i>1 925</i>
DEUTSCHLAND	23 415	25 207	25 884	26 410	26 661	28 254	<i>28 063</i>	:	:
ELLADA	:	69	:	100	:	:	:	:	:
ESPAÑA	1 904	2 089	2 058	1 785	1 613	1 748	<i>1 928</i>	1 977	<i>2 134</i>
FRANCE	13 742	14 386	15 450	16 166	16 500	16 725	17 315	:	:
IRELAND	184	229	262	339	<i>423</i>	484	:	:	:
ITALIA	6 514	6 427	6 282	5 133	4 807	4 479	5 231	5 893 <sup>1</sup>	6 216 <sup>1</sup>
NEDERLAND	2 542	2 390	2 404	2 637	2 976	3 292	3 441	:	:
ÖSTERREICH	:	:	:	1 301	:	:	:	:	:
PORTUGAL	75	:	100	:	:	<b>98</b>	:	<b>131<sup>1</sup></b>	:
SUOMI-FINLAND	1 270	1 160	1 015	930	1 200	1 430	1 690	1 938	:
SVERIGE	:	3 823	:	3 669	:	4 719	:	5 798	:
UNITED KINGDOM	11 715	11 621	11 472	11 627	11 800	11 149	11 558	13 845	:
<b>EEA<sup>3</sup></b>	<i>69 400</i>	<i>72 300</i>	<i>74 100</i>	<i>74 200</i>	<i>76 100</i>	<i>78 900</i>	<i>82 200</i>	<i>86 600</i>	<i>90 500</i>
ICELAND	9	14	16	22	23	26	<i>27<sup>1</sup></i>	<i>37<sup>1</sup></i>	:
NORWAY	:	858	:	918	:	1 089	:	1 291	:

<sup>1</sup> Provisional.<sup>2</sup> Luxembourg not included.<sup>3</sup> Luxembourg and Liechtenstein not included.

**Table 12A**  
**R&D EXPENDITURE BY REGION**  
**BUSINESS ENTERPRISE SECTOR**  
Mio ECU at current prices and exchange rates

	1989	1990	1991	1992	1993	1994	1995	1996	1997
<b>BELGIQUE-BELGIË</b>	<b>1 582</b>	:	<b>1 765</b>	:	<b>1 841</b>	<b>2 041</b>	<b>2 234</b>	:	:
Bruxelles-Brussel	305	:	318	:	:	197	223	:	:
Vlaams Gewest	911	:	1 039	:	:	1 377	1 491	:	:
Région Wallonne	321	:	354	:	:	467	520	:	:
Not registered by region	45	:	54	:	:	-	-	:	:
<b>DANMARK</b>	<b>813</b>	<b>941</b>	<b>1 043</b>	<b>1 114</b>	<b>1 206</b>	:	<b>1 452</b>	<b>1 717</b>	<b>1 810</b>
<b>DEUTSCHLAND</b>	<b>22 264</b>	<b>23 415</b>	<b>25 207</b>	<b>25 884</b>	<b>26 410</b>	<b>26 661</b>	<b>28 254</b>	<b>28 063</b>	:
Baden-Württemberg	5 199	:	5 820	:	6 965	:	7 356	:	:
Bayern	5 935	:	6 608	:	6 205	:	6 652	:	:
Berlin	694	:	788	:	1 032	:	1 033	:	:
Brandenburg	:	:	98	:	158	:	190	:	:
Bremen	332	:	377	:	324	:	396	:	:
Hamburg	408	:	429	:	552	:	759	:	:
Hessen	2 417	:	2 637	:	2 786	:	2 958	:	:
Mecklenburg-Vorpommern	:	:	40	:	36	:	56	:	:
Niedersachsen	1 313	:	1 346	:	1 388	:	1 730	:	:
Nordrhein-Westfalen	4 354	:	4 753	:	4 550	:	4 333	:	:
Rheinland-Pfalz	1 229	:	1 104	:	1 058	:	1 170	:	:
Saarland	49	:	46	:	55	:	70	:	:
Sachsen	:	:	352	:	406	:	606	:	:
Sachsen-Anhalt	:	:	186	:	170	:	196	:	:
Schleswig-Holstein	310	:	307	:	297	:	274	:	:
Thüringen	:	:	149	:	164	:	268	:	:
Not registered by region	24	:	167	:	265	:	206	:	:
<b>ELLADA</b>	<b>51</b>	:	<b>69</b>	:	<b>100</b>	:	:	:	:
Voreia Ellada	7	:	8	:	22	:	:	:	:
Kentriki Ellada	8	:	12	:	12	:	:	:	:
Attiki	35	:	49	:	65	:	:	:	:
Nisia Aigaiou, Kriti	2	:	1	:	2	:	:	:	:
<b>ESPAÑA</b>	<b>1 466</b>	<b>1 904</b>	<b>2 089</b>	<b>2 058</b>	<b>1 785</b>	<b>1 613</b>	<b>1 748</b>	<b>1 928</b>	<b>1 977</b>
Noroeste	45	53	57	69	54	49	43	48	65
Noreste	244	303	353	322	296	268	328	361	362
Madrid	640	874	915	873	725	655	637	703	682
Centro (E)	68	84	88	98	95	85	91	100	110
Este	389	496	577	595	525	474	531	586	629
Sur	80	91	95	100	89	80	109	120	118
Canarias	1	2	3	1	2	1	9	10	11
<b>FRANCE</b>	<b>12 339</b>	<b>13 742</b>	<b>14 386</b>	<b>15 450</b>	<b>16 166</b>	<b>16 500</b>	<b>16 725</b>	<b>17 315</b>	:
Île de France	6 863	7 554	7 843	8 225	8 507	8 620	8 528	8 489	:
Bassin Parisien	965	1 136	1 220	1 393	1 461	1 508	1 615	1 635	:
Nord-Pas-de-Calais	156	175	202	201	239	238	236	249	:
Est	485	565	655	745	824	783	857	855	:
Ouest	476	522	593	773	892	974	959	1 011	:
Sud-Ouest	1 110	1 310	1 353	1 416	1 318	1 350	1 368	1 406	:
Centre-Est	1 410	1 512	1 543	1 678	1 848	1 957	1 933	2 129	:
Méditerranée	875	968	977	1 019	1 077	1 069	1 229	1 541	:
Départements d'Outre-Mer <sup>2</sup>	:	:	:	:	:	:	:	:	:

**Table 12A**  
**R&D EXPENDITURE BY REGION**  
**BUSINESS ENTERPRISE SECTOR**



Mio ECU at current prices and exchange rates

	1989	1990	1991	1992	1993	1994	1995	1996	1997
<b>IRELAND</b>	159	184	229	262	339	423	484	:	:
<b>ITALIA</b>	5 759	6 514	6 427	6 282	5 133	4 807	4 479	5 231	5 893 <sup>1</sup>
Nord Ovest	:	:	2 254	2 058	1 595	1 344	1 194	1 335	1 504
Lombardia	:	:	2 034	2 064	1 710	1 622	1 559	1 782	2 008
Nord Est	:	:	354	313	254	351	348	398	449
Emilia-Romagna	:	:	367	341	267	310	305	370	417
Centro (I)	:	:	302	311	243	237	217	248	279
Lazio	:	:	678	689	574	525	533	658	741
Abruzzo-Molise	:	:	82	106	90	85	73	155	175
Campania	:	:	183	216	241	190	142	174	196
Sud	:	:	99	102	96	82	74	75	84
Sicilia	:	:	51	59	40	42	19	17	19
Sardegna	:	:	22	23	21	19	14	19	22
<b>NEDERLAND</b>	2 598	2 542	2 390	2 404	2 637	2 976	3 292	3 441	:
Noord-Nederland	:	:	:	:	:	:	:	210	:
Oost-Nederland	:	:	:	:	:	:	:	548	:
West-Nederland	:	:	:	:	:	:	:	1 267	:
Zuid-Nederland	:	:	:	:	:	:	:	1 416	:
<b>ÖSTERREICH</b>	923	:	:	:	1 301	:	:	:	:
Ostösterreich	479	:	:	:	740	:	:	:	:
Südösterreich	164	:	:	:	179	:	:	:	:
Westösterreich	281	:	:	:	346	:	:	:	:
Not registered by region	-	:	:	:	35	:	:	:	:
<b>PORTUGAL</b>	:	75	:	100	:	:	98	:	131 <sup>1</sup>
Continente	:	75	:	100	:	:	98	:	131
Açores	:	-	:	-	:	:	0	:	0
Madeira	:	0	:	-	:	:	0	:	0
<b>SUOMI-FINLAND</b>	1 165	1 270	1 160	1 015	930	1 200	1 430	1 690	1 938
Manner-Suomi	:	:	:	:	:	:	1 430	:	1 938
Ahvenanmaa/Åland	:	:	:	:	:	:	0	:	0
<b>SVERIGE</b>	3 343	:	3 823	:	3 669	:	4 719	:	5 798
<b>UNITED KINGDOM</b>	11 418	11 715	11 621	11 472	11 627	11 800	11 149	11 558	13 845
North	:	:	:	:	169	359	325	233	313
Yorkshire and Humberside	:	:	:	:	295	328	336	344	371
East Midlands	:	:	:	:	1 013	763	741	877	984
East Anglia	:	:	:	:	329	597	624	2 574	3 338
South East (UK)	:	:	:	:	6 536	5 805	5 564	3 740	4 283
South West (UK)	:	:	:	:	709	986	908	885	1 101
West Midlands	:	:	:	:	924	783	799	775	938
North West (UK)	:	:	:	:	1 144	1 550	1 267	1 448	1 720
Wales	:	:	:	:	144	147	116	135	164
Scotland	:	:	:	:	314	408	395	446	516
Northern Ireland	:	:	:	:	50	74	73	101	117
<b>ICELAND</b>	10	9	14	16	22	23	26	27 <sup>1</sup>	37 <sup>1</sup>
<b>NORWAY</b>	858	:	858	:	918	:	1 088	:	1 291

<sup>1</sup> Provisional.

<sup>2</sup> Overseas departments not surveyed.

**R&D EXPENDITURE  
BUSINESS ENTERPRISE SECTOR**  
Mio PPS at 1990 prices

	1990	1991	1992	1993	1994	1995	1996	1997	1998
<b>EU-15<sup>2</sup></b>	<b>65 700</b>	<b>65 200</b>	<b>64 500</b>	<b>63 200</b>	<b>63 200</b>	<b>63 900</b>	<b>64 800</b>	<b>66 700</b>	<b>68 800</b>
<b>EUR-11<sup>2</sup></b>	<b>49 700</b>	<b>50 100</b>	<b>49 200</b>	<b>47 300</b>	<b>46 900</b>	<b>47 400</b>	<b>48 300</b>	<b>49 900</b>	<b>51 600</b>
BELGIQUE-BELGIË	:	1 703	:	1 578 <sup>1</sup>	1 677 <sup>1</sup>	1 758 <sup>1</sup>	:	:	:
DANMARK	728	793	817	855	:	969	1 129	1 188	1 240
DEUTSCHLAND	21 333	22 105	21 183	19 958	19 479	19 667	19 753	:	:
ELLADA	:	86	:	113	:	:	:	:	:
ESPAÑA	2 092	2 127	2 024	1 894	1 752	1 858	1 956	2 028	2 155
FRANCE	13 337	13 633	14 076	13 926	13 862	13 745	13 955	:	:
IRELAND	192	234	258	337	411	486	:	:	:
ITALIA	6 493	5 992	5 823	5 258	4 954	4 885	5 000	5 403 <sup>1</sup>	5 611 <sup>1</sup>
NEDERLAND	2 521	2 302	2 231	2 306	2 531	2 661	2 797	:	:
ÖSTERREICH	:	:	:	1 052	:	:	:	:	:
PORTUGAL	122	:	127	:	:	117	:	149 <sup>1</sup>	:
SUOMI-FINLAND	894	821	829	856	1 008	1 081	1 294	1 464	:
SVERIGE	:	2 637	:	2 974	:	3 686	:	4 105	:
UNITED KINGDOM	12 603	11 498	11 453	11 876	11 858	11 626	11 357	11 282	:
<b>EEA<sup>3</sup></b>	<b>66 400</b>	<b>65 900</b>	<b>65 200</b>	<b>63 900</b>	<b>63 900</b>	<b>64 700</b>	<b>65 700</b>	<b>67 600</b>	<b>69 600</b>
ICELAND	8	11	13	18	20	22	23 <sup>1</sup>	23 <sup>1</sup>	:
NORWAY	:	690	:	753	:	862	:	946	:

<sup>1</sup> Provisional.

<sup>2</sup> Luxembourg not included.

<sup>3</sup> Luxembourg and Liechtenstein not included.

**Table 13A**  
**R&D EXPENDITURE BY REGION**  
**BUSINESS ENTERPRISE SECTOR**

Mio PPS at 1990 prices

	1989	1990	1991	1992	1993	1994	1995	1996	1997
<b>BELGIQUE-BELGIË</b>	<b>1 663</b>	:	<b>1 703</b>	:	<b>1 578</b> <sup>1</sup>	<b>1 677</b> <sup>1</sup>	<b>1 758</b> <sup>1</sup>	:	:
Bruxelles-Brussel	321	:	307	:	:	162	175	:	:
Vlaams Gewest	958	:	1 002	:	:	1 132	1 173	:	:
Région Wallonne	337	:	342	:	:	384	410	:	:
Not registered by region	47	:	52	:	:	-	-	:	:
<b>DANMARK</b>	<b>661</b>	<b>728</b>	<b>793</b>	<b>817</b>	<b>855</b>	:	<b>969</b>	<b>1 129</b>	<b>1 188</b>
<b>DEUTSCHLAND</b>	<b>21 138</b>	<b>21 333</b>	<b>22 105</b>	<b>21 183</b>	<b>19 958</b>	<b>19 479</b>	<b>19 667</b>	<b>19 753</b>	:
Baden-Württemberg	4 936	:	5 104	:	5 263	:	5 120	:	:
Bayern	5 635	:	5 795	:	4 689	:	4 631	:	:
Berlin	659	:	691	:	780	:	719	:	:
Brandenburg	:	:	86	:	120	:	132	:	:
Bremen	315	:	330	:	245	:	275	:	:
Hamburg	388	:	376	:	417	:	529	:	:
Hessen	2 295	:	2 312	:	2 105	:	2 059	:	:
Mecklenburg-Vorpommern	:	:	36	:	27	:	39	:	:
Niedersachsen	1 247	:	1 181	:	1 049	:	1 204	:	:
Nordrhein-Westfalen	4 134	:	4 168	:	3 438	:	3 016	:	:
Rheinland-Pfalz	1 166	:	968	:	800	:	814	:	:
Saarland	46	:	40	:	41	:	48	:	:
Sachsen	:	:	309	:	307	:	422	:	:
Sachsen-Anhalt	:	:	163	:	128	:	136	:	:
Schleswig-Holstein	294	:	269	:	224	:	191	:	:
Thüringen	:	:	130	:	124	:	186	:	:
Not registered by region	23	:	147	:	201	:	144	:	:
<b>ELLADA</b>	<b>73</b>	:	<b>86</b>	:	<b>113</b>	:	:	:	:
Voreia Ellada	11	:	9	:	25	:	:	:	:
Kentriki Ellada	11	:	14	:	14	:	:	:	:
Attiki	49	:	61	:	73	:	:	:	:
Nisia Aigaiou, Kriti	2	:	1	:	2	:	:	:	:
<b>ESPAÑA</b>	<b>1 743</b>	<b>2 092</b>	<b>2 127</b>	<b>2 024</b>	<b>1 894</b>	<b>1 752</b>	<b>1 858</b>	<b>1 956</b>	<b>2 028</b>
Noroeste	53	58	58	68	57	53	46	49	67
Noreste	290	333	359	316	315	291	348	367	371
Madrid	760	961	932	858	769	712	677	713	699
Centro (E)	81	93	90	97	100	93	97	102	113
Este	462	545	588	585	557	515	564	594	645
Sur	95	100	97	99	94	87	116	122	121
Canarias	1	2	3	1	2	1	10	10	11
<b>FRANCE</b>	<b>12 555</b>	<b>13 337</b>	<b>13 633</b>	<b>14 076</b>	<b>13 926</b>	<b>13 862</b>	<b>13 745</b>	<b>13 955</b>	:
Île de France	6 983	7 331	7 433	7 493	7 328	7 242	7 009	6 842	:
Bassin Parisien	982	1 103	1 156	1 270	1 259	1 267	1 327	1 318	:
Nord-Pas-de-Calais	159	170	191	184	206	200	194	200	:
Est	494	548	621	679	710	658	704	689	:
Ouest	484	506	562	704	769	819	788	815	:
Sud-Ouest	1 129	1 271	1 283	1 290	1 135	1 134	1 124	1 133	:
Centre-Est	1 435	1 468	1 462	1 528	1 592	1 644	1 589	1 716	:
Méditerranée	891	940	926	928	928	898	1 010	1 242	:
Départements d'Outre-Mer <sup>2</sup>	:	:	:	:	:	:	:	:	:



**Table 13A**  
**R&D EXPENDITURE BY REGION**  
**BUSINESS ENTERPRISE SECTOR**

Mio PPS at 1990 prices

	1989	1990	1991	1992	1993	1994	1995	1996	1997
<b>IRELAND</b>	<b>166</b>	<b>192</b>	<b>234</b>	<b>258</b>	<b>337</b>	<b>411</b>	<b>486</b>	:	:
<b>ITALIA</b>	<b>6 132</b>	<b>6 493</b>	<b>5 992</b>	<b>5 823</b>	<b>5 258</b>	<b>4 954</b>	<b>4 885</b>	<b>5 000</b>	<b>5 403</b> <sup>1</sup>
Nord Ovest	:	:	2 101	1 908	1 634	1 385	1 302	1 276	1 379
Lombardia	:	:	1 897	1 913	1 752	1 672	1 700	1 704	1 841
Nord Est	:	:	330	290	260	361	380	381	411
Emilia-Romagna	:	:	343	316	273	319	332	354	382
Centro (I)	:	:	281	289	249	245	236	237	256
Lazio	:	:	632	639	588	541	582	629	679
Abruzzo-Molise	:	:	77	98	92	87	80	148	160
Campania	:	:	171	200	247	196	155	167	180
Sud	:	:	92	94	99	84	80	72	77
Sicilia	:	:	47	55	41	44	21	16	17
Sardegna	:	:	20	21	21	19	16	19	20
<b>NEDERLAND</b>	<b>2 670</b>	<b>2 521</b>	<b>2 302</b>	<b>2 231</b>	<b>2 306</b>	<b>2 531</b>	<b>2 661</b>	<b>2 797</b>	:
Noord-Nederland	:	:	:	:	:	:	:	171	:
Oost-Nederland	:	:	:	:	:	:	:	445	:
West-Nederland	:	:	:	:	:	:	:	1 030	:
Zuid-Nederland	:	:	:	:	:	:	:	1 151	:
<b>ÖSTERREICH</b>	<b>919</b>	:	:	:	<b>1 052</b>	:	:	:	:
Ostösterreich	476	:	:	:	599	:	:	:	:
Südösterreich	163	:	:	:	145	:	:	:	:
Westösterreich	280	:	:	:	280	:	:	:	:
Not registered by region	-	:	:	:	29	:	:	:	:
<b>PORTUGAL</b>	:	<b>122</b>	:	<b>126</b>	:	:	<b>117</b>	:	<b>149</b> <sup>1</sup>
Continente	:	122	:	126	:	:	117	:	149
Açores	:	-	:	-	:	:	0	:	0
Madeira	:	0	:	-	:	:	0	:	0
<b>SUOMI-FINLAND</b>	<b>845</b>	<b>894</b>	<b>821</b>	<b>829</b>	<b>856</b>	<b>1 008</b>	<b>1 081</b>	<b>1 294</b>	<b>1 464</b>
Manner-Suomi	:	:	:	:	:	:	1 081	:	1 464
Ahvenanmaa/Åland	:	:	:	:	:	:	0	:	0
<b>SVERIGE</b>	<b>2 562</b>	:	<b>2 637</b>	:	<b>2 974</b>	:	<b>3 686</b>	:	<b>4 105</b>
<b>UNITED KINGDOM</b>	<b>12 331</b>	<b>12 603</b>	<b>11 498</b>	<b>11 453</b>	<b>11 876</b>	<b>11 858</b>	<b>11 626</b>	<b>11 357</b>	<b>11 282</b>
North	:	:	:	:	173	361	339	229	255
Yorkshire and Humberside	:	:	:	:	301	330	351	338	302
East Midlands	:	:	:	:	1 035	767	773	861	802
East Anglia	:	:	:	:	337	600	651	2 529	2 720
South East (UK)	:	:	:	:	6 676	5 834	5 802	3 674	3 490
South West (UK)	:	:	:	:	724	991	947	870	898
West Midlands	:	:	:	:	944	787	833	762	764
North West (UK)	:	:	:	:	1 168	1 558	1 322	1 423	1 402
Wales	:	:	:	:	147	148	121	132	133
Scotland	:	:	:	:	321	410	412	438	420
Northern Ireland	:	:	:	:	51	75	77	99	96
<b>ICELAND</b>	<b>9</b>	<b>8</b>	<b>11</b>	<b>13</b>	<b>18</b>	<b>20</b>	<b>22</b>	<b>23</b> <sup>1</sup>	<b>28</b> <sup>1</sup>
<b>NORWAY</b>	<b>696</b>	:	<b>690</b>	:	<b>753</b>	:	<b>862</b>	:	<b>946</b>

<sup>1</sup> Provisional.

<sup>2</sup> Overseas departments not surveyed.

**Table 14**
**R&D EXPENDITURE**  
**BUSINESS ENTERPRISE SECTOR**  
 As % of GDP

	1990	1991	1992	1993	1994	1995	1996	1997	1998
<b>EU-15<sup>2</sup></b>	<b>1.32</b>	<b>1.27</b>	<b>1.24</b>	<b>1.24</b>	<b>1.21</b>	<b>1.21</b>	<b>1.20</b>	<b>1.20</b>	<b>1.19</b>
<b>EUR-11<sup>2</sup></b>	<b>1.29</b>	<b>1.23</b>	<b>1.20</b>	<b>1.19</b>	<b>1.16</b>	<b>1.16</b>	<b>1.15</b>	<b>1.15</b>	<b>1.15</b>
BELGIQUE-BELGIË	:	1.09	:	1.01 <sup>1</sup>	1.06 <sup>1</sup>	1.08 <sup>1</sup>	:	:	:
DANMARK	0.94	1.02	1.04	1.07	:	1.12	1.23	1.28	1.29
DEUTSCHLAND	1.98	1.81	1.70	1.62	1.53	1.53	1.52	:	:
ELLADA	:	0.10	:	0.13	:	:	:	:	:
ESPAÑA	0.48	0.48	0.45	0.42	0.38	0.40	0.41	0.42	0.43
FRANCE	1.46	1.48	1.52	1.52	1.48	1.43	1.44	:	:
IRELAND	0.51	0.61	0.65	0.82	0.90	0.94	:	:	:
ITALIA	0.76	0.69	0.67	0.61	0.57	0.54	0.55	0.58 <sup>1</sup>	0.59 <sup>1</sup>
NEDERLAND	1.14	1.02	0.97	0.99	1.06	1.09	1.11	:	:
ÖSTERREICH	:	:	:	0.83	:	:	:	:	:
PORTUGAL	0.14	:	0.14	:	:	0.13	:	0.15 <sup>1</sup>	:
SUOMI-FINLAND	1.20	1.18	1.24	1.29	1.45	1.48	1.72	1.83	:
SVERIGE	:	1.97	:	2.31	:	2.66	:	2.86	:
UNITED KINGDOM	1.52	1.42	1.42	1.44	1.38	1.32	1.27	1.22	:
<b>EEA<sup>3</sup></b>	<b>1.31</b>	<b>1.26</b>	<b>1.24</b>	<b>1.24</b>	<b>1.21</b>	<b>1.20</b>	<b>1.19</b>	<b>1.19</b>	<b>1.19</b>
ICELAND	0.19	0.25	0.29	0.42	0.43	0.49	0.47 <sup>1</sup>	0.57 <sup>1</sup>	:
NORWAY	:	0.90	:	0.93	:	0.97	:	0.98	:

<sup>1</sup> Provisional.<sup>2</sup> Luxembourg not included.<sup>3</sup> Luxembourg and Liechtenstein not included.

**Table 14A**  
**R&D EXPENDITURE BY REGION**  
**BUSINESS ENTERPRISE SECTOR**

As % of GDP

	1989	1990	1991	1992	1993	1994	1995	1996	1997
<b>BELGIQUE-BELGIË</b>	<b>1.11</b>	:	<b>1.09</b>	:	<b>1.01</b>	<b>1.06</b>	<b>1.08</b>	:	:
Bruxelles-Brussel	1.43	:	1.33	:	:	0.71	0.76	:	:
Vlaams Gewest	1.09	:	1.08	:	:	1.20	1.20	:	:
Région Wallonne	0.86	:	0.83	:	:	0.93	0.95	:	:
<b>DANMARK</b>	<b>0.87</b>	<b>0.94</b>	<b>1.02</b>	<b>1.04</b>	<b>1.07</b>	:	<b>1.12</b>	<b>1.23</b>	<b>1.28</b>
<b>DEUTSCHLAND</b>	<b>2.07</b>	<b>1.98</b>	<b>1.81</b>	<b>1.70</b>	<b>1.62</b>	<b>1.53</b>	<b>1.53</b>	<b>1.52</b>	:
Baden-Württemberg	2.89	:	2.71	:	2.93	:	2.76	:	:
Bayern	3.04	:	2.78	:	2.25	:	2.14	:	:
Berlin	1.92	:	1.48	:	1.53	:	1.38	:	:
Brandenburg	:	:	0.56	:	0.57	:	0.55	:	:
Bremen	2.30	:	2.14	:	1.68	:	1.85	:	:
Hamburg	0.95	:	0.81	:	0.92	:	1.11	:	:
Hessen	2.13	:	1.87	:	1.69	:	1.60	:	:
Mecklenburg-Vorpommern	:	:	0.34	:	0.20	:	0.24	:	:
Niedersachsen	1.24	:	1.05	:	0.94	:	1.04	:	:
Nordrhein-Westfalen	1.57	:	1.46	:	1.24	:	1.05	:	:
Rheinland-Pfalz	2.23	:	1.71	:	1.47	:	1.46	:	:
Saarland	0.30	:	0.24	:	0.26	:	0.29	:	:
Sachsen	:	:	1.21	:	0.86	:	1.02	:	:
Sachsen-Anhalt	:	:	1.06	:	0.59	:	0.57	:	:
Schleswig-Holstein	0.84	:	0.68	:	0.57	:	0.46	:	:
Thüringen	:	:	1.04	:	0.65	:	0.86	:	:
<b>ELLADA</b>	<b>0.08</b>	:	<b>0.10</b>	:	<b>0.13</b>	:	:	:	:
Voreia Ellada	0.04	:	0.03	:	0.09	:	:	:	:
Kentriki Ellada	0.06	:	0.07	:	0.07	:	:	:	:
Attiki	0.15	:	0.19	:	0.22	:	:	:	:
Nisia Aigaiou, Kriti	0.03	:	0.01	:	0.02	:	:	:	:
<b>ESPAÑA</b>	<b>0.41</b>	<b>0.48</b>	<b>0.48</b>	<b>0.45</b>	<b>0.42</b>	<b>0.38</b>	<b>0.40</b>	<b>0.41</b>	<b>0.42</b>
Noroeste	0.13	0.14	0.14	0.16	0.14	0.12	0.10	0.11	:
Noreste	0.54	0.61	0.65	0.57	0.58	0.53	0.62	0.64	:
Madrid	1.16	1.40	1.32	1.20	1.08	0.98	0.90	0.92	:
Centro (E)	0.16	0.18	0.18	0.19	0.19	0.18	0.18	0.18	:
Este	0.35	0.40	0.42	0.42	0.40	0.36	0.39	0.40	:
Sur	0.14	0.14	0.13	0.13	0.13	0.12	0.16	0.16	:
Canarias	0.01	0.01	0.02	0.01	0.01	0.01	0.05	0.06	:
<b>FRANCE</b>	<b>1.41</b>	<b>1.46</b>	<b>1.48</b>	<b>1.52</b>	<b>1.52</b>	<b>1.48</b>	<b>1.43</b>	<b>1.44</b>	:
Île de France	2.77	2.82	2.82	2.78	2.71	2.62	2.51	2.42	:
Bassin Parisien	0.66	0.73	0.76	0.85	0.86	0.84	0.86	0.85	:
Nord-Pas-de-Calais	0.32	0.34	0.37	0.35	0.40	0.38	0.36	0.37	:
Est	0.67	0.74	0.83	0.92	0.97	0.87	0.91	0.88	:
Ouest	0.49	0.51	0.56	0.69	0.77	0.80	0.75	0.76	:
Sud-Ouest	1.39	1.53	1.56	1.56	1.40	1.37	1.31	1.30	:
Centre-Est	1.43	1.43	1.41	1.48	1.56	1.58	1.48	1.59	:
Méditerranée	1.00	1.02	0.99	0.99	1.02	0.96	1.04	1.28	:
Départements d'Outre-Mer <sup>2</sup>	:	:	:	:	:	:	:	:	:

**Table 14A**  
**R&D EXPENDITURE BY REGION**  
**BUSINESS ENTERPRISE SECTOR**

As % of GDP

	1989	1990	1991	1992	1993	1994	1995	1996	1997
<b>IRELAND</b>	<b>0.48</b>	<b>0.51</b>	<b>0.61</b>	<b>0.65</b>	<b>0.82</b>	<b>0.90</b>	<b>0.94</b>	:	:
<b>ITALIA</b>	<b>0.73</b>	<b>0.76</b>	<b>0.69</b>	<b>0.67</b>	<b>0.61</b>	<b>0.57</b>	<b>0.54</b>	<b>0.55</b>	<b>0.58</b> <sup>1</sup>
Nord Ovest	:	:	1.97	1.79	1.58	1.30	1.18	1.15	:
Lombardia	:	:	1.09	1.10	1.02	0.96	0.94	0.93	:
Nord Est	:	:	0.29	0.25	0.23	0.30	0.30	0.30	:
Emilia-Romagna	:	:	0.46	0.42	0.37	0.42	0.42	0.44	:
Centro (I)	:	:	0.31	0.31	0.27	0.26	0.25	0.25	:
Lazio	:	:	0.71	0.71	0.66	0.61	0.65	0.69	:
Abruzzo-Molise	:	:	0.37	0.46	0.45	0.42	0.37	0.69	:
Campania	:	:	0.29	0.34	0.43	0.34	0.27	0.28	:
Sud	:	:	0.13	0.14	0.15	0.12	0.11	0.10	:
Sicilia	:	:	0.09	0.10	0.08	0.09	0.04	0.03	:
Sardegna	:	:	0.11	0.11	0.11	0.10	0.08	0.10	:
<b>NEDERLAND</b>	<b>1.25</b>	<b>1.14</b>	<b>1.02</b>	<b>0.97</b>	<b>0.99</b>	<b>1.06</b>	<b>1.09</b>	<b>1.11</b>	:
Noord-Nederland	:	:	:	:	:	:	:	0.66	:
Oost-Nederland	:	:	:	:	:	:	:	0.98	:
West-Nederland	:	:	:	:	:	:	:	0.81	:
Zuid-Nederland	:	:	:	:	:	:	:	2.11	:
<b>ÖSTERREICH</b>	<b>0.80</b>	:	:	:	<b>0.83</b>	:	:	:	:
Ostösterreich	0.89	:	:	:	1.00	:	:	:	:
Südösterreich	0.80	:	:	:	0.66	:	:	:	:
Westösterreich	0.69	:	:	:	0.63	:	:	:	:
<b>PORTUGAL</b>	:	<b>0.14</b>	:	<b>0.14</b>	:	:	<b>0.13</b>	:	<b>0.15</b> <sup>1</sup>
Continente	:	0.14	:	0.14	:	:	0.14	:	:
Açores	:	-	:	-	:	:	0.01	:	:
Madeira	:	0.01	:	-	:	:	0.02	:	:
<b>SUOMI-FINLAND</b>	<b>1.13</b>	<b>1.20</b>	<b>1.18</b>	<b>1.24</b>	<b>1.29</b>	<b>1.45</b>	<b>1.48</b>	<b>1.72</b>	<b>1.83</b>
Manner-Suomi	:	:	:	:	:	:	1.49	:	:
Ahvenanmaa/Åland	:	:	:	:	:	:	0.03	:	:
<b>SVERIGE</b>	<b>1.93</b>	:	<b>1.98</b>	:	<b>2.31</b>	:	<b>2.66</b>	:	<b>2.86</b>
<b>UNITED KINGDOM</b>	<b>1.49</b>	<b>1.52</b>	<b>1.42</b>	<b>1.42</b>	<b>1.44</b>	<b>1.38</b>	<b>1.32</b>	<b>1.27</b>	<b>1.22</b>
North	:	:	:	:	0.45	0.89	0.82	0.56	:
Yorkshire and Humberside	:	:	:	:	0.47	0.50	0.51	0.49	:
East Midlands	:	:	:	:	1.88	1.31	1.30	1.45	:
East Anglia	:	:	:	:	1.13	1.92	2.03	3.13	:
South East (UK)	:	:	:	:	2.23	1.89	1.85	1.13	:
South West (UK)	:	:	:	:	1.12	1.48	1.36	1.24	:
West Midlands	:	:	:	:	1.37	1.08	1.11	1.01	:
North West (UK)	:	:	:	:	1.43	1.82	1.52	1.62	:
Wales	:	:	:	:	0.44	0.41	0.33	0.36	:
Scotland	:	:	:	:	0.45	0.55	0.53	0.57	:
Northern Ireland	:	:	:	:	0.27	0.38	0.37	0.48	:
<b>ICELAND</b>	<b>0.20</b>	<b>0.19</b>	<b>0.25</b>	<b>0.29</b>	<b>0.42</b>	<b>0.43</b>	<b>0.49</b>	<b>0.47</b> <sup>1</sup>	<b>0.57</b> <sup>1</sup>
<b>NORWAY</b>	<b>0.96</b>	:	<b>0.90</b>	:	<b>0.93</b>	:	<b>0.97</b>	:	<b>0.98</b>

<sup>1</sup> Provisional.

<sup>2</sup> Overseas departments not surveyed.

**R&D EXPENDITURE  
GOVERNMENT SECTOR**  
Mio national currencies

		1990	1991	1992	1993	1994	1995	1996	1997	1998
BELGIQUE-BELGIË	BEF	:	6 866	:	7 285 <sup>1</sup>	4 693 <sup>1</sup>	4 821 <sup>1</sup>	:	:	:
DANMARK	DKK	2 382	2 497	2 646	2 795	:	3 154	3 508	3 663	3 815
DEUTSCHLAND <sup>2</sup>	DEM	8 875	10 674	10 906	11 647	11 603	12 255	12 332	:	:
ELLADA	GRD	:	23 885	:	32 122	:	33 749	:	:	:
ESPAÑA	ESP	90 542	101 949	108 033	111 495	113 441	110 000	117 291	116 728	125 865
FRANCE	FRF	:	36 943	35 420	36 696	36 217	37 591	37 008	:	:
IRELAND	IEP	43	44	41	45	52	55	:	:	:
ITALIA	ITL	3 561 206	4 016 142	3 946 012	3 765 240	3 696 280	3 774 394	3 827 012	4 317 020 <sup>1</sup>	4 707 143 <sup>1</sup>
NEDERLAND <sup>2</sup>	NLG	1 895	2 032	2 057	2 108	2 327	2 396	2 614	:	:
ÖSTERREICH	ATS	:	:	:	2 815	:	:	:	:	:
PORTUGAL	PTE	13 240	:	17 789	:	:	24 923	:	27 758 <sup>1</sup>	:
SUOMI-FINLAND <sup>2</sup>	FIM	1 846	2 057	2 138	2 258	2 259	2 226	2 346	2 349	:
SVERIGE	SEK	:	1 696	:	2 002	:	2 231	:	2 372	:
UNITED KINGDOM	GBP	1 566	1 757	1 846	1 928	2 051	2 043	2 070	2 014	:
ICELAND	ISK	1 778	2 054	2 302	2 247	2 472	2 606	2 991 <sup>1</sup>	2 866 <sup>1</sup>	:
NORWAY <sup>2</sup>	NOK	:	2 367	:	2 737	:	2 747	:	2 990	:

<sup>1</sup> Provisional.

<sup>2</sup> PNP included (D since 1992).

**Table 15A**  
**R&D EXPENDITURE BY REGION**  
**GOVERNMENT SECTOR**

Mio national currencies

		1989	1990	1991	1992	1993	1994	1995	1996	1997
<b>BELGIQUE-BELGIË</b>	<b>BEF</b>	<b>6 207</b>	:	<b>6 866</b>	:	<b>7 285</b> <sup>1</sup>	<b>4 693</b> <sup>1</sup>	<b>4 821</b> <sup>1</sup>	:	:
Bruxelles-Brussel		:	:	:	:	:	1 749	1 727	:	:
Vlaams Gewest		:	:	:	:	:	2 304	2 480	:	:
Région Wallonne		:	:	:	:	:	639	615	:	:
<b>DANMARK</b>	<b>DKK</b>	<b>2 266</b>	<b>2 382</b>	<b>2 497</b>	<b>2 646</b>	<b>2 795</b>	:	<b>3 154</b>	<b>3 508</b>	<b>3 663</b>
<b>DEUTSCHLAND<sup>2</sup></b>	<b>DEM</b>	<b>8 559</b>	<b>8 875</b>	<b>10 674</b>	<b>10 906</b>	<b>11 647</b>	<b>11 603</b>	<b>12 255</b>	<b>12 332</b>	:
Baden-Württemberg		:	:	2 044	:	2 291	2 328	2 301	2 278	:
Bayern		:	:	1 181	:	1 376	1 392	1 484	1 515	:
Berlin		:	:	:	:	1 623	1 447	1 595	1 564	:
Brandenburg		:	:	:	:	368	390	458	481	:
Bremen		:	:	147	:	175	191	213	211	:
Hamburg		:	:	455	:	483	521	476	480	:
Hessen		:	:	480	:	494	456	506	502	:
Mecklenburg-Vorpommern		:	:	:	:	135	147	148	162	:
Niedersachsen		:	:	927	:	1 030	1 052	1 027	1 094	:
Nordrhein-Westfalen		:	:	2 338	:	2 064	2 043	2 277	2 145	:
Rheinland-Pfalz		:	:	196	:	177	164	195	206	:
Saarland		:	:	40	:	65	70	79	83	:
Sachsen		:	:	:	:	535	547	635	684	:
Sachsen-Anhalt		:	:	:	:	224	259	250	261	:
Schleswig-Holstein		:	:	229	:	345	324	330	359	:
Thüringen		:	:	:	:	195	212	217	235	:
Not registered by region		:	:	2 637 <sup>3</sup>	:	68	63	65	70	:
<b>ELLADA</b>	<b>GRD</b>	<b>17 366</b>	:	<b>23 885</b>	:	<b>32 122</b>	:	<b>33 749</b>	:	:
Voreia Ellada		3 243	:	3 821	:	5 256	:	5 567	:	:
Kentriki Ellada		2 013	:	1 915	:	2 901	:	3 196	:	:
Attiki		9 236	:	13 374	:	16 686	:	17 982	:	:
Nisia Aigaiou, Kriti		2 874	:	4 775	:	7 279	:	7 004	:	:
<b>ESPAÑA</b>	<b>ESP</b>	<b>77 137</b>	<b>90 542</b>	<b>101 949</b>	<b>108 033</b>	<b>111 495</b>	<b>113 441</b>	<b>110 000</b>	<b>117 291</b>	<b>116 728</b>
Noroeste		4 060	4 352	5 433	5 014	5 344	5 333	7 548	8 049	8 143
Noreste		3 270	3 683	3 848	5 051	5 850	4 804	4 934	5 261	4 742
Madrid		47 878	55 030	62 328	66 652	67 458	68 589	56 697	60 454	59 353
Centro (E)		2 369	3 254	3 756	3 480	3 416	3 884	4 217	4 497	5 243
Este		9 108	12 274	13 578	14 823	14 655	16 182	19 023	20 284	21 681
Sur		8 533	9 825	10 688	10 731	11 255	11 234	14 312	15 260	14 270
Canarias		1 919	2 125	2 320	2 282	3 517	3 415	3 269	3 485	3 294
<b>FRANCE</b>	<b>FRF</b>	:	:	<b>36 943</b>	<b>35 420</b>	<b>36 696</b>	<b>36 217</b>	<b>37 591</b>	<b>37 008</b>	:
Île de France		:	:	10 495	10 348	10 348	10 361	11 650	11 617	:
Bassin Parisien		:	:	782	720	760	773	790	857	:
Nord-Pas-de-Calais		:	:	132	209	195	204	224	230	:
Est		:	:	383	360	393	395	402	418	:
Ouest		:	:	2 049	1 327	1 368	1 399	1 408	1 449	:
Sud-Ouest		:	:	2 474	3 306	3 856	3 213	3 534	3 827	:
Centre-Est		:	:	2 279	2 207	2 416	2 404	2 755	2 768	:
Méditerranée		:	:	3 947	3 419	3 544	3 611	4 018	4 389	:
Départements d'Outre-Mer		:	:	1 238	557	614	1 031	1 064	1 023	:
Not registered by region		:	:	13 163	12 967	13 201	12 827	11 746	10 430	:

		1989	1990	1991	1992	1993	1994	1995	1996	1997
<b>IRELAND</b>	<b>IEP</b>	39	43	44	41	45	52	55	:	:
<b>ITALIA</b>	<b>ITL</b>	3 178 697	3 561 206	4 016 142	3 946 012	3 765 240	3 696 280	3 774 394	3 827 012	4 317 020 <sup>1</sup>
Nord Ovest		:	:	318 880	305 476	297 939	305 842	315 710	442 476	499 130
Lombardia		:	:	410 486	426 020	408 984	442 125	478 912	549 001	619 295
Nord Est		:	:	229 758	222 786	223 626	230 780	276 825	246 365	277 909
Emilia-Romagna		:	:	233 798	275 827	286 515	252 630	209 658	186 824	210 745
Centro (I)		:	:	252 279	271 143	267 338	271 462	315 287	306 929	346 228
Lazio		:	:	2 133 318	1 978 633	1 785 337	1 726 799	1 672 722	1 630 900	1 839 719
Abruzzo-Molise		:	:	28 442	43 005	40 220	52 540	41 342	45 102	50 877
Campania		:	:	155 524	165 195	174 626	167 530	188 281	186 385	210 250
Sud		:	:	107 906	117 900	119 371	114 081	121 084	81 218	91 617
Sicilia		:	:	80 962	83 441	99 149	83 604	101 008	91 867	103 630
Sardegna		:	:	64 789	56 586	62 135	48 887	53 565	59 945	67 620
<b>NEDERLAND<sup>2</sup></b>	<b>NLG</b>	1 780	1 895	2 032	2 057	2 108	2 327	2 396	2 614	:
Noord-Nederland		:	:	:	:	:	:	:	65	:
Oost-Nederland		:	:	:	:	:	:	:	676	:
West-Nederland		:	:	:	:	:	:	:	1 835	:
Zuid-Nederland		:	:	:	:	:	:	:	37	:
<b>ÖSTERREICH</b>	<b>ATS</b>	1 713	:	:	:	2 815	:	:	:	:
Ostösterreich		1 197	:	:	:	1 974	:	:	:	:
Südösterreich		232	:	:	:	303	:	:	:	:
Westösterreich		284	:	:	:	435	:	:	:	:
Not registered by region		-	:	:	:	103	:	:	:	:
<b>PORTUGAL</b>	<b>PTE</b>	:	13 240	:	17 789	:	:	24 923	:	27 758 <sup>1</sup>
Continente		:	12 894	:	17 327	:	:	23 358	:	25 871
Açores		:	273	:	304	:	:	341	:	648
Madeira		:	73	:	157	:	:	1 224	:	1 240
<b>SUOMI-FINLAND<sup>2</sup></b>	<b>FIM</b>	1 654	1 846	2 057	2 138	2 258	2 259	2 226	2 346	2 349
Manner-Suomi		:	:	:	:	:	:	2 223	:	2 348
Ahvenanmaa/Åland		:	:	:	:	:	:	3	:	1
<b>SVERIGE</b>	<b>SEK</b>	1 401	:	1 696	:	2 002	:	2 231	:	2 372
<b>UNITED KINGDOM</b>	<b>GBP</b>	1 534	1 566	1 757	1 846	1 928	2 051	2 043	2 070	2 014
North		:	:	:	18	18	26	25	18	17
Yorkshire and Humberside		:	:	:	36	36	48	46	59	55
East Midlands		:	:	:	51	51	63	65	69	69
East Anglia		:	:	:	121	116	142	139	268	250
South East (UK)		:	:	:	1 038	1 048	1 062	1 052	903	887
South West (UK)		:	:	:	166	229	241	246	260	257
West Midlands		:	:	:	119	143	156	173	188	185
North West (UK)		:	:	:	52	59	75	73	87	87
Wales		:	:	:	33	30	38	31	32	32
Scotland		:	:	:	198	183	183	177	163	163
Northern Ireland		:	:	:	14	15	18	18	23	12
<b>ICELAND</b>	<b>ISK</b>	1 550	1 778	2 054	2 302	2 247	2 472	2 606	2 991 <sup>1</sup>	2 866 <sup>1</sup>
<b>NORWAY<sup>2</sup></b>	<b>NOK</b>	2 237	:	2 367	:	2 737	:	2 747	:	2 990

<sup>1</sup> Provisional.

<sup>2</sup> PNP included (D since 1992).

<sup>3</sup> New "Länder" included.

**Table 16****R&D EXPENDITURE****GOVERNMENT SECTOR**

Mio ECU at current prices and exchange rates

	1990	1991	1992	1993	1994	1995	1996	1997	1998
<b>EU-15<sup>3</sup></b>	<b>17 300</b>	<b>18 800</b>	<b>18 800</b>	<b>19 400</b>	<b>19 500</b>	<b>20 100</b>	<b>20 500</b>	<b>20 900</b>	<b>21 400</b>
<b>EUR-11<sup>3</sup></b>	<b>14 500</b>	<b>15 700</b>	<b>15 600</b>	<b>16 200</b>	<b>16 200</b>	<b>16 900</b>	<b>17 000</b>	<b>17 100</b>	<b>17 500</b>
BELGIQUE-BELGIË	:	163	:	180 <sup>1</sup>	118 <sup>1</sup>	125 <sup>1</sup>	:	:	:
DANMARK	303	316	339	368	:	430	477	490	509
DEUTSCHLAND <sup>2</sup>	4 329	5 207	5 399	6 004	6 043	6 553	6 457	:	:
ELLADA	:	106	:	120	:	111	:	:	:
ESPAÑA	700	794	815	748	714	675	730	704	753
FRANCE	:	5 300	5 171	5 535	5 504	5 757	5 702	:	:
IRELAND	56	56	54	56	66	66	:	:	:
ITALIA	2 340	2 619	2 474	2 045	1 930	1 772	1 954	2 238 <sup>1</sup>	2 422 <sup>1</sup>
NEDERLAND <sup>2</sup>	820	880	906	967	1 077	1 141	1 222	:	:
ÖSTERREICH	:	:	:	207	:	:	:	:	:
PORTUGAL	73	:	102	:	:	127	:	140 <sup>1</sup>	:
SUOMI-FINLAND <sup>2</sup>	381	411	368	326	365	390	402	399	:
SVERIGE	:	227	:	220	:	239	:	274	:
UNITED KINGDOM	2 206	2 510	2 495	2 472	2 629	2 461	2 556	2 919	:
<b>EEA<sup>4</sup></b>	<b>17 600</b>	<b>19 100</b>	<b>19 200</b>	<b>19 700</b>	<b>19 900</b>	<b>20 500</b>	<b>20 900</b>	<b>21 300</b>	<b>21 800</b>
ICELAND	24	28	31	28	30	31	35 <sup>1</sup>	36 <sup>1</sup>	:
NORWAY <sup>2</sup>	:	295	:	329	:	331	:	373	:

<sup>1</sup> Provisional.<sup>2</sup> PNP included (D since 1992).<sup>3</sup> Luxembourg not included.<sup>4</sup> Luxembourg and Liechtenstein not included.



Mio ECU at current prices and exchange rates

	1989	1990	1991	1992	1993	1994	1995	1996	1997
<b>BELGIQUE-BELGIË</b>	<b>143</b>	:	<b>163</b>	:	<b>180</b> <sup>1</sup>	<b>118</b> <sup>1</sup>	<b>125</b> <sup>1</sup>	:	:
Bruxelles-Brussel	:	:	:	:	:	44	45	:	:
Vlaams Gewest	:	:	:	:	:	58	64	:	:
Région Wallonne	:	:	:	:	:	16	16	:	:
<b>DANMARK</b>	<b>281</b>	<b>303</b>	<b>316</b>	<b>339</b>	<b>368</b>	:	<b>430</b>	<b>477</b>	<b>490</b>
<b>DEUTSCHLAND<sup>2</sup></b>	<b>4 135</b>	<b>4 329</b>	<b>5 207</b>	<b>5 399</b>	<b>6 004</b>	<b>6 043</b>	<b>6 553</b>	<b>6 457</b>	:
Baden-Württemberg	:	:	997	:	1 181	1 213	1 230	1 193	:
Bayern	:	:	576	:	709	725	794	793	:
Berlin	:	:	:	:	837	754	853	819	:
Brandenburg	:	:	:	:	190	203	245	252	:
Bremen	:	:	72	:	90	99	114	110	:
Hamburg	:	:	222	:	249	271	255	251	:
Hessen	:	:	234	:	255	238	271	263	:
Mecklenburg-Vorpommern	:	:	:	:	70	77	79	85	:
Niedersachsen	:	:	452	:	531	548	549	573	:
Nordrhein-Westfalen	:	:	1 140	:	1 064	1 064	1 218	1 123	:
Rheinland-Pfalz	:	:	95	:	91	85	104	108	:
Saarland	:	:	19	:	33	36	42	43	:
Sachsen	:	:	:	:	276	285	340	358	:
Sachsen-Anhalt	:	:	:	:	115	135	134	137	:
Schleswig-Holstein	:	:	112	:	178	169	176	188	:
Thüringen	:	:	:	:	101	110	116	123	:
Not registered by region	:	:	1 286 <sup>3</sup>	:	35	33	35	37	:
<b>ELLADA</b>	<b>97</b>	:	<b>106</b>	:	<b>120</b>	:	<b>111</b>	:	:
Voreia Ellada	18	:	17	:	20	:	18	:	:
Kentriki Ellada	11	:	9	:	11	:	11	:	:
Attiki	52	:	59	:	62	:	59	:	:
Nisia Aigaiou, Kriti	16	:	21	:	27	:	23	:	:
<b>ESPAÑA</b>	<b>592</b>	<b>700</b>	<b>794</b>	<b>815</b>	<b>748</b>	<b>714</b>	<b>675</b>	<b>730</b>	<b>704</b>
Noroeste	31	34	42	38	36	34	46	50	49
Noreste	25	28	30	38	39	30	30	33	29
Madrid	367	426	485	503	452	432	348	376	358
Centro (E)	18	25	29	26	23	24	26	28	32
Este	70	95	106	112	98	102	117	126	131
Sur	65	76	83	81	75	71	88	95	86
Canarias	15	16	18	17	24	21	20	22	20
<b>FRANCE</b>	:	:	<b>5 300</b>	<b>5 171</b>	<b>5 535</b>	<b>5 504</b>	<b>5 757</b>	<b>5 702</b>	:
Île de France	:	:	1 506	1 511	1 561	1 575	1 784	1 790	:
Bassin Parisien	:	:	112	105	115	117	121	132	:
Nord-Pas-de-Calais	:	:	19	31	29	31	34	35	:
Est	:	:	55	53	59	60	62	64	:
Ouest	:	:	294	194	206	213	216	223	:
Sud-Ouest	:	:	355	483	582	488	541	590	:
Centre-Est	:	:	327	322	364	365	422	426	:
Méditerranée	:	:	566	499	535	549	615	676	:
Départements d'Outre-Mer	:	:	178	81	93	157	163	158	:
Not registered by region	:	:	1 889	1 893	1 991	1 949	1 799	1 607	:

**Table 16A**  
**R&D EXPENDITURE BY REGION**  
**GOVERNMENT SECTOR**

Mio ECU at current prices and exchange rates

	1989	1990	1991	1992	1993	1994	1995	1996	1997
<b>IRELAND</b>	50	56	56	54	56	66	66	:	:
<b>ITALIA</b>	2 104	2 340	2 619	2 474	2 045	1 930	1 772	1 954	2 238 <sup>1</sup>
Nord Ovest	:	:	208	191	162	160	148	226	259
Lombardia	:	:	268	267	222	231	225	280	321
Nord Est	:	:	150	140	121	121	130	126	144
Emilia-Romagna	:	:	152	173	156	132	98	95	109
Centro (I)	:	:	165	170	145	142	148	157	179
Lazio	:	:	1 391	1 240	970	902	785	833	954
Abruzzo-Molise	:	:	19	27	22	27	19	23	26
Campania	:	:	101	104	95	87	88	95	109
Sud	:	:	70	74	65	60	57	41	47
Sicilia	:	:	53	52	54	44	47	47	54
Sardegna	:	:	42	35	34	26	25	31	35
<b>NEDERLAND<sup>2</sup></b>	761	820	880	906	967	1 077	1 141	1 222	:
Noord-Nederland	:	:	:	:	:	:	:	30	:
Oost-Nederland	:	:	:	:	:	:	:	316	:
West-Nederland	:	:	:	:	:	:	:	857	:
Zuid-Nederland	:	:	:	:	:	:	:	17	:
<b>ÖSTERREICH</b>	118	:	:	:	207	:	:	:	:
Ostösterreich	82	:	:	:	145	:	:	:	:
Südösterreich	16	:	:	:	22	:	:	:	:
Westösterreich	19	:	:	:	32	:	:	:	:
Not registered by region	-	:	:	:	8	:	:	:	:
<b>PORTUGAL</b>	:	73	:	102	:	:	127	:	140 <sup>1</sup>
Continente	:	71	:	99	:	:	119	:	130
Açores	:	2	:	2	:	:	2	:	3
Madeira	:	0	:	1	:	:	6	:	6
<b>SUOMI-FINLAND<sup>2</sup></b>	350	381	411	368	326	365	390	402	399
Manner-Suomi	:	:	:	:	:	:	389	:	399
Ahvenanmaa/Åland	:	:	:	:	:	:	1	:	0
<b>SVERIGE</b>	197	:	227	:	220	:	239	:	274
<b>UNITED KINGDOM</b>	2 290	2 206	2 510	2 495	2 472	2 629	2 461	2 556	2 919
North	:	:	:	24	23	33	30	22	25
Yorkshire and Humberside	:	:	:	49	46	62	55	73	80
East Midlands	:	:	:	69	65	81	78	85	100
East Anglia	:	:	:	164	149	182	167	331	362
South East (UK)	:	:	:	1 403	1 344	1 362	1 267	1 115	1 286
South West (UK)	:	:	:	224	294	309	296	321	372
West Midlands	:	:	:	161	183	200	208	232	268
North West (UK)	:	:	:	70	76	96	88	107	126
Wales	:	:	:	45	38	49	37	40	46
Scotland	:	:	:	268	235	235	213	201	236
Northern Ireland	:	:	:	19	19	23	22	28	17
<b>ICELAND</b>	25	24	28	31	28	30	31	35 <sup>1</sup>	36 <sup>1</sup>
<b>NORWAY<sup>2</sup></b>	294	:	295	:	329	:	331	:	373

<sup>1</sup> Provisional.

<sup>2</sup> PNP included (D since 1992).

<sup>3</sup> New "Länder" included.

**R&D EXPENDITURE  
GOVERNMENT SECTOR**  
Mio PPS at 1990 prices

	1990	1991	1992	1993	1994	1995	1996	1997	1998
<b>EU-15<sup>3</sup></b>	<b>16 800</b>	<b>17 500</b>	<b>16 900</b>	<b>17 000</b>	<b>16 700</b>	<b>16 800</b>	<b>16 700</b>	<b>16 700</b>	<b>16 900</b>
<b>EUR-11<sup>3</sup></b>	<b>13 900</b>	<b>14 500</b>	<b>13 900</b>	<b>13 900</b>	<b>13 500</b>	<b>13 700</b>	<b>13 600</b>	<b>13 700</b>	<b>13 900</b>
BELGIQUE-BELGIË	:	157	:	154 <sup>1</sup>	97 <sup>1</sup>	98 <sup>1</sup>	:	:	:
DANMARK	234	240	249	261	:	287	313	321	328
DEUTSCHLAND <sup>2</sup>	3 944	4 566	4 419	4 537	4 415	4 562	4 545	:	:
ELLADA	:	132	:	135	:	116	:	:	:
ESPAÑA	769	808	802	793	775	717	740	722	760
FRANCE	:	5 023	4 711	4 768	4 624	4 731	4 596	:	:
IRELAND	58	58	53	56	64	67	:	:	:
ITALIA	2 332	2 442	2 293	2 095	1 989	1 933	1 868	2 052 <sup>1</sup>	2 186 <sup>1</sup>
NEDERLAND <sup>2</sup>	813	848	841	846	916	922	993	:	:
ÖSTERREICH	:	:	:	167	:	:	:	:	:
PORTUGAL	119	:	129	:	:	151	:	159 <sup>1</sup>	:
SUOMI-FINLAND <sup>2</sup>	268	291	301	310	306	295	308	302	:
SVERIGE	:	156	:	178	:	187	:	194	:
UNITED KINGDOM	2 373	2 483	2 491	2 525	2 643	2 567	2 511	2 378	:
<b>EEA<sup>4</sup></b>	<b>17 100</b>	<b>17 700</b>	<b>17 200</b>	<b>17 200</b>	<b>17 000</b>	<b>17 100</b>	<b>17 000</b>	<b>17 000</b>	<b>17 200</b>
ICELAND	22	23	25	24	26	26	30 <sup>1</sup>	27 <sup>1</sup>	:
NORWAY <sup>2</sup>	:	238	:	270	:	263	:	273	:

<sup>1</sup> Provisional.

<sup>2</sup> PNP included (D since 1992).

<sup>3</sup> Luxembourg not included.

<sup>4</sup> Luxembourg and Liechtenstein not included.

**Table 17A**  
**R&D EXPENDITURE BY REGION**  
**GOVERNMENT SECTOR**

Mio PPS at 1990 prices

	1989	1990	1991	1992	1993	1994	1995	1996	1997
<b>BELGIQUE-BELGIË</b>	150	:	157	:	154 <sup>1</sup>	97 <sup>1</sup>	98 <sup>1</sup>	:	:
Bruxelles-Brussel	:	:	:	:	:	36	35	:	:
Vlaams Gewest	:	:	:	:	:	48	51	:	:
Région Wallonne	:	:	:	:	:	13	13	:	:
<b>DANMARK</b>	229	234	240	249	261	:	287	313	321
<b>DEUTSCHLAND<sup>2</sup></b>	3 926	3 944	4 566	4 419	4 537	4 415	4 562	4 545	:
Baden-Württemberg	:	:	874	:	892	886	857	840	:
Bayern	:	:	505	:	536	530	552	558	:
Berlin	:	:	:	:	632	551	594	576	:
Brandenburg	:	:	:	:	143	148	170	177	:
Bremen	:	:	63	:	68	73	79	78	:
Hamburg	:	:	195	:	188	198	177	177	:
Hessen	:	:	205	:	193	174	188	185	:
Mecklenburg-Vorpommern	:	:	:	:	53	56	55	60	:
Niedersachsen	:	:	397	:	401	400	382	403	:
Nordrhein-Westfalen	:	:	1 000	:	804	777	848	790	:
Rheinland-Pfalz	:	:	84	:	69	62	73	76	:
Saarland	:	:	17	:	25	27	29	31	:
Sachsen	:	:	:	:	208	208	236	252	:
Sachsen-Anhalt	:	:	:	:	87	99	93	96	:
Schleswig-Holstein	:	:	98	:	134	123	123	132	:
Thüringen	:	:	:	:	76	81	81	87	:
Not registered by region	:	:	1 128 <sup>3</sup>	:	26	24	24	26	:
<b>ELLADA</b>	138	:	132	:	135	:	116	:	:
Voreia Ellada	26	:	21	:	22	:	19	:	:
Kentriki Ellada	16	:	11	:	12	:	11	:	:
Attiki	74	:	74	:	70	:	62	:	:
Nisia Aigaiou, Kriti	23	:	26	:	31	:	24	:	:
<b>ESPAÑA</b>	703	769	808	802	793	775	717	740	722
Noroeste	37	37	43	37	38	36	49	51	50
Noreste	30	31	31	37	42	33	32	33	29
Madrid	436	468	494	495	480	469	370	382	367
Centro (E)	22	28	30	26	24	27	28	28	32
Este	83	104	108	110	104	111	124	128	134
Sur	78	83	85	80	80	77	93	96	88
Canarias	17	18	18	17	25	23	21	22	20
<b>FRANCE</b>	:	:	5 023	4 711	4 768	4 624	4 731	4 596	:
Île de France	:	:	1 427	1 376	1 344	1 323	1 466	1 443	:
Bassin Parisien	:	:	106	96	99	99	99	106	:
Nord-Pas-de-Calais	:	:	18	28	25	26	28	29	:
Est	:	:	52	48	51	50	51	52	:
Ouest	:	:	279	176	178	179	177	180	:
Sud-Ouest	:	:	336	440	501	410	445	475	:
Centre-Est	:	:	310	294	314	307	347	344	:
Méditerranée	:	:	537	455	460	461	506	545	:
Départements d'Outre-Mer	:	:	168	74	80	132	134	127	:
Not registered by region	:	:	1 790	1 725	1 715	1 638	1 478	1 295	:

**Table 17A**  
**R&D EXPENDITURE BY REGION**  
**GOVERNMENT SECTOR**

Mio PPS at 1990 prices

	1989	1990	1991	1992	1993	1994	1995	1996	1997
<b>IRELAND</b>	53	58	58	53	56	64	67	:	:
<b>ITALIA</b>	2 241	2 332	2 442	2 293	2 095	1 989	1 933	1 868	2 052 <sup>1</sup>
Nord Ovest	:	:	194	178	166	165	162	216	237
Lombardia	:	:	250	248	228	238	245	268	294
Nord Est	:	:	140	129	124	124	142	120	132
Emilia-Romagna	:	:	142	160	159	136	107	91	100
Centro (I)	:	:	153	158	149	146	161	150	165
Lazio	:	:	1 297	1 150	993	929	856	796	874
Abruzzo-Molise	:	:	17	25	22	28	21	22	24
Campania	:	:	95	96	97	90	96	91	100
Sud	:	:	66	69	66	61	62	40	44
Sicilia	:	:	49	48	55	45	52	45	49
Sardegna	:	:	39	33	35	26	27	29	32
<b>NEDERLAND<sup>2</sup></b>	782	813	848	841	846	916	922	993	:
Noord-Nederland	:	:	:	:	:	:	:	25	:
Oost-Nederland	:	:	:	:	:	:	:	257	:
West-Nederland	:	:	:	:	:	:	:	697	:
Zuid-Nederland	:	:	:	:	:	:	:	14	:
<b>ÖSTERREICH</b>	117	:	:	:	167	:	:	:	:
Ostösterreich	82	:	:	:	117	:	:	:	:
Südösterreich	16	:	:	:	18	:	:	:	:
Westösterreich	19	:	:	:	26	:	:	:	:
Not registered by region	-	:	:	:	6	:	:	:	:
<b>PORTUGAL</b>	:	119	:	129	:	:	151	:	159 <sup>1</sup>
Continente	:	116	:	125	:	:	142	:	148
Açores	:	2	:	2	:	:	2	:	4
Madeira	:	1	:	1	:	:	7	:	7
<b>SUOMI-FINLAND<sup>2</sup></b>	254	268	291	301	310	306	295	308	302
Manner-Suomi	:	:	:	:	:	:	294	:	302
Ahvenanmaa/Åland	:	:	:	:	:	:	0	:	0
<b>SVERIGE</b>	151	:	156	:	178	:	187	:	194
<b>UNITED KINGDOM</b>	2 473	2 373	2 483	2 491	2 525	2 643	2 567	2 511	2 378
North	:	:	:	24	24	34	31	22	20
Yorkshire and Humberside	:	:	:	49	47	62	58	72	65
East Midlands	:	:	:	69	67	81	82	84	81
East Anglia	:	:	:	163	152	183	175	325	295
South East (UK)	:	:	:	1 400	1 372	1 368	1 322	1 095	1 048
South West (UK)	:	:	:	224	300	311	309	315	304
West Midlands	:	:	:	161	187	201	217	228	218
North West (UK)	:	:	:	70	77	97	92	106	103
Wales	:	:	:	45	39	49	39	39	38
Scotland	:	:	:	267	240	236	222	198	192
Northern Ireland	:	:	:	19	20	23	23	28	14
<b>ICELAND</b>	22	22	23	25	24	26	26	30 <sup>1</sup>	27 <sup>1</sup>
<b>NORWAY<sup>2</sup></b>	239	:	238	:	270	:	263	:	273

<sup>1</sup> Provisional.

<sup>2</sup> PNP included (D since 1992).

<sup>3</sup> New "Länder" included.

**Table 18**
**R&D EXPENDITURE**  
**GOVERNMENT SECTOR**  
 As % of GDP

	1990	1991	1992	1993	1994	1995	1996	1997	1998
<b>EU-15<sup>3</sup></b>	<b>0.33</b>	<b>0.33</b>	<b>0.32</b>	<b>0.33</b>	<b>0.31</b>	<b>0.31</b>	<b>0.30</b>	<b>0.29</b>	<b>0.29</b>
<b>EUR-11<sup>3</sup></b>	<b>0.36</b>	<b>0.35</b>	<b>0.33</b>	<b>0.34</b>	<b>0.33</b>	<b>0.33</b>	<b>0.31</b>	<b>0.31</b>	<b>0.30</b>
BELGIQUE-BELGIË	:	0.10	:	0.10 <sup>1</sup>	0.06 <sup>1</sup>	0.06 <sup>1</sup>	:	:	:
DANMARK	0.30	0.31	0.32	0.33	:	0.33	0.34	0.35	0.34
DEUTSCHLAND <sup>2</sup>	0.37	0.37	0.35	0.37	0.35	0.35	0.35	:	:
ELLADA	:	0.15	:	0.15	:	0.13	:	:	:
ESPAÑA	0.18	0.18	0.18	0.18	0.17	0.15	0.15	0.15	0.15
FRANCE	:	0.55	0.51	0.52	0.49	0.49	0.47	:	:
IRELAND	0.16	0.15	0.13	0.14	0.14	0.13	:	:	:
ITALIA	0.27	0.28	0.26	0.24	0.23	0.21	0.21	0.22 <sup>1</sup>	0.23 <sup>1</sup>
NEDERLAND <sup>2</sup>	0.37	0.37	0.36	0.36	0.38	0.38	0.39	:	:
ÖSTERREICH	:	:	:	0.13	:	:	:	:	:
PORTUGAL	0.13	:	0.14	:	:	0.17	:	0.16 <sup>1</sup>	:
SUOMI-FINLAND <sup>2</sup>	0.36	0.42	0.45	0.47	0.44	0.40	0.41	0.38	:
SVERIGE	:	0.12	:	0.14	:	0.13	:	0.14	:
UNITED KINGDOM	0.29	0.31	0.31	0.31	0.31	0.29	0.28	0.26	:
<b>EEA<sup>4</sup></b>	<b>0.33</b>	<b>0.33</b>	<b>0.32</b>	<b>0.33</b>	<b>0.32</b>	<b>0.31</b>	<b>0.30</b>	<b>0.29</b>	<b>0.29</b>
ICELAND	0.49	0.52	0.58	0.55	0.57	0.58	0.62 <sup>1</sup>	0.56 <sup>1</sup>	:
NORWAY <sup>2</sup>	:	0.31	:	0.33	:	0.30	:	0.28	:

<sup>1</sup> Provisional.

<sup>2</sup> PNP included (D since 1992).

<sup>3</sup> Luxembourg not included.

<sup>4</sup> Luxembourg and Liechtenstein not included.

**Table 18A**  
**R&D EXPENDITURE BY REGION**  
**GOVERNMENT SECTOR**  
As % of GDP

	1989	1990	1991	1992	1993	1994	1995	1996	1997
<b>BELGIQUE-BELGIË</b>	<b>0.10</b>	:	<b>0.10</b>	:	<b>0.10</b> <sup>1</sup>	<b>0.06</b> <sup>1</sup>	<b>0.06</b> <sup>1</sup>	:	:
Bruxelles-Brussel	:	:	:	:	:	0.16	0.15	:	:
Vlaams Gewest	:	:	:	:	:	0.05	0.05	:	:
Région Wallonne	:	:	:	:	:	0.03	0.03	:	:
<b>DANMARK</b>	<b>0.30</b>	<b>0.30</b>	<b>0.31</b>	<b>0.32</b>	<b>0.33</b>	:	<b>0.33</b>	<b>0.34</b>	<b>0.35</b>
<b>DEUTSCHLAND<sup>2</sup></b>	<b>0.38</b>	<b>0.37</b>	<b>0.37</b>	<b>0.35</b>	<b>0.37</b>	<b>0.35</b>	<b>0.35</b>	<b>0.35</b>	:
Baden-Württemberg	:	:	0.46	:	0.50	0.48	0.46	0.45	:
Bayern	:	:	0.24	:	0.26	0.25	0.26	0.25	:
Berlin	:	:	:	:	1.24	1.06	1.14	1.11	:
Brandenburg	:	:	:	:	0.68	0.64	0.71	0.71	:
Bremen	:	:	0.41	:	0.47	0.49	0.53	0.52	:
Hamburg	:	:	0.42	:	0.41	0.43	0.37	0.37	:
Hessen	:	:	0.17	:	0.15	0.14	0.15	0.14	:
Mecklenburg-Vorpommern	:	:	:	:	0.38	0.36	0.35	0.37	:
Niedersachsen	:	:	0.35	:	0.36	0.35	0.33	0.34	:
Nordrhein-Westfalen	:	:	0.35	:	0.29	0.28	0.29	0.27	:
Rheinland-Pfalz	:	:	0.15	:	0.13	0.11	0.13	0.14	:
Saarland	:	:	0.10	:	0.16	0.16	0.18	0.18	:
Sachsen	:	:	:	:	0.59	0.53	0.57	0.59	:
Sachsen-Anhalt	:	:	:	:	0.40	0.42	0.39	0.40	:
Schleswig-Holstein	:	:	0.25	:	0.34	0.31	0.30	0.32	:
Thüringen	:	:	:	:	0.40	0.38	0.37	0.39	:
<b>ELLADA</b>	<b>0.16</b>	:	<b>0.15</b>	:	<b>0.15</b>	:	<b>0.13</b>	:	:
Voreia Ellada	0.09	:	0.07	:	0.08	:	0.07	:	:
Kentriki Ellada	0.08	:	0.05	:	0.06	:	0.05	:	:
Attiki	0.23	:	0.23	:	0.21	:	0.18	:	:
Nisia Aigaiou, Kriti	0.27	:	0.30	:	0.35	:	0.26	:	:
<b>ESPAÑA</b>	<b>0.17</b>	<b>0.18</b>	<b>0.18</b>	<b>0.18</b>	<b>0.18</b>	<b>0.17</b>	<b>0.15</b>	<b>0.15</b>	<b>0.15</b>
Noroeste	0.09	0.09	0.10	0.09	0.09	0.09	0.11	0.11	:
Noreste	0.06	0.06	0.06	0.07	0.08	0.06	0.06	0.06	:
Madrid	0.68	0.70	0.72	0.71	0.69	0.66	0.49	0.49	:
Centro (E)	0.04	0.06	0.06	0.05	0.05	0.05	0.05	0.05	:
Este	0.06	0.08	0.08	0.08	0.08	0.08	0.08	0.09	:
Sur	0.12	0.12	0.12	0.11	0.11	0.11	0.13	0.13	:
Canarias	0.11	0.12	0.12	0.10	0.15	0.14	0.12	0.12	:
<b>FRANCE</b>	:	:	<b>0.55</b>	<b>0.51</b>	<b>0.52</b>	<b>0.49</b>	<b>0.49</b>	<b>0.47</b>	:
Île de France	:	:	0.54	0.51	0.50	0.48	0.53	0.51	:
Bassin Parisien	:	:	0.07	0.06	0.07	0.07	0.06	0.07	:
Nord-Pas-de-Calais	:	:	0.03	0.05	0.05	0.05	0.05	0.05	:
Est	:	:	0.07	0.06	0.07	0.07	0.07	0.07	:
Ouest	:	:	0.28	0.17	0.18	0.17	0.17	0.17	:
Sud-Ouest	:	:	0.41	0.53	0.62	0.50	0.52	0.55	:
Centre-Est	:	:	0.30	0.28	0.31	0.30	0.32	0.32	:
Méditerranée	:	:	0.58	0.49	0.50	0.49	0.52	0.56	:
Départements d'Outre-Mer	:	:	:	:	:	:	:	:	:

**Table 18A**  
**R&D EXPENDITURE BY REGION**  
**GOVERNMENT SECTOR**

As % of GDP

	1989	1990	1991	1992	1993	1994	1995	1996	1997
<b>IRELAND</b>	<b>0.15</b>	<b>0.16</b>	<b>0.15</b>	<b>0.13</b>	<i><b>0.14</b></i>	<i><b>0.14</b></i>	<i><b>0.13</b></i>	:	:
<b>ITALIA</b>	<b>0.27</b>	<b>0.27</b>	<b>0.28</b>	<b>0.26</b>	<b>0.24</b>	<b>0.23</b>	<b>0.21</b>	<b>0.21</b>	<b>0.22</b> <sup>1</sup>
Nord Ovest	:	:	0.18	0.17	0.16	0.15	0.15	0.20	:
Lombardia	:	:	0.14	0.14	0.13	0.14	0.14	0.15	:
Nord Est	:	:	0.12	0.11	0.11	0.10	0.11	0.10	:
Emilia-Romagna	:	:	0.19	0.21	0.21	0.18	0.14	0.11	:
Centro (I)	:	:	0.17	0.17	0.16	0.16	0.17	0.16	:
Lazio	:	:	1.46	1.27	1.11	1.05	0.95	0.87	:
Abruzzo-Molise	:	:	0.08	0.12	0.11	0.14	0.10	0.10	:
Campania	:	:	0.16	0.16	0.17	0.16	0.17	0.15	:
Sud	:	:	0.10	0.10	0.10	0.09	0.09	0.06	:
Sicilia	:	:	0.09	0.09	0.11	0.09	0.10	0.09	:
Sardegna	:	:	0.21	0.17	0.18	0.14	0.15	0.16	:
<b>NEDERLAND</b> <sup>2</sup>	<b>0.37</b>	<b>0.37</b>	<b>0.37</b>	<b>0.36</b>	<b>0.36</b>	<b>0.38</b>	<b>0.38</b>	<b>0.39</b>	:
Noord-Nederland	:	:	:	:	:	:	:	0.10	:
Oost-Nederland	:	:	:	:	:	:	:	0.56	:
West-Nederland	:	:	:	:	:	:	:	0.55	:
Zuid-Nederland	:	:	:	:	:	:	:	0.03	:
<b>ÖSTERREICH</b>	<b>0.10</b>	:	:	:	<b>0.13</b>	:	:	:	:
Ostösterreich	0.15	:	:	:	0.20	:	:	:	:
Südösterreich	0.08	:	:	:	0.08	:	:	:	:
Westösterreich	0.05	:	:	:	0.06	:	:	:	:
<b>PORTUGAL</b>	:	<b>0.13</b>	:	<b>0.14</b>	:	:	<b>0.17</b>	:	<b>0.16</b> <sup>1</sup>
Continente	:	0.14	:	0.14	:	:	0.17	:	:
Açores	:	0.16	:	0.14	:	:	0.14	:	:
Madeira	:	0.04	:	0.06	:	:	0.42	:	:
<b>SUOMI-FINLAND</b> <sup>2</sup>	<b>0.34</b>	<b>0.36</b>	<b>0.42</b>	<b>0.45</b>	<b>0.47</b>	<b>0.44</b>	<b>0.40</b>	<b>0.41</b>	<b>0.38</b>
Manner-Suomi	:	:	:	:	:	:	0.41	:	:
Ahvenanmaa/Åland	:	:	:	:	:	:	0.09	:	:
<b>SVERIGE</b>	<b>0.11</b>	:	<b>0.12</b>	:	<b>0.14</b>	:	<b>0.13</b>	:	<b>0.14</b>
<b>UNITED KINGDOM</b>	<b>0.30</b>	<b>0.29</b>	<b>0.31</b>	<b>0.31</b>	<b>0.31</b>	<b>0.31</b>	<b>0.29</b>	<b>0.28</b>	<b>0.26</b>
North	:	:	:	0.06	0.06	0.08	0.08	0.05	:
Yorkshire and Humberside	:	:	:	0.08	0.07	0.09	0.08	0.10	:
East Midlands	:	:	:	0.13	0.12	0.14	0.14	0.14	:
East Anglia	:	:	:	0.55	0.51	0.58	0.54	0.40	:
South East (UK)	:	:	:	0.48	0.46	0.44	0.42	0.34	:
South West (UK)	:	:	:	0.35	0.47	0.46	0.44	0.45	:
West Midlands	:	:	:	0.24	0.27	0.28	0.29	0.30	:
North West (UK)	:	:	:	0.09	0.09	0.11	0.11	0.12	:
Wales	:	:	:	0.13	0.12	0.14	0.11	0.10	:
Scotland	:	:	:	0.38	0.34	0.32	0.29	0.26	:
Northern Ireland	:	:	:	0.10	0.11	0.12	0.11	0.14	:
<b>ICELAND</b>	<b>0.50</b>	<b>0.49</b>	<b>0.52</b>	<b>0.58</b>	<b>0.55</b>	<b>0.57</b>	<b>0.58</b>	<i><b>0.62</b></i> <sup>1</sup>	<i><b>0.56</b></i> <sup>1</sup>
<b>NORWAY</b> <sup>2</sup>	<b>0.33</b>	:	<b>0.31</b>	:	<b>0.33</b>	:	<b>0.30</b>	:	<b>0.28</b>

<sup>1</sup> Provisional.

<sup>2</sup> PNP included (D since 1992).



**R&D EXPENDITURE  
HIGHER EDUCATION SECTOR**  
Mio national currencies

		1990	1991	1992	1993	1994	1995	1996	1997	1998
BELGIQUE-BELGIË	BEF	:	29 372	:	33 514	33 867 <sup>1</sup>	34 814 <sup>1</sup>	:	:	:
DANMARK	DKK	3 067	3 183	3 384	3 587	:	4 548	4 253	4 455	4 658
DEUTSCHLAND	DEM	9 849	12 169	13 164	13 838	14 530	14 430	14 967	:	:
ELLADA	GRD	:	20 090	:	40 841	:	58 665	:	:	:
ESPAÑA	ESP	86 721	106 507	156 098	174 341	173 092	189 166	206 768	219 951	235 590
FRANCE	FRF	:	24 600	25 875	27 496	28 407	29 919	30 747	:	:
IRELAND	IEP	55	64	73	84	95	108	:	:	:
ITALIA	ITL	3 525 724	3 787 493	3 990 202	4 397 616	4 486 528	4 548 793	5 081 630	5 465 412 <sup>1</sup>	5 712 967 <sup>1</sup>
NEDERLAND	NLG	3 111	3 303	3 381	3 499	3 602	3 813	4 002	:	:
ÖSTERREICH	ATS	:	:	:	11 081	:	:	:	:	:
PORTUGAL	PTE	18 748	:	34 587	:	:	30 956	:	47 523 <sup>1</sup>	:
SUOMI-FINLAND	FIM	1 839	2 248	2 283	2 185	2 251	2 524	2 690	3 446	:
SVERIGE	SEK	:	11 432	:	10 431	:	13 004	:	14 452	:
UNITED KINGDOM	GBP	1 873	2 020	2 129	2 312	2 623	2 696	2 792	2 891	:
ICELAND	ISK	903	1 357	1 623	1 320	1 452	1 915	1 757 <sup>1</sup>	2 107 <sup>1</sup>	:
NORWAY	NOK	:	3 359	:	3 894	:	4 139	:	4 846	:

<sup>1</sup> Provisional.

**Table 19A**  
**R&D EXPENDITURE BY REGION**  
**HIGHER EDUCATION SECTOR**

Mio national currencies

		1989	1990	1991	1992	1993	1994	1995	1996	1997
<b>BELGIQUE-BELGIË</b>	<b>BEF</b>	<b>26 370</b>	:	<b>29 372</b>	:	<b>33 514</b> <sup>1</sup>	<b>33 867</b> <sup>1</sup>	<b>34 814</b> <sup>1</sup>	:	:
Bruxelles-Brussel		:	:	:	:	:	7 907	8 133	:	:
Vlaams Gewest		:	:	:	:	:	17 262	17 855	:	:
Région Wallonne		:	:	:	:	:	8 697	8 825	:	:
<b>DANMARK</b>	<b>DKK</b>	<b>2 951</b>	<b>3 067</b>	<b>3 183</b>	<b>3 384</b>	<b>3 587</b>	:	<b>4 548</b>	<b>4 253</b>	<b>4 455</b>
<b>DEUTSCHLAND</b>	<b>DEM</b>	<b>9 227</b>	<b>9 849</b>	<b>12 169</b>	<b>13 164</b>	<b>13 838</b>	<b>14 530</b>	<b>14 430</b>	<b>14 967</b>	:
Baden-Württemberg		1 591	:	1 854	:	2 046	:	2 103	2 176	:
Bayern		1 358	:	1 627	:	1 859	:	2 169	2 347	:
Berlin		726	:	:	:	1 247	:	1 178	1 141	:
Brandenburg		:	:	:	:	108	:	174	200	:
Bremen		108	:	130	:	170	:	183	190	:
Hamburg		390	:	443	:	503	:	507	526	:
Hessen		773	:	901	:	996	:	1 050	1 038	:
Mecklenburg-Vorpommern		:	:	:	:	210	:	233	262	:
Niedersachsen		976	:	1 111	:	1 146	:	1 144	1 203	:
Nordrhein-Westfalen		2 109	:	2 478	:	2 689	:	2 752	2 919	:
Rheinland-Pfalz		393	:	469	:	502	:	459	475	:
Saarland		183	:	204	:	223	:	188	182	:
Sachsen		:	:	:	:	725	:	788	834	:
Sachsen-Anhalt		:	:	:	:	360	:	362	367	:
Schleswig-Holstein		293	:	372	:	393	:	402	419	:
Thüringen		:	:	:	:	339	:	338	366	:
Not registered by region		326	:	2 5802	:	323	:	401	321	:
<b>ELLADA</b>	<b>GRD</b>	<b>14 484</b>	:	<b>20 090</b>	:	<b>40 841</b>	:	<b>58 665</b>	:	:
Voreia Ellada		5 311	:	6 864	:	13 529	:	18 482	:	:
Kentriki Ellada		2 058	:	2 836	:	5 609	:	8 841	:	:
Attiki		6 137	:	8 811	:	18 781	:	26 354	:	:
Nisia Aigaiou, Kriti		978	:	1 579	:	2 922	:	4 989	:	:
<b>ESPAÑA</b>	<b>ESP</b>	<b>69 270</b>	<b>86 721</b>	<b>106 507</b>	<b>156 098</b>	<b>174 341</b>	<b>173 092</b>	<b>189 166</b>	<b>206 768</b>	<b>219 951</b>
Noroeste		5 533	6 900	9 433	14 495	15 051	13 693	19 248	19 994	20 240
Noreste		6 390	10 467	11 694	18 679	18 428	15 934	18 608	19 885	21 521
Madrid		14 452	19 885	22 875	25 555	26 429	29 862	38 437	38 186	41 943
Centro (E)		5 169	6 834	8 326	12 291	18 291	17 713	17 757	18 942	21 553
Este		16 896	21 152	28 049	45 397	47 901	53 130	54 383	63 347	64 236
Sur		11 785	15 283	18 026	26 175	35 949	28 465	33 562	37 139	41 957
Canarias		1 697	2 412	3 403	8 603	7 389	9 636	7 171	9 275	8 500
Not registered by region		7 347	3 788	4 701	4 903	4 903	4 659	-	-	-
<b>FRANCE</b>	<b>FRF</b>	:	:	<b>24 600</b>	<b>25 875</b>	<b>27 496</b>	<b>28 407</b>	<b>29 919</b>	<b>30 747</b>	:
Île de France		:	:	5 724	6 023	6 256	6 426	6 425	6 455	:
Bassin Parisien		:	:	413	343	386	445	491	487	:
Nord-Pas-de-Calais		:	:	141	173	202	214	244	221	:
Est		:	:	944	986	1 048	1 079	1 155	1 164	:
Ouest		:	:	340	365	409	460	494	509	:
Sud-Ouest		:	:	765	772	843	888	958	983	:
Centre-Est		:	:	1 158	1 613	1 723	1 799	1 928	1 947	:
Méditerranée		:	:	1 342	1 219	1 294	1 324	1 654	1 657	:
Départements d'Outre-Mer		:	:	36	7	7	6	7	7	:
Not registered by region		:	:	13 736	14 374	15 329	15 765	16 563	17 317	:

**Table 19A**  
**R&D EXPENDITURE BY REGION**  
**HIGHER EDUCATION SECTOR**

Mio national currencies

		1989	1990	1991	1992	1993	1994	1995	1996	1997
<b>IRELAND</b>	<b>IEP</b>	<b>48</b>	<b>55</b>	<b>64</b>	<b>73</b>	<b>84</b>	<b>95</b>	<b>108</b>	:	:
<b>ITALIA</b>	<b>ITL</b>	<b>2 923 504</b>	<b>3 525 724</b>	<b>3 787 493</b>	<b>3 990 202</b>	<b>4 397 616</b>	<b>4 486 528</b>	<b>4 548 793</b>	<b>5 081 630</b>	<b>5 465 412</b> <sup>1</sup>
Nord Ovest		:	:	:	:	:	412 627	403 975	458 820	493 472
Lombardia		:	:	:	:	:	557 531	547 842	606 943	652 781
Nord Est		:	:	:	:	:	490 565	477 405	481 665	518 041
Emilia-Romagna		:	:	:	:	:	440 929	420 237	485 198	521 842
Centro (I)		:	:	:	:	:	632 128	687 299	787 632	847 117
Lazio		:	:	:	:	:	571 552	648 780	741 024	796 989
Abruzzo-Molise		:	:	:	:	:	103 235	108 888	127 832	137 486
Campania		:	:	:	:	:	399 012	394 472	461 510	496 365
Sud		:	:	:	:	:	301 345	295 402	336 804	362 240
Sicilia		:	:	:	:	:	435 569	414 715	421 123	452 928
Sardegna		:	:	:	:	:	142 035	149 778	173 079	186 151
<b>NEDERLAND</b>	<b>NLG</b>	<b>2 202</b>	<b>3 111</b>	<b>3 303</b>	<b>3 381</b>	<b>3 499</b>	<b>3 602</b>	<b>3 813</b>	<b>4 002</b>	:
<b>ÖSTERREICH</b>	<b>ATS</b>	<b>7 440</b>	:	:	:	<b>11 081</b>	:	:	:	:
Ostösterreich		4 344	:	:	:	6 027	:	:	:	:
Südösterreich		1 479	:	:	:	2 242	:	:	:	:
Westösterreich		1 617	:	:	:	2 394	:	:	:	:
Not registered by region		-	:	:	:	417	:	:	:	:
<b>PORTUGAL</b>	<b>PTE</b>	:	<b>18 748</b>	:	<b>34 587</b>	:	:	<b>30 956</b>	:	<b>47 523</b> <sup>1</sup>
Continente		:	18 393	:	34 224	:	:	29 934	:	46 289
Açores		:	237	:	228	:	:	764	:	885
Madeira		:	118	:	134	:	:	258	:	350
<b>SUOMI-FINLAND</b>	<b>FIM</b>	<b>1 726</b>	<b>1 839</b>	<b>2 248</b>	<b>2 283</b>	<b>2 185</b>	<b>2 251</b>	<b>2 524</b>	<b>2 690</b>	<b>3 446</b>
Manner-Suomi		:	:	:	:	:	:	2 524	:	3 446
Ahvenanmaa/Åland		:	:	:	:	:	:	-	:	-
<b>SVERIGE</b>	<b>SEK</b>	<b>11 104</b>	:	<b>11 432</b>	:	<b>10 431</b>	:	<b>13 004</b>	:	<b>14 452</b>
<b>UNITED KINGDOM</b>	<b>GBP</b>	<b>1 689</b>	<b>1 873</b>	<b>2 020</b>	<b>2 129</b>	<b>2 312</b>	<b>2 623</b>	<b>2 696</b>	<b>2 792</b>	<b>2 891</b>
North		:	:	:	67	74	86	91	95	101
Yorkshire and Humberside		:	:	:	131	152	195	209	216	229
East Midlands		:	:	:	108	124	138	142	146	151
East Anglia		:	:	:	132	150	172	175	182	214
South East (UK)		:	:	:	941	1 032	1 070	1 094	1 138	1 163
South West (UK)		:	:	:	92	97	119	122	124	129
West Midlands		:	:	:	106	113	141	149	154	156
North West (UK)		:	:	:	171	175	214	223	227	228
Wales		:	:	:	70	73	100	102	105	111
Scotland		:	:	:	274	283	337	336	348	357
Northern Ireland		:	:	:	38	39	51	52	57	52
<b>ICELAND</b>	<b>ISK</b>	<b>787</b>	<b>903</b>	<b>1 357</b>	<b>1 623</b>	<b>1 320</b>	<b>1 452</b>	<b>1 915</b>	<b>1 757</b> <sup>1</sup>	<b>2 107</b> <sup>1</sup>
<b>NORWAY</b>	<b>NOK</b>	<b>2 771</b>	:	<b>3 359</b>	:	<b>3 894</b>	:	<b>4 139</b>	:	<b>4 846</b>

<sup>1</sup> Provisional.

<sup>2</sup> New "Länder" included.

**Table 20****R&D EXPENDITURE****HIGHER EDUCATION SECTOR**

Mio ECU at current prices and exchange rates

	1990	1991	1992	1993	1994	1995	1996	1997	1998
<b>EU-15 <sup>2</sup></b>	<b>18 900</b>	<b>21 100</b>	<b>22 500</b>	<b>23 400</b>	<b>24 700</b>	<b>25 500</b>	<b>26 900</b>	<b>28 000</b>	<b>29 000</b>
<b>EUR-11 <sup>2</sup></b>	<b>14 200</b>	<b>16 200</b>	<b>17 700</b>	<b>18 700</b>	<b>19 400</b>	<b>20 000</b>	<b>21 000</b>	<b>21 300</b>	<b>22 000</b>
BELGIQUE-BELGIË	:	696	:	828 <sup>1</sup>	854 <sup>1</sup>	903 <sup>1</sup>	:	:	:
DANMARK	390	402	433	473	:	620	578	596	621
DEUTSCHLAND	4 804	5 936	6 517	7 133	7 568	7 717	7 836	:	:
ELLADA	:	89	:	152	:	194	:	:	:
ESPAÑA	670	829	1 178	1 169	1 089	1 161	1 286	1 326	1 409
FRANCE	:	3 529	3 777	4 147	4 317	4 582	4 738	:	:
IRELAND	71	83	96	105	121	132	:	:	:
ITALIA	2 317	2 470	2 501	2 388	2 343	2 135	2 594	2 833 <sup>1</sup>	2 939 <sup>1</sup>
NEDERLAND	1 347	1 430	1 489	1 605	1 668	1 816	1 970	:	:
ÖSTERREICH	:	:	:	814	:	:	:	:	:
PORTUGAL	104	:	198	:	:	158	:	239 <sup>1</sup>	:
SUOMI-FINLAND	379	450	393	326	364	442	461	586	:
SVERIGE	:	1 528	:	1 144	:	1 394	:	1 671	:
UNITED KINGDOM	2 638	2 886	2 877	2 964	3 363	3 248	3 447	4 190	:
<b>EEA <sup>3</sup></b>	<b>19 200</b>	<b>21 600</b>	<b>23 000</b>	<b>23 900</b>	<b>25 200</b>	<b>26 000</b>	<b>27 500</b>	<b>28 700</b>	<b>29 700</b>
ICELAND	12	19	22	17	17	23	21 <sup>1</sup>	26 <sup>1</sup>	:
NORWAY	:	419	:	469	:	499	:	604	:

<sup>1</sup> Provisional.<sup>2</sup> Luxembourg not included.<sup>3</sup> Luxembourg and Liechtenstein not included.

**Table 20A**  
**R&D EXPENDITURE BY REGION**  
**HIGHER EDUCATION SECTOR**

Mio ECU at current prices and exchange rates

	1989	1990	1991	1992	1993	1994	1995	1996	1997
<b>BELGIQUE-BELGIË</b>	608	:	696	:	828 <sup>1</sup>	854 <sup>1</sup>	903 <sup>1</sup>	:	:
Bruxelles-Brussel	:	:	:	:	:	199	211	:	:
Vlaams Gewest	:	:	:	:	:	435	463	:	:
Région Wallonne	:	:	:	:	:	219	229	:	:
<b>DANMARK</b>	367	390	402	433	473	:	620	578	596
<b>DEUTSCHLAND</b>	4 457	4 804	5 936	6 517	7 133	7 568	7 717	7 836	:
Baden-Württemberg	769	:	904	:	1 055	:	1 125	1 139	:
Bayern	656	:	794	:	958	:	1 160	1 229	:
Berlin	351	:	:	:	643	:	630	597	:
Brandenburg	:	:	:	:	56	:	93	105	:
Bremen	52	:	63	:	87	:	98	99	:
Hamburg	188	:	216	:	259	:	271	275	:
Hessen	373	:	439	:	513	:	562	543	:
Mecklenburg-Vorpommern	:	:	:	:	108	:	125	137	:
Niedersachsen	472	:	542	:	591	:	612	630	:
Nordrhein-Westfalen	1 019	:	1 209	:	1 386	:	1 472	1 528	:
Rheinland-Pfalz	190	:	229	:	259	:	245	249	:
Saarland	88	:	100	:	115	:	101	95	:
Sachsen	:	:	:	:	374	:	421	437	:
Sachsen-Anhalt	:	:	:	:	185	:	194	192	:
Schleswig-Holstein	142	:	182	:	203	:	215	219	:
Thüringen	:	:	:	:	175	:	181	192	:
Not registered by region	157	:	1 259 <sup>2</sup>	:	166	:	214	168	:
<b>ELLADA</b>	81	:	89	:	152	:	194	:	:
Voreia Ellada	30	:	30	:	50	:	61	:	:
Kentriki Ellada	12	:	13	:	21	:	29	:	:
Attiki	34	:	39	:	70	:	87	:	:
Nisia Aigaiou, Kriti	5	:	7	:	11	:	16	:	:
<b>ESPAÑA</b>	531	670	829	1 178	1 169	1 089	1 161	1 286	1 326
Noroeste	42	53	73	109	101	86	118	124	122
Noreste	49	81	91	141	124	100	114	124	130
Madrid	111	154	178	193	177	188	236	238	253
Centro (E)	40	53	65	93	123	111	109	118	130
Este	130	164	218	343	321	334	334	394	387
Sur	90	118	140	198	241	179	206	231	253
Canarias	13	19	26	65	50	61	44	58	51
Not registered by region	56	29	37	37	33	29	-	-	-
<b>FRANCE</b>	:	:	3 529	3 777	4 147	4 317	4 582	4 738	:
Île de France	:	:	821	879	944	977	984	995	:
Bassin Parisien	:	:	59	50	58	68	75	75	:
Nord-Pas-de-Calais	:	:	20	25	30	33	37	34	:
Est	:	:	135	144	158	164	177	179	:
Ouest	:	:	49	53	62	70	76	78	:
Sud-Ouest	:	:	110	113	127	135	147	152	:
Centre-Est	:	:	166	235	260	273	295	300	:
Méditerranée	:	:	193	178	195	201	253	255	:
Départements d'Outre-Mer	:	:	5	1	1	1	1	1	:
Not registered by region	:	:	1 971	2 098	2 312	2 396	2 536	2 668	:

**Table 20A**  
**R&D EXPENDITURE BY REGION**  
**HIGHER EDUCATION SECTOR**

Mio ECU at current prices and exchange rates

	1989	1990	1991	1992	1993	1994	1995	1996	1997
<b>IRELAND</b>	62	71	83	96	105	121	132	:	:
<b>ITALIA</b>	1 935	2 317	2 470	2 501	2 388	2 343	2 135	2 594	2 833 <sup>1</sup>
Nord Ovest	:	:	:	:	:	215	190	234	256
Lombardia	:	:	:	:	:	291	257	310	338
Nord Est	:	:	:	:	:	256	224	246	269
Emilia-Romagna	:	:	:	:	:	230	197	248	270
Centro (I)	:	:	:	:	:	330	323	402	439
Lazio	:	:	:	:	:	298	305	378	413
Abruzzo-Molise	:	:	:	:	:	54	51	65	71
Campania	:	:	:	:	:	208	185	236	257
Sud	:	:	:	:	:	157	139	172	188
Sicilia	:	:	:	:	:	227	195	215	235
Sardegna	:	:	:	:	:	74	70	88	96
<b>NEDERLAND</b>	941	1 347	1 430	1 489	1 605	1 668	1 816	1 870	:
<b>ÖSTERREICH</b>	511	:	:	:	814	:	:	:	:
Ostösterreich	298	:	:	:	443	:	:	:	:
Südösterreich	102	:	:	:	165	:	:	:	:
Westösterreich	111	:	:	:	176	:	:	:	:
Not registered by region	-	:	:	:	31	:	:	:	:
<b>PORTUGAL</b>	:	104	:	198	:	:	158	:	239 <sup>1</sup>
Continente	:	102	:	196	:	:	153	:	233
Açores	:	1	:	1	:	:	4	:	4
Madeira	:	1	:	1	:	:	1	:	2
<b>SUOMI-FINLAND</b>	366	379	450	393	326	364	442	461	586
Manner-Suomi	:	:	:	:	:	:	442	:	586
Ahvenanmaa/Åland	:	:	:	:	:	:	-	:	-
<b>SVERIGE</b>	1 564	:	1 528	:	1 144	:	1 394	:	1 671
<b>UNITED KINGDOM</b>	2 521	2 638	2 886	2 877	2 964	3 363	3 248	3 447	4 190
North	:	:	:	91	95	110	110	117	146
Yorkshire and Humberside	:	:	:	177	195	250	252	267	332
East Midlands	:	:	:	146	159	177	171	180	219
East Anglia	:	:	:	178	192	221	211	225	310
South East (UK)	:	:	:	1 272	1 323	1 372	1 318	1 405	1 686
South West (UK)	:	:	:	124	124	153	147	153	187
West Midlands	:	:	:	143	145	181	180	190	226
North West (UK)	:	:	:	231	224	274	269	280	330
Wales	:	:	:	95	94	128	123	130	161
Scotland	:	:	:	370	363	432	405	430	517
Northern Ireland	:	:	:	51	50	65	63	70	75
<b>ICELAND</b>	13	12	19	22	17	17	23	21 <sup>1</sup>	26 <sup>1</sup>
<b>NORWAY</b>	364	:	419	:	469	:	499	:	604

<sup>1</sup> Provisional.

<sup>2</sup> New "Länder" included.

**R&D EXPENDITURE  
HIGHER EDUCATION SECTOR**  
Mio PPS at 1990 prices

	1990	1991	1992	1993	1994	1995	1996	1997	1998
<b>EU-15<sup>2</sup></b>	<b>18 100</b>	<b>19 300</b>	<b>20 000</b>	<b>20 500</b>	<b>21 200</b>	<b>21 400</b>	<b>22 000</b>	<b>22 400</b>	<b>22 900</b>
<b>EUR-11<sup>2</sup></b>	<b>13 700</b>	<b>15 000</b>	<b>15 600</b>	<b>16 100</b>	<b>16 200</b>	<b>16 300</b>	<b>16 800</b>	<b>17 200</b>	<b>17 600</b>
BELGIQUE-BELGIË	:	671	:	710 <sup>1</sup>	702 <sup>1</sup>	711 <sup>1</sup>	:	:	:
DANMARK	302	306	318	335	:	414	380	391	400
DEUTSCHLAND	4 377	5 205	5 333	5 390	5 529	5 371	5 516	:	:
ELLADA	:	111	:	171	:	201	:	:	:
ESPAÑA	737	844	1 158	1 241	1 183	1 233	1 305	1 360	1 423
FRANCE	:	3 345	3 441	3 572	3 627	3 765	3 818	:	:
IRELAND	74	85	95	105	117	132	:	:	:
ITALIA	2 309	2 303	2 319	2 447	2 414	2 329	2 480	2 597 <sup>1</sup>	2 653 <sup>1</sup>
NEDERLAND	1 335	1 378	1 382	1 403	1 418	1 468	1 520	:	:
ÖSTERREICH	:	:	:	658	:	:	:	:	:
PORTUGAL	168	:	251	:	:	188	:	272 <sup>1</sup>	:
SUOMI-FINLAND	267	318	321	300	305	334	353	443	:
SVERIGE	:	1 054	:	927	:	1 089	:	1 183	:
UNITED KINGDOM	2 838	2 855	2 872	3 028	3 379	3 387	3 387	3 414	:
<b>EEA<sup>3</sup></b>	<b>18 400</b>	<b>19 600</b>	<b>20 300</b>	<b>20 900</b>	<b>21 500</b>	<b>21 700</b>	<b>22 400</b>	<b>22 800</b>	<b>23 300</b>
ICELAND	11	15	18	14	15	19	17 <sup>1</sup>	20 <sup>1</sup>	:
NORWAY	:	337	:	384	:	396	:	443	:

<sup>1</sup> Provisional.

<sup>2</sup> Luxembourg not included.

<sup>3</sup> Luxembourg and Liechtenstein not included.

**Table 21A**  
**R&D EXPENDITURE BY REGION**  
**HIGHER EDUCATION SECTOR**  
Mio PPS at 1990 prices

	1989	1990	1991	1992	1993	1994	1995	1996	1997
<b>BELGIQUE-BELGIË</b>	<b>639</b>	:	<b>671</b>	:	<b>710</b>	<b>702</b> <sup>1</sup>	<b>711</b> <sup>1</sup>	:	:
Bruxelles-Brussel	:	:	:	:	:	164	166	:	:
Vlaams Gewest	:	:	:	:	:	358	364	:	:
Région Wallonne	:	:	:	:	:	180	180	:	:
<b>DANMARK</b>	<b>298</b>	<b>302</b>	<b>306</b>	<b>318</b>	<b>335</b>	:	<b>414</b>	<b>380</b>	<b>391</b>
<b>DEUTSCHLAND</b>	<b>4 232</b>	<b>4 377</b>	<b>5 205</b>	<b>5 333</b>	<b>5 390</b>	<b>5 529</b>	<b>5 371</b>	<b>5 516</b>	:
Baden-Württemberg	730	:	793	:	797	:	783	802	:
Bayern	623	:	696	:	724	:	807	865	:
Berlin	333	:	:	:	486	:	438	420	:
Brandenburg	:	:	:	:	42	:	65	74	:
Bremen	50	:	55	:	66	:	68	70	:
Hamburg	179	:	189	:	196	:	189	194	:
Hessen	355	:	385	:	388	:	391	383	:
Mecklenburg-Vorpommern	:	:	:	:	82	:	87	97	:
Niedersachsen	448	:	475	:	446	:	426	443	:
Nordrhein-Westfalen	967	:	1 060	:	1 047	:	1 024	1 076	:
Rheinland-Pfalz	180	:	201	:	196	:	171	175	:
Saarland	84	:	87	:	87	:	70	67	:
Sachsen	:	:	:	:	283	:	293	307	:
Sachsen-Anhalt	:	:	:	:	140	:	135	135	:
Schleswig-Holstein	134	:	159	:	153	:	150	154	:
Thüringen	:	:	:	:	132	:	126	135	:
Not registered by region	150	:	1 104 <sup>2</sup>	:	126	:	149	118	:
<b>ELLADA</b>	<b>115</b>	:	<b>111</b>	:	<b>171</b>	:	<b>201</b>	:	:
Voreia Ellada	42	:	38	:	57	:	63	:	:
Kentriki Ellada	16	:	16	:	24	:	30	:	:
Attiki	49	:	49	:	79	:	90	:	:
Nisia Aigaiou, Kriti	8	:	9	:	12	:	17	:	:
<b>ESPAÑA</b>	<b>631</b>	<b>737</b>	<b>844</b>	<b>1 158</b>	<b>1 241</b>	<b>1 183</b>	<b>1 233</b>	<b>1 305</b>	<b>1 360</b>
Noroeste	50	59	75	108	107	94	126	126	125
Noreste	58	89	93	139	131	109	121	126	133
Madrid	132	169	181	190	188	204	251	241	259
Centro (E)	47	58	66	91	130	121	116	120	133
Este	154	180	222	337	341	363	355	400	397
Sur	107	130	143	194	256	195	219	234	259
Canarias	15	20	27	64	53	66	47	59	53
Not registered by region	67	32	37	36	35	32	-	-	-
<b>FRANCE</b>	:	:	<b>3 345</b>	<b>3 441</b>	<b>3 572</b>	<b>3 627</b>	<b>3 765</b>	<b>3 818</b>	:
Île de France	:	:	778	801	813	820	809	802	:
Bassin Parisien	:	:	56	46	50	57	62	60	:
Nord-Pas-de-Calais	:	:	19	23	26	27	31	27	:
Est	:	:	128	131	136	138	145	145	:
Ouest	:	:	46	49	53	59	62	63	:
Sud-Ouest	:	:	104	103	110	113	121	122	:
Centre-Est	:	:	157	215	224	230	243	242	:
Méditerranée	:	:	182	162	168	169	208	206	:
Départements d'Outre-Mer	:	:	5	1	1	1	1	1	:
Not registered by region	:	:	1 868	1 912	1 992	2 013	2 084	2 150	:



## Table 21A

### R&D EXPENDITURE BY REGION

#### HIGHER EDUCATION SECTOR

Mio PPS at 1990 prices

	1989	1990	1991	1992	1993	1994	1995	1996	1997
<b>IRELAND</b>	64	74	85	95	105	117	132	:	:
<b>ITALIA</b>	2 061	2 309	2 303	2 319	2 447	2 414	2 329	2 480	2 597 <sup>1</sup>
Nord Ovest	:	:	:	:	:	222	207	224	235
Lombardia	:	:	:	:	:	300	281	296	310
Nord Est	:	:	:	:	:	264	244	235	246
Emilia-Romagna	:	:	:	:	:	237	215	237	248
Centro (I)	:	:	:	:	:	340	352	384	403
Lazio	:	:	:	:	:	308	332	362	379
Abruzzo-Molise	:	:	:	:	:	56	56	62	65
Campania	:	:	:	:	:	215	202	225	236
Sud	:	:	:	:	:	162	151	164	172
Sicilia	:	:	:	:	:	234	212	206	215
Sardegna	:	:	:	:	:	76	77	84	88
<b>NEDERLAND</b>	967	1 335	1 378	1 382	1 403	1 418	1 468	1 520	:
<b>ÖSTERREICH</b>	508	:	:	:	658	:	:	:	:
Ostösterreich	297	:	:	:	358	:	:	:	:
Südösterreich	101	:	:	:	133	:	:	:	:
Westösterreich	110	:	:	:	142	:	:	:	:
Not registered by region	-	:	:	:	25	:	:	:	:
<b>PORTUGAL</b>	:	168	:	251	:	:	188	:	272 <sup>1</sup>
Continente	:	165	:	248	:	:	182	:	265
Açores	:	2	:	2	:	:	5	:	5
Madeira	:	1	:	1	:	:	2	:	2
<b>SUOMI-FINLAND</b>	265	267	318	321	300	305	334	353	443
Manner-Suomi	:	:	:	:	:	:	334	:	443
Ahvenanmaa/Åland	:	:	:	:	:	:	-	:	-
<b>SVERIGE</b>	1 199	:	1 054	:	927	:	1 089	:	1 183
<b>UNITED KINGDOM</b>	2 722	2 838	2 855	2 872	3 028	3 379	3 387	3 387	3 414
North	:	:	:	90	97	111	114	115	119
Yorkshire and Humberside	:	:	:	177	199	251	263	262	270
East Midlands	:	:	:	146	162	178	178	177	178
East Anglia	:	:	:	178	196	222	220	221	253
South East (UK)	:	:	:	1 270	1 351	1 379	1 374	1 381	1 373
South West (UK)	:	:	:	124	127	153	153	150	152
West Midlands	:	:	:	143	148	182	187	187	184
North West (UK)	:	:	:	231	229	276	280	275	269
Wales	:	:	:	94	96	129	128	127	131
Scotland	:	:	:	370	371	434	422	422	422
Northern Ireland	:	:	:	51	51	66	65	69	61
<b>ICELAND</b>	11	11	15	18	14	15	19	17 <sup>1</sup>	20 <sup>1</sup>
<b>NORWAY</b>	296	:	337	:	384	:	396	:	443

<sup>1</sup> Provisional.

<sup>2</sup> New "Länder" included.

**Table 22**

**R&D EXPENDITURE  
HIGHER EDUCATION SECTOR  
As % of GDP**

	1990	1991	1992	1993	1994	1995	1996	1997	1998
<b>EU-15<sup>2</sup></b>	<i>0.36</i>	<i>0.37</i>	<i>0.38</i>	<i>0.40</i>	<i>0.40</i>	<i>0.40</i>	<i>0.40</i>	<i>0.39</i>	<i>0.39</i>
<b>EUR-11<sup>2</sup></b>	<i>0.35</i>	<i>0.36</i>	<i>0.38</i>	<i>0.39</i>	<i>0.39</i>	<i>0.38</i>	<i>0.39</i>	<i>0.38</i>	<i>0.38</i>
BELGIQUE-BELGIË	:	0.43	:	0.45 <sup>1</sup>	0.44 <sup>1</sup>	0.44 <sup>1</sup>	:	:	:
DANMARK	<i>0.39</i>	0.39	<i>0.40</i>	0.42	:	0.48	<i>0.41</i>	<i>0.42</i>	<i>0.42</i>
DEUTSCHLAND	0.41	0.43	0.43	0.44	0.43	0.42	0.42	:	:
ELLADA	:	0.12	:	0.19	:	0.22	:	:	:
ESPAÑA	0.17	0.19	0.26	0.28	0.26	0.26	0.27	0.28	<i>0.28</i>
FRANCE	:	0.36	0.37	0.39	0.39	0.39	0.39	:	:
IRELAND	0.20	0.22	0.24	<i>0.25</i>	0.26	<i>0.26</i>	:	:	:
ITALIA	0.27	0.27	0.27	0.29	0.28	0.26	0.27	0.28 <sup>1</sup>	0.28 <sup>1</sup>
NEDERLAND	0.60	0.61	0.60	0.60	0.59	0.60	0.60	:	:
ÖSTERREICH	:	:	:	0.52	:	:	:	:	:
PORTUGAL	0.19	:	0.27	:	:	0.21	:	0.27 <sup>1</sup>	:
SUOMI-FINLAND	0.36	0.46	0.48	0.45	0.44	0.46	0.47	0.55	:
SVERIGE	:	0.79	:	0.72	:	0.78	:	0.82	:
UNITED KINGDOM	0.34	0.35	0.36	0.37	0.39	0.38	0.38	0.37	:
<b>EEA<sup>3</sup></b>	<i>0.36</i>	<i>0.38</i>	<i>0.38</i>	<i>0.40</i>	<i>0.40</i>	<i>0.40</i>	<i>0.40</i>	<i>0.40</i>	<i>0.39</i>
ICELAND	0.25	0.34	0.41	0.32	0.33	0.42	<i>0.36</i> <sup>1</sup>	0.41 <sup>1</sup>	:
NORWAY	:	0.44	:	0.47	:	0.45	:	0.46	:

<sup>1</sup> Provisional.

<sup>2</sup> Luxembourg not included.

<sup>3</sup> Luxembourg and Liechtenstein not included.

**Table 22A**  
**R&D EXPENDITURE BY REGION**  
**HIGHER EDUCATION SECTOR**  
As % of GDP

	1989	1990	1991	1992	1993	1994	1995	1996	1997
<b>BELGIQUE-BELGIË</b>	<b>0.43</b>	:	<b>0.43</b>	:	<b>0.45</b>	<b>0.44</b> <sup>1</sup>	<b>0.44</b> <sup>1</sup>	:	:
Bruxelles-Brussel	:	:	:	:	:	0.70	0.72	:	:
Vlaams Gewest	:	:	:	:	:	0.37	0.37	:	:
Région Wallonne	:	:	:	:	:	0.43	0.42	:	:
<b>DANMARK</b>	<b>0.39</b>	<b>0.39</b>	<b>0.39</b>	<b>0.40</b>	<b>0.42</b>	:	<b>0.48</b>	<b>0.41</b>	<b>0.42</b>
<b>DEUTSCHLAND</b>	<b>0.41</b>	<b>0.41</b>	<b>0.43</b>	<b>0.43</b>	<b>0.44</b>	<b>0.43</b>	<b>0.42</b>	<b>0.42</b>	:
Baden-Württemberg	0.43	:	0.42	:	0.44	:	0.42	0.43	:
Bayern	0.34	:	0.33	:	0.35	:	0.37	0.39	:
Berlin	0.97	:	:	:	0.95	:	0.84	0.81	:
Brandenburg	:	:	:	:	0.20	:	0.27	0.30	:
Bremen	0.36	:	0.36	:	0.45	:	0.46	0.47	:
Hamburg	0.44	:	0.41	:	0.43	:	0.40	0.40	:
Hessen	0.33	:	0.31	:	0.31	:	0.30	0.29	:
Mecklenburg-Vorpommern	:	:	:	:	0.59	:	0.54	0.59	:
Niedersachsen	0.44	:	0.42	:	0.40	:	0.37	0.38	:
Nordrhein-Westfalen	0.37	:	0.37	:	0.38	:	0.36	0.37	:
Rheinland-Pfalz	0.34	:	0.35	:	0.36	:	0.31	0.32	:
Saarland	0.54	:	0.51	:	0.54	:	0.42	0.40	:
Sachsen	:	:	:	:	0.80	:	0.71	0.72	:
Sachsen-Anhalt	:	:	:	:	0.64	:	0.56	0.56	:
Schleswig-Holstein	0.38	:	0.40	:	0.39	:	0.36	0.38	:
Thüringen	:	:	:	:	0.70	:	0.58	0.60	:
<b>ELLADA</b>	<b>0.13</b>	:	<b>0.12</b>	:	<b>0.19</b>	:	<b>0.22</b>	:	:
Voreia Ellada	0.16	:	0.13	:	0.21	:	0.22	:	:
Kentriki Ellada	0.09	:	0.08	:	0.12	:	0.15	:	:
Attiki	0.15	:	0.15	:	0.24	:	0.26	:	:
Nisia Aigaiou, Kriti	0.09	:	0.10	:	0.14	:	0.19	:	:
<b>ESPAÑA</b>	<b>0.15</b>	<b>0.17</b>	<b>0.19</b>	<b>0.26</b>	<b>0.28</b>	<b>0.26</b>	<b>0.26</b>	<b>0.27</b>	<b>0.28</b>
Noroeste	0.12	0.14	0.18	0.26	0.26	0.22	0.29	0.28	:
Noreste	0.11	0.17	0.17	0.26	0.25	0.20	0.21	0.22	:
Madrid	0.21	0.25	0.26	0.27	0.27	0.28	0.33	0.31	:
Centro (E)	0.10	0.12	0.13	0.18	0.26	0.23	0.21	0.22	:
Este	0.12	0.14	0.16	0.24	0.25	0.26	0.24	0.27	:
Sur	0.16	0.19	0.20	0.27	0.36	0.27	0.29	0.31	:
Canarias	0.10	0.13	0.17	0.39	0.32	0.38	0.26	0.32	:
<b>FRANCE</b>	:	:	<b>0.36</b>	<b>0.37</b>	<b>0.39</b>	<b>0.39</b>	<b>0.39</b>	<b>0.39</b>	:

**Table 22A**  
**R&D EXPENDITURE BY REGION**  
**HIGHER EDUCATION SECTOR**

As % of GDP

	1989	1990	1991	1992	1993	1994	1995	1996	1997
<b>IRELAND</b>	0.19	0.20	0.22	0.24	0.25	0.26	0.26	:	:
<b>ITALIA</b>	0.25	0.27	0.27	0.27	0.29	0.28	0.26	0.27	0.28 <sup>1</sup>
Nord Ovest	:	:	:	:	:	0.21	0.19	0.20	:
Lombardia	:	:	:	:	:	0.17	0.15	0.16	:
Nord Est	:	:	:	:	:	0.22	0.20	0.19	:
Emilia-Romagna	:	:	:	:	:	0.31	0.27	0.29	:
Centro (I)	:	:	:	:	:	0.37	0.37	0.40	:
Lazio	:	:	:	:	:	0.35	0.37	0.39	:
Abruzzo-Molise	:	:	:	:	:	0.27	0.26	0.29	:
Campania	:	:	:	:	:	0.37	0.35	0.38	:
Sud	:	:	:	:	:	0.24	0.22	0.23	:
Sicilia	:	:	:	:	:	0.46	0.41	0.40	:
Sardegna	:	:	:	:	:	0.40	0.41	0.45	:
<b>NEDERLAND</b>	0.45	0.60	0.61	0.60	0.60	0.59	0.60	0.60	:
<b>ÖSTERREICH</b>	0.44	:	:	:	0.52	:	:	:	:
Ostösterreich	0.55	:	:	:	0.60	:	:	:	:
Südösterreich	0.49	:	:	:	0.61	:	:	:	:
Westösterreich	0.27	:	:	:	0.32	:	:	:	:
<b>PORTUGAL</b>	:	0.19	:	0.27	:	:	0.21	:	0.27 <sup>1</sup>
Continente	:	0.19	:	0.28	:	:	0.21	:	:
Açores	:	0.14	:	0.10	:	:	0.30	:	:
Madeira	:	0.07	:	0.05	:	:	0.09	:	:
<b>SUOMI-FINLAND</b>	0.35	0.36	0.46	0.48	0.45	0.44	0.46	0.47	0.55
Manner-Suomi	:	:	:	:	:	:	0.46	:	:
Ahvenanmaa/Åland	:	:	:	:	:	:	-	:	:
<b>SVERIGE</b>	0.90	:	0.79	:	0.72	:	0.78	:	0.82
<b>UNITED KINGDOM</b>	0.33	0.34	0.35	0.36	0.37	0.39	0.38	0.38	0.37
North	:	:	:	0.24	0.25	0.27	0.28	0.28	:
Yorkshire and Humberside	:	:	:	0.28	0.31	0.38	0.38	0.38	:
East Midlands	:	:	:	0.27	0.30	0.30	0.30	0.30	:
East Anglia	:	:	:	0.60	0.66	0.71	0.68	0.27	:
South East (UK)	:	:	:	0.44	0.45	0.45	0.44	0.42	:
South West (UK)	:	:	:	0.20	0.20	0.23	0.22	0.22	:
West Midlands	:	:	:	0.21	0.21	0.25	0.25	0.25	:
North West (UK)	:	:	:	0.29	0.28	0.32	0.32	0.31	:
Wales	:	:	:	0.28	0.29	0.36	0.35	0.34	:
Scotland	:	:	:	0.53	0.52	0.58	0.55	0.55	:
Northern Ireland	:	:	:	0.28	0.27	0.33	0.32	0.34	:
<b>ICELAND</b>	0.26	0.25	0.34	0.41	0.32	0.33	0.42	0.36 <sup>1</sup>	0.41 <sup>1</sup>
<b>NORWAY</b>	0.41	:	0.44	:	0.47	:	0.45	:	0.46

<sup>1</sup> Provisional.

**R&D PERSONNEL**
**ALL SECTORS <sup>4</sup>**
**Full time equivalent**

	1990	1991	1992	1993	1994	1995	1996	1997	1998
<b>EU-15 <sup>2</sup></b>	<b>1 488 500</b>	<b>1 571 900</b>	<b>1 570 000</b>	<b>1 575 700</b>	<b>1 580 800</b>	<b>1 561 100</b>	<b>1 573 900</b>	<b>1 601 900</b>	<b>1 632 500</b>
<b>EUR-11 <sup>2</sup></b>	<b>1 119 400</b>	<b>1 213 000</b>	<b>1 203 700</b>	<b>1 199 400</b>	<b>1 205 700</b>	<b>1 201 000</b>	<b>1 213 400</b>	<b>1 241 600</b>	<b>1 272 400</b>
BELGIQUE-BELGIË	:	40 063	:	:	37 703 <sup>1</sup>	38 450 <sup>1</sup>	:	:	:
DANMARK	25 047	25 756	26 573	27 304	:	30 213	30 841	31 467	32 107
DEUTSCHLAND	:	516 331	:	475 018	:	459 138	453 679	:	:
ELLADA	:	10 905	:	14 549	:	:	:	:	:
ESPAÑA	69 684	72 405	73 320	76 581	80 401	79 990	87 264	87 150	90 018
FRANCE	288 230	293 997	311 060	312 810	313 372	315 527	316 805	:	:
IRELAND	6 967	8 144	8 798	9 397	10 833	12 372	:	:	:
ITALIA <sup>5</sup>	144 917	143 641	142 855	142 171	143 823	141 789	142 288	:	:
NEDERLAND	73 940	72 350	72 310	74 420	78 980	79 256	80 821	:	:
ÖSTERREICH	:	:	:	24 458	:	:	:	:	:
PORTUGAL	12 043	:	13 448	:	:	15 465	:	18 152 <sup>1</sup>	:
SUOMI-FINLAND	:	29 575	:	30 527	32 331	33 635	:	41 257	:
SVERIGE	:	53 604	:	56 954	:	62 635	:	65 495	:
UNITED KINGDOM	279 504	268 608	271 689	277 500	:	:	:	:	:
<b>EEA <sup>3</sup></b>	<b>1 509 700</b>	<b>1 593 300</b>	<b>1 592 400</b>	<b>1 599 200</b>	<b>1 605 300</b>	<b>1 586 700</b>	<b>1 599 800</b>	<b>1 628 600</b>	<b>1 660 000</b>
ICELAND	1 188	1 197	1 244	1 364	1 412	1 694	1 516 <sup>1</sup>	1 779 <sup>1</sup>	:
NORWAY	:	20 252	:	22 091	:	23 938	:	24 877	:

<sup>1</sup> Provisional.

<sup>2</sup> Luxembourg not included.

<sup>3</sup> Luxembourg and Liechtenstein not included.

<sup>4</sup> PNP included.

<sup>5</sup> PNP not existing.

**Table 23A**  
**TOTAL R&D PERSONNEL BY REGION**

ALL SECTORS <sup>3</sup>

Full time equivalent

	1989	1990	1991	1992	1993	1994	1995	1996	1997
<b>BELGIQUE-BELGIË</b>	<b>40 066</b>	:	<b>40 063</b>	:	:	<b>37 703</b> <sup>1</sup>	<b>38 450</b> <sup>1</sup>	:	:
Bruxelles-Brussel	:	:	:	:	:	6 495	6 516	:	:
Vlaams Gewest	:	:	:	:	:	22 691	23 197	:	:
Région Wallonne	:	:	:	:	:	8 519	8 737	:	:
<b>DANMARK</b>	<b>24 328</b>	<b>25 047</b>	<b>25 756</b>	<b>26 573</b>	<b>27 304</b>	:	<b>30 213</b>	<b>30 841</b>	<b>31 467</b>
<b>DEUTSCHLAND</b>	<b>426 448</b>	:	<b>516 331</b>	:	<b>475 018</b>	:	<b>459 138</b>	<b>453 679</b>	:
Baden-Württemberg	94 364	:	98 615	:	:	:	91 843	:	:
Bayern	94 927	:	94 904	:	:	:	87 002	:	:
Berlin	20 674	:	:	:	:	:	29 260	:	:
Brandenburg	:	:	:	:	:	:	6 978	:	:
Bremen	4 778	:	4 815	:	:	:	5 233	:	:
Hamburg	12 256	:	12 234	:	:	:	13 137	:	:
Hessen	44 563	:	45 266	:	:	:	39 658	:	:
Mecklenburg-Vorpommern	:	:	:	:	:	:	3 937	:	:
Niedersachsen	33 346	:	33 875	:	:	:	32 436	:	:
Nordrhein-Westfalen	86 356	:	88 440	:	:	:	76 294	:	:
Rheinland-Pfalz	20 557	:	19 931	:	:	:	16 902	:	:
Saarland	2 567	:	2 412	:	:	:	2 471	:	:
Sachsen	:	:	:	:	:	:	19 692	:	:
Sachsen-Anhalt	:	:	:	:	:	:	7 455	:	:
Schleswig-Holstein	9 379	:	9 126	:	:	:	8 014	:	:
Thüringen	:	:	:	:	:	:	8 255	:	:
Not registered by region	2 669	:	106 713	:	:	:	10 569	:	:
<b>ELLADA</b>	<b>9 387</b>	:	<b>10 905</b>	:	<b>14 549</b>	:	:	:	:
Voreia Ellada	2 242	:	2 565	:	4 001	:	:	:	:
Kentriki Ellada	1 094	:	1 305	:	1 817	:	:	:	:
Attiki	5 247	:	6 036	:	7 302	:	:	:	:
Nisia Aigaiou, Kriti	805	:	999	:	1 429	:	:	:	:
<b>ESPAÑA</b>	<b>63 155</b>	<b>69 684</b>	<b>72 405</b>	<b>73 320</b>	<b>76 581</b>	<b>80 401</b>	<b>79 990</b>	<b>87 264</b>	<b>87 150</b>
Noroeste	3 035	3 485	3 795	4 229	4 284	4 594	5 330	5 253	6 574
Noreste	7 396	8 306	8 851	8 514	8 968	9 103	9 579	10 615	10 558
Madrid	23 021	26 232	25 787	25 294	25 540	27 217	25 607	26 549	25 933
Centro (E)	3 530	3 634	4 398	4 627	5 823	5 936	4 853	6 680	6 535
Este	14 014	15 901	16 784	17 149	18 108	19 478	22 249	24 838	24 228
Sur	6 119	6 650	7 181	8 723	8 759	8 679	10 475	11 036	11 417
Canarias	887	1 082	1 360	1 564	1 879	1 850	1 897	2 290	1 905
Not registered by region	5 155	4 393	4 250	3 220	3 220	3 544	-	-	-
<b>FRANCE</b>	<b>283 747</b>	<b>288 230</b>	<b>293 997</b>	<b>311 060</b>	<b>312 810</b>	<b>313 372</b>	<b>315 527</b>	<b>316 805</b>	:
Île de France	:	:	116 193	116 867	114 217	112 531	111 399	110 442	:
Bassin Parisien	:	:	18 746	20 463	20 179	20 854	21 420	21 533	:
Nord-Pas-de-Calais	:	:	3 736	3 942	4 416	4 311	4 199	4 011	:
Est	:	:	11 098	12 276	12 514	12 474	13 268	13 521	:
Ouest	:	:	13 219	13 789	14 772	15 064	14 923	15 159	:
Sud-Ouest	:	:	18 834	19 916	19 615	19 371	19 026	18 812	:
Centre-Est	:	:	26 962	27 787	28 904	28 699	28 987	29 620	:
Méditerranée	:	:	21 074	20 632	20 792	20 908	21 570	21 990	:
Départements d'Outre-Mer <sup>2</sup>	:	:	:	:	:	:	:	:	:
Not registered by region	:	:	62 701	73 953	75 998	77 784	79 320	80 231	:

**Table 23A**  
**TOTAL R&D PERSONNEL BY REGION**  
**ALL SECTORS <sup>3</sup>**  
Full time equivalent

	1989	1990	1991	1992	1993	1994	1995	1996	1997
<b>IRELAND</b>	6 397	6 967	8 144	8 798	9 397	10 833	12 372	:	:
<b>ITALIA <sup>4</sup></b>	140 496	144 917	143 641	142 855	142 171	143 823	141 789	142 288	:
Nord Ovest	:	:	:	:	:	24 078	22 854	23 124	:
Lombardia	:	:	:	:	:	30 466	30 121	29 815	:
Nord Est	:	:	:	:	:	10 805	11 254	11 276	:
Emilia-Romagna	:	:	:	:	:	11 345	10 889	11 113	:
Centro (I)	:	:	:	:	:	12 449	12 664	12 666	:
Lazio	:	:	:	:	:	28 359	28 978	28 196	:
Abruzzo-Molise	:	:	:	:	:	2 867	2 871	3 364	:
Campania	:	:	:	:	:	9 663	8 510	8 875	:
Sud	:	:	:	:	:	5 509	5 535	5 425	:
Sicilia	:	:	:	:	:	5 894	5 708	5 919	:
Sardegna	:	:	:	:	:	2 388	2 405	2 515	:
<b>NEDERLAND</b>	66 140	73 940	72 350	72 310	74 420	78 980	79 256	80 821	:
<b>ÖSTERREICH</b>	23 084	:	:	:	24 458	:	:	:	:
Ostösterreich	12 968	:	:	:	14 169	:	:	:	:
Südösterreich	4 235	:	:	:	4 399	:	:	:	:
Westösterreich	5 881	:	:	:	5 890	:	:	:	:
<b>PORTUGAL</b>	:	12 043	:	13 448	:	:	15 465	:	18 152 <sup>1</sup>
Continente	:	11 805	:	13 206	:	:	14 906	:	17 434
Açores	:	190	:	181	:	:	225	:	312
Madeira	:	48	:	62	:	:	334	:	406
<b>SUOMI-FINLAND</b>	28 517	:	29 575	:	30 527	32 331	33 635	:	41 257
Manner-Suomi	:	:	:	:	:	:	33 612	:	41 252
Ahvenanmaa/Åland	:	:	:	:	:	:	23	:	5
<b>SVERIGE</b>	55 129	:	53 604	:	56 954	:	62 635	:	65 495
<b>UNITED KINGDOM</b>	281 000	279 504	268 608	271 689	277 500	:	:	:	:
North	:	:	:	:	6 273	:	:	:	:
Yorkshire and Humberside	:	:	:	:	12 028	:	:	:	:
East Midlands	:	:	:	:	19 046	:	:	:	:
East Anglia	:	:	:	:	11 985	:	:	:	:
South East (UK)	:	:	:	:	125 697	:	:	:	:
South West (UK)	:	:	:	:	17 813	:	:	:	:
West Midlands	:	:	:	:	22 506	:	:	:	:
North West (UK)	:	:	:	:	23 126	:	:	:	:
Wales	:	:	:	:	5 781	:	:	:	:
Scotland	:	:	:	:	16 716	:	:	:	:
Northern Ireland	:	:	:	:	2 506	:	:	:	:
<b>ICELAND</b>	1 204	1 188	1 197	1 244	1 364	1 412	1 694	1 516 <sup>1</sup>	1 779 <sup>1</sup>
<b>NORWAY</b>	19 826	:	20 252	:	22 091	:	23 938	:	24 877

<sup>1</sup> Provisional.

<sup>2</sup> Overseas departments not surveyed for the BES.

<sup>3</sup> PNP included.

<sup>4</sup> PNP not existing.

<sup>5</sup> Data of the new "Länder" included.

**Table 24****R&D PERSONNEL**ALL SECTORS <sup>4</sup>

Head count

	1990	1991	1992	1993	1994	1995	1996	1997	1998
<b>EU-15 <sup>2</sup></b>	<b>1 987 000</b>	<b>2 051 600</b>	<b>2 057 200</b>	<b>2 067 300</b>	<b>2 086 200</b>	<b>2 085 100</b>	<b>2 100 300</b>	<b>2 122 900</b>	<b>2 163 500</b>
<b>EUR-11 <sup>2</sup></b>	<b>1 492 800</b>	<b>1 574 200</b>	<b>1 560 100</b>	<b>1 550 800</b>	<b>1 563 700</b>	<b>1 573 000</b>	<b>1 587 600</b>	<b>1 608 700</b>	<b>1 648 300</b>
BELGIQUE-BELGIË	:	54 970	:	:	50 390 <sup>1</sup>	51 253 <sup>1</sup>	:	:	:
DANMARK	42 849	41 326	42 589	43 851	:	50 725	52 125	53 213	54 321
DEUTSCHLAND	:	663 342	:	614 951	:	585 676	:	573 746	:
ELLADA	:	21 989	:	30 545	:	:	:	:	:
ESPAÑA	108 546	115 274	119 442	122 276	134 586	147 046	155 890	155 117	160 859
FRANCE	333 277	341 840	355 992	356 584	361 702	365 431	370 084	:	:
IRELAND	9 703	11 194	12 106	14 439	14 795	16 784	:	:	:
ITALIA <sup>5</sup>	179 978	179 900	179 740	179 557	183 849	183 812	185 641	:	:
NEDERLAND	102 298	100 625	100 720	102 909	106 896	105 269	107 570	:	:
ÖSTERREICH	:	:	:	43 133	:	:	:	:	:
PORTUGAL	18 963	:	20 582	:	:	25 024	:	29 326 <sup>1</sup>	:
SUOMI-FINLAND	:	46 181	:	42 508	42 732	47 866	:	55 490	:
SVERIGE	:	70 399	:	79 602	:	97 954	:	102 216	:
UNITED KINGDOM	360 194	343 147	352 926	362 518	:	:	:	:	:
<b>EEA <sup>3</sup></b>	<b>2 020 600</b>	<b>2 084 900</b>	<b>2 092 100</b>	<b>2 103 900</b>	<b>2 126 100</b>	<b>2 128 800</b>	<b>2 144 000</b>	<b>2 167 100</b>	<b>2 208 100</b>
ICELAND	2 088	2 180	2 295	2 702	2 533	2 889	2 716 <sup>1</sup>	3 284 <sup>1</sup>	:
NORWAY	:	27 436	:	33 876	:	40 821	:	43 894	:

<sup>1</sup> Provisional.<sup>2</sup> Luxembourg not included.<sup>3</sup> Luxembourg and Liechtenstein not included.<sup>4</sup> PNP included.<sup>5</sup> PNP not existing.



	1989	1990	1991	1992	1993	1994	1995	1996	1997
<b>BELGIQUE-BELGIË</b>	<b>54 919</b>		<b>54 970</b>			<b>50 390 <sup>1</sup></b>	<b>51 253 <sup>1</sup></b>		
Bruxelles-Brussel						9 178	9 191		
Vlaams Gewest						29 560	30 158		
Région Wallonne						11 654	11 904		
<b>DANMARK</b>	<b>42 610</b>	<b>42 849</b>	<b>41 326</b>	<b>42 589</b>	<b>43 851</b>		<b>50 725</b>	<b>52 125</b>	<b>53 213</b>
<b>DEUTSCHLAND</b>	<b>544 985</b>		<b>663 342</b>		<b>614 951</b>		<b>585 676</b>	<b>573 746</b>	
Baden-Württemberg	118 447		123 686				113 479		
Bayern	118 206		117 621				107 212		
Berlin	27 937						38 937		
Brandenburg							9 029		
Bremen	6 010		6 238				6 557		
Hamburg	16 501		16 409				16 925		
Hessen	56 183		56 721				49 262		
Mecklenburg-Vorpommern							5 530		
Niedersachsen	44 239		44 976				41 707		
Nordrhein-Westfalen	111 831		114 284				98 092		
Rheinland-Pfalz	25 749		24 991				21 026		
Saarland	3 832		3 572				3 492		
Sachsen							25 972		
Sachsen-Anhalt							10 028		
Schleswig-Holstein	12 495		12 219				10 669		
Thüringen							10 776		
Not registered by region	3 538		142 625 <sup>5</sup>				16 981		
<b>ELLADA</b>	<b>18 174</b>		<b>21 989</b>		<b>30 545</b>				
Voreia Ellada	5 258		6 080		9 044				
Kentriki Ellada	2 191		2 812		4 150				
Attiki	9 337		11 338		14 526				
Nisia Aigaiou, Kriti	1 387		1 759		2 824				
<b>ESPAÑA</b>	<b>99 813</b>	<b>108 546</b>	<b>115 274</b>	<b>119 442</b>	<b>122 276</b>	<b>134 586</b>	<b>147 046</b>	<b>155 890</b>	<b>155 117</b>
Noroeste	5 165	5 791	6 493	7 412	7 250	8 339	11 713	10 307	12 321
Noreste	10 731	12 453	13 485	13 267	13 769	14 606	17 982	17 815	17 895
Madrid	34 137	38 112	37 997	38 018	38 271	41 012	43 289	41 274	43 644
Centro (E)	5 784	5 999	7 233	7 928	9 675	11 045	10 863	14 309	14 351
Este	21 335	23 967	26 102	27 159	28 117	32 229	39 011	45 265	39 348
Sur	10 341	11 161	12 413	15 652	14 927	15 956	19 843	21 938	22 954
Canarias	1 638	1 960	2 540	3 092	3 384	3 616	4 345	4 977	4 604
Not registered by region	10 687	9 105	9 010	6 913	6 881	7 782	-	-	-
<b>FRANCE</b>	<b>330 041</b>	<b>333 277</b>	<b>341 840</b>	<b>355 992</b>	<b>356 584</b>	<b>361 702</b>	<b>365 431</b>	<b>370 084</b>	
Île de France			132 142	126 400	122 809	122 948	123 681	121 910	
Bassin Parisien			20 987	22 328	21 804	22 841	22 995	23 724	
Nord-Pas-de-Calais			4 265	4 277	4 758	4 720	4 749	4 441	
Est			13 058	13 281	13 448	13 709	13 785	15 059	
Ouest			14 693	14 921	15 896	16 412	16 516	16 675	
Sud-Ouest			21 386	21 551	21 088	21 138	21 265	20 771	
Centre-Est			30 653	30 126	31 125	31 392	31 585	32 727	
Méditerranée			24 063	22 063	22 217	22 710	22 830	24 274	
Départements d'Outre-Mer <sup>2</sup>									
Not registered by region			79 067	99 557	101 959	104 385	106 570	108 915	

**Table 24A**  
**TOTAL R&D PERSONNEL BY REGION**  
**ALL SECTORS <sup>3</sup>**

Head count

	1989	1990	1991	1992	1993	1994	1995	1996	1997
<b>IRELAND</b>	<i>8 843</i>	<i>9 703</i>	<i>11 194</i>	<i>12 106</i>	<i>14 439</i>	<i>14 795</i>	<i>16 784</i>	:	:
<b>ITALIA <sup>4</sup></b>	<b>176 649</b>	<b>179 978</b>	<b>179 900</b>	<b>179 740</b>	<b>179 557</b>	<b>183 849</b>	<b>183 812</b>	<b>185 641</b>	:
Nord Ovest	:	:	:	:	:	28 482	26 500	27 603	:
Lombardia	:	:	:	:	:	39 718	39 360	39 449	:
Nord Est	:	:	:	:	:	14 420	15 596	15 097	:
Emilia-Romagna	:	:	:	:	:	15 086	14 759	15 509	:
Centro (I)	:	:	:	:	:	17 256	17 370	18 086	:
Lazio	:	:	:	:	:	33 544	35 986	34 074	:
Abruzzo-Molise	:	:	:	:	:	3 720	3 824	4 304	:
Campania	:	:	:	:	:	12 821	11 286	11 913	:
Sud	:	:	:	:	:	7 169	7 387	7 613	:
Sicilia	:	:	:	:	:	8 243	8 213	8 439	:
Sardegna	:	:	:	:	:	3 391	3 531	3 554	:
<b>NEDERLAND</b>	<i>89 338</i>	<i>102 298</i>	<i>100 625</i>	<i>100 720</i>	<i>102 909</i>	<i>106 896</i>	<i>105 269</i>	<i>107 570</i>	:
<b>ÖSTERREICH</b>	<i>40 000</i>	:	:	:	<i>43 133</i>	:	:	:	:
Ostösterreich	<i>22 565</i>	:	:	:	<i>24 986</i>	:	:	:	:
Südösterreich	<i>7 660</i>	:	:	:	<i>8 089</i>	:	:	:	:
Westösterreich	<i>9 776</i>	:	:	:	<i>10 058</i>	:	:	:	:
<b>PORTUGAL</b>	:	<b>18 963</b>	:	<b>20 582</b>	:	:	<b>25 024</b>	:	<b>29 326 <sup>1</sup></b>
Continente	:	18 603	:	20 223	:	:	24 135	:	28 061
Açores	:	279	:	270	:	:	389	:	512
Madeira	:	81	:	89	:	:	500	:	753
<b>SUOMI-FINLAND</b>	<b>38 840</b>	:	<b>46 181</b>	:	<b>42 508</b>	<b>42 732</b>	<b>47 866</b>	:	<b>55 490</b>
Manner-Suomi	:	:	:	:	:	:	47 834	:	55 476
Ahvenanmaa/Åland	:	:	:	:	:	:	32	:	14
<b>SVERIGE</b>	<i>72 339</i>	:	<i>70 399</i>	:	<b>79 602</b>	:	<b>97 954</b>	:	<b>102 216</b>
<b>UNITED KINGDOM</b>	<b>366 987</b>	<b>360 194</b>	<b>343 147</b>	<b>352 926</b>	<b>362 518</b>	:	:	:	:
North	:	:	:	:	<i>8 641</i>	:	:	:	:
Yorkshire and Humberside	:	:	:	:	<i>16 573</i>	:	:	:	:
East Midlands	:	:	:	:	<i>23 971</i>	:	:	:	:
East Anglia	:	:	:	:	<i>16 132</i>	:	:	:	:
South East (UK)	:	:	:	:	<i>159 986</i>	:	:	:	:
South West (UK)	:	:	:	:	<i>22 784</i>	:	:	:	:
West Midlands	:	:	:	:	<i>28 265</i>	:	:	:	:
North West (UK)	:	:	:	:	<i>29 514</i>	:	:	:	:
Wales	:	:	:	:	<i>8 038</i>	:	:	:	:
Scotland	:	:	:	:	<i>23 776</i>	:	:	:	:
Northern Ireland	:	:	:	:	<i>3 631</i>	:	:	:	:
<b>ICELAND</b>	<i>2 118</i>	<i>2 088</i>	<b>2 180</b>	<i>2 295</i>	<b>2 702</b>	<i>2 533</i>	<b>2 889</b>	<i>2 716 <sup>1</sup></i>	<i>3 284 <sup>1</sup></i>
<b>NORWAY</b>	<i>31 862</i>	:	<i>31 151</i>	:	<b>33 876</b>	:	<b>40 821</b>	:	<b>43 894</b>

<sup>1</sup> Provisional.

<sup>2</sup> Overseas departments not surveyed for the BES.

<sup>3</sup> PNP included.

<sup>4</sup> PNP not existing.

<sup>5</sup> Data of the new "Länder" included.

**R&D PERSONNEL**
**ALL SECTORS <sup>4</sup>**

Head count as % of the labour force

	1990	1991	1992	1993	1994	1995	1996	1997	1998
<b>EU-15 <sup>2</sup></b>	<b>1.27</b>	<b>1.24</b>	<b>1.25</b>	<b>1.25</b>	<b>1.26</b>	<b>1.26</b>	<b>1.26</b>	<b>1.26</b>	:
<b>EUR-11 <sup>2</sup></b>	<b>1.29</b>	<b>1.25</b>	<b>1.25</b>	<b>1.24</b>	<b>1.24</b>	<b>1.25</b>	<b>1.25</b>	<b>1.26</b>	:
BELGIQUE-BELGIË	:	1.37	:	:	1.21 <sup>1</sup>	1.23 <sup>1</sup>	:	:	:
DANMARK	1.46	1.43	1.47	1.53	:	1.81	1.85	1.88	1.93
DEUTSCHLAND	:	1.70	:	1.57	:	1.50	1.47	:	:
ELLADA	:	0.56	:	0.75	:	:	:	:	:
ESPAÑA	0.72	0.77	0.79	0.80	0.87	0.94	0.98	0.97	0.99
FRANCE	1.39	1.40	1.45	1.44	1.45	1.46	1.46	:	:
IRELAND	0.73	0.83	0.90	1.06	1.05	1.17	:	:	:
ITALIA <sup>5</sup>	0.76	0.75	0.79	0.79	0.81	0.81	0.81	:	:
NEDERLAND	1.50	1.45	1.44	1.45	1.48	1.44	1.45	:	:
ÖSTERREICH	:	:	:	1.16	:	:	:	:	:
PORTUGAL	0.39	:	0.44	:	:	0.53	:	0.61 <sup>1</sup>	:
SUOMI-FINLAND	:	1.80	:	1.69	1.71	1.97	:	2.23	:
SVERIGE	:	1.56	:	1.84	:	2.18	:	2.34	:
UNITED KINGDOM	1.25	1.20	1.24	1.28	:	:	:	:	:
<b>EEA <sup>3</sup></b>	<b>1.28</b>	<b>1.24</b>	<b>1.25</b>	<b>1.26</b>	<b>1.27</b>	<b>1.26</b>	<b>1.26</b>	<b>1.27</b>	:
ICELAND	:	1.55	1.60	1.87	1.74	1.97	1.80 <sup>1</sup>	2.21 <sup>1</sup>	:
NORWAY	:	1.47	:	1.59	:	1.87	:	1.91	:

<sup>1</sup> Provisional.

<sup>2</sup> Luxembourg not included.

<sup>3</sup> Luxembourg and Liechtenstein not included.

<sup>4</sup> PNP included.

<sup>5</sup> PNP not existing.

**Table 25A**  
**TOTAL R&D PERSONNEL BY REGION**  
**ALL SECTORS <sup>3</sup>**

Head count as % of the labour force

	1989	1990	1991	1992	1993	1994	1995	1996	1997
<b>BELGIQUE-BELGIË</b>	<i>1.40</i>	:	<i>1.37</i>	:	:	<i>1.21</i> <sup>1</sup>	<i>1.23</i> <sup>1</sup>	:	:
Bruxelles-Brussel	:	:	:	:	:	<i>2.37</i>	<i>2.39</i>	:	:
Vlaams Gewest	:	:	:	:	:	<i>1.20</i>	<i>1.21</i>	:	:
Région Wallonne	:	:	:	:	:	<i>0.89</i>	<i>0.91</i>	:	:
<b>DANMARK</b>	<i>1.49</i>	<i>1.46</i>	<i>1.43</i>	<i>1.47</i>	<i>1.53</i>	:	<i>1.81</i>	<i>1.85</i>	<i>1.88</i>
<b>DEUTSCHLAND</b>	<i>1.88</i>	:	<i>1.70</i>	:	<i>1.57</i>	:	<i>1.50</i>	<i>1.47</i>	:
Baden-Württemberg	<i>2.61</i>	:	<i>2.53</i>	:	:	:	<i>2.26</i>	:	:
Bayern	<i>2.11</i>	:	<i>2.00</i>	:	:	:	<i>1.78</i>	:	:
Berlin	<i>2.63</i>	:	:	:	:	:	<i>2.13</i>	:	:
Brandenburg	:	:	:	:	:	:	<i>0.71</i>	:	:
Bremen	<i>1.97</i>	:	<i>2.04</i>	:	:	:	<i>2.09</i>	:	:
Hamburg	<i>2.13</i>	:	<i>2.00</i>	:	:	:	<i>1.97</i>	:	:
Hessen	<i>2.11</i>	:	<i>2.04</i>	:	:	:	<i>1.73</i>	:	:
Mecklenburg-Vorpommern	:	:	:	:	:	:	<i>0.59</i>	:	:
Niedersachsen	<i>1.34</i>	:	<i>1.31</i>	:	:	:	<i>1.17</i>	:	:
Nordrhein-Westfalen	<i>1.50</i>	:	<i>1.47</i>	:	:	:	<i>1.26</i>	:	:
Rheinland-Pfalz	<i>1.52</i>	:	<i>1.40</i>	:	:	:	<i>1.16</i>	:	:
Saarland	<i>0.85</i>	:	<i>0.77</i>	:	:	:	<i>0.79</i>	:	:
Sachsen	:	:	:	:	:	:	<i>1.15</i>	:	:
Sachsen-Anhalt	:	:	:	:	:	:	<i>0.72</i>	:	:
Schleswig-Holstein	<i>1.01</i>	:	<i>0.96</i>	:	:	:	<i>0.81</i>	:	:
Thüringen	:	:	:	:	:	:	<i>0.85</i>	:	:
<b>ELLADA</b>	<i>0.46</i>	:	<i>0.56</i>	:	<i>0.75</i>	:	:	:	:
Voreia Ellada	<i>0.40</i>	:	<i>0.47</i>	:	<i>0.68</i>	:	:	:	:
Kentriki Ellada	<i>0.24</i>	:	<i>0.34</i>	:	<i>0.50</i>	:	:	:	:
Attiki	<i>0.67</i>	:	<i>0.78</i>	:	<i>0.96</i>	:	:	:	:
Nisia Aigaiou, Kriti	<i>0.40</i>	:	<i>0.49</i>	:	<i>0.74</i>	:	:	:	:
<b>ESPAÑA</b>	<i>0.68</i>	<i>0.72</i>	<i>0.77</i>	<i>0.79</i>	<i>0.80</i>	<i>0.87</i>	<i>0.94</i>	<i>0.98</i>	<i>0.97</i>
Noroeste	<i>0.28</i>	<i>0.32</i>	<i>0.37</i>	<i>0.42</i>	<i>0.41</i>	<i>0.48</i>	<i>0.69</i>	<i>0.60</i>	<i>0.72</i>
Noreste	<i>0.67</i>	<i>0.77</i>	<i>0.83</i>	<i>0.81</i>	<i>0.85</i>	<i>0.88</i>	<i>1.09</i>	<i>1.08</i>	<i>1.06</i>
Madrid	<i>1.92</i>	<i>2.05</i>	<i>2.05</i>	<i>2.01</i>	<i>1.99</i>	<i>2.10</i>	<i>2.14</i>	<i>1.92</i>	<i>2.05</i>
Centro (E)	<i>0.29</i>	<i>0.30</i>	<i>0.37</i>	<i>0.40</i>	<i>0.48</i>	<i>0.56</i>	<i>0.57</i>	<i>0.72</i>	<i>0.72</i>
Este	<i>0.51</i>	<i>0.56</i>	<i>0.60</i>	<i>0.63</i>	<i>0.64</i>	<i>0.72</i>	<i>0.85</i>	<i>0.99</i>	<i>0.84</i>
Sur	<i>0.37</i>	<i>0.39</i>	<i>0.43</i>	<i>0.53</i>	<i>0.50</i>	<i>0.52</i>	<i>0.64</i>	<i>0.70</i>	<i>0.71</i>
Canarias	<i>0.29</i>	<i>0.35</i>	<i>0.44</i>	<i>0.52</i>	<i>0.58</i>	<i>0.59</i>	<i>0.70</i>	<i>0.80</i>	<i>0.70</i>
<b>FRANCE <sup>5</sup></b>	<i>1.37</i>	<i>1.39</i>	<i>1.40</i>	<i>1.45</i>	<i>1.44</i>	<i>1.45</i>	<i>1.46</i>	<i>1.46</i>	:
Île de France	:	:	<i>2.52</i>	<i>2.38</i>	<i>2.31</i>	<i>2.34</i>	<i>2.35</i>	<i>2.31</i>	:
Bassin Parisien	:	:	<i>0.48</i>	<i>0.51</i>	<i>0.51</i>	<i>0.54</i>	<i>0.53</i>	<i>0.54</i>	:
Nord-Pas-de-Calais	:	:	<i>0.28</i>	<i>0.28</i>	<i>0.30</i>	<i>0.31</i>	<i>0.31</i>	<i>0.29</i>	:
Est	:	:	<i>0.63</i>	<i>0.62</i>	<i>0.61</i>	<i>0.63</i>	<i>0.64</i>	<i>0.71</i>	:
Ouest	:	:	<i>0.46</i>	<i>0.47</i>	<i>0.49</i>	<i>0.50</i>	<i>0.49</i>	<i>0.50</i>	:
Sud-Ouest	:	:	<i>0.85</i>	<i>0.83</i>	<i>0.83</i>	<i>0.84</i>	<i>0.82</i>	<i>0.77</i>	:
Centre-Est	:	:	<i>1.11</i>	<i>1.08</i>	<i>1.06</i>	<i>1.01</i>	<i>1.03</i>	<i>1.03</i>	:
Méditerranée	:	:	<i>0.91</i>	<i>0.87</i>	<i>0.83</i>	<i>0.83</i>	<i>0.83</i>	<i>0.87</i>	:
Départements d'Outre-Mer <sup>2</sup>	:	:	:	:	:	:	:	:	:

**Table 25A**  
**TOTAL R&D PERSONNEL BY REGION**  
**ALL SECTORS <sup>3</sup>**

Head count as % of the labour force

	1989	1990	1991	1992	1993	1994	1995	1996	1997
<b>IRELAND</b>	<i>0.68</i>	<i>0.73</i>	<i>0.83</i>	<i>0.90</i>	<i>1.06</i>	<i>1.05</i>	<i>1.17</i>	:	:
<b>ITALIA <sup>4</sup></b>	<b>0.76</b>	<b>0.76</b>	<b>0.75</b>	<b>0.79</b>	<b>0.79</b>	<b>0.81</b>	<b>0.81</b>	<b>0.81</b>	:
Nord Ovest	:	:	:	:	:	1.13	1.04	1.07	:
Lombardia	:	:	:	:	:	1.02	1.01	1.01	:
Nord Est	:	:	:	:	:	0.52	0.56	0.53	:
Emilia-Romagna	:	:	:	:	:	0.85	0.84	0.87	:
Centro (I)	:	:	:	:	:	0.72	0.72	0.75	:
Lazio	:	:	:	:	:	1.65	1.75	1.64	:
Abruzzo-Molise	:	:	:	:	:	0.61	0.62	0.69	:
Campania	:	:	:	:	:	0.63	0.57	0.60	:
Sud	:	:	:	:	:	0.31	0.32	0.33	:
Sicilia	:	:	:	:	:	0.50	0.49	0.50	:
Sardegna	:	:	:	:	:	0.55	0.58	0.58	:
<b>NEDERLAND</b>	<i>1.35</i>	<i>1.50</i>	<i>1.45</i>	<i>1.44</i>	<i>1.45</i>	<i>1.48</i>	<i>1.44</i>	<i>1.45</i>	:
<b>ÖSTERREICH</b>	<i>1.16</i>	:	:	:	<i>1.16</i>	:	:	:	:
<b>PORTUGAL</b>	:	<b>0.39</b>	:	<i>0.44</i>	:	:	<b>0.53</b>	:	<b>0.61 <sup>1</sup></b>
Continente	:	0.40	:	<i>0.45</i>	:	:	0.53	:	0.61
Açores	:	0.29	:	<i>0.29</i>	:	:	0.42	:	0.54
Madeira	:	0.06	:	<i>0.08</i>	:	:	0.47	:	0.67
<b>SUOMI-FINLAND</b>	<b>1.50</b>	:	<b>1.80</b>	:	<b>1.69</b>	<i>1.71</i>	<b>1.97</b>	:	<b>2.23</b>
Manner-Suomi	:	:	:	:	:	:	1.98	:	2.24
Ahvenanmaa/Åland	:	:	:	:	:	:	0.27	:	0.12
<b>SVERIGE</b>	<b>1.62</b>	:	<b>1.56</b>	:	<b>1.84</b>	:	<b>2.18</b>	:	<b>2.34</b>
<b>UNITED KINGDOM</b>	<i>1.28</i>	<i>1.25</i>	<i>1.20</i>	<i>1.24</i>	<i>1.28</i>	:	:	:	:
North	:	:	:	:	<i>0.60</i>	:	:	:	:
Yorkshire and Humberside	:	:	:	:	<i>0.68</i>	:	:	:	:
East Midlands	:	:	:	:	<i>1.17</i>	:	:	:	:
East Anglia	:	:	:	:	<i>1.52</i>	:	:	:	:
South East (UK)	:	:	:	:	<i>1.77</i>	:	:	:	:
South West (UK)	:	:	:	:	<i>0.97</i>	:	:	:	:
West Midlands	:	:	:	:	<i>1.10</i>	:	:	:	:
North West (UK)	:	:	:	:	<i>0.98</i>	:	:	:	:
Wales	:	:	:	:	<i>0.63</i>	:	:	:	:
Scotland	:	:	:	:	<i>0.96</i>	:	:	:	:
Northern Ireland	:	:	:	:	<i>0.53</i>	:	:	:	:
<b>ICELAND</b>	:	:	<b>1.55</b>	<b>1.60</b>	<b>1.87</b>	<b>1.74</b>	<b>1.97</b>	<b>1.80 <sup>1</sup></b>	<b>2.21 <sup>1</sup></b>
<b>NORWAY</b>	<i>1.48</i>	:	<i>1.47</i>	:	<b>1.59</b>	:	<b>1.87</b>	:	<b>1.91</b>

<sup>1</sup> Provisional.

<sup>2</sup> Overseas departments not surveyed for the BES.

<sup>3</sup> PNP included.

<sup>4</sup> PNP not existing.

<sup>5</sup> Between 23-29% of the R&D personnel is not registered by region.

**Table 26**
**R&D PERSONNEL**  
**BUSINESS ENTERPRISE SECTOR**  
 Full time equivalent

	1990	1991	1992	1993	1994	1995	1996	1997	1998
<b>EU-15<sup>2</sup></b>	<b>854 900</b>	<b>871 100</b>	<b>863 300</b>	<b>855 900</b>	<b>850 200</b>	<b>844 000</b>	<b>845 700</b>	<b>862 400</b>	<b>886 300</b>
<b>EUR-11<sup>2</sup></b>	<b>632 800</b>	<b>660 900</b>	<b>651 600</b>	<b>638 100</b>	<b>634 700</b>	<b>635 400</b>	<b>638 500</b>	<b>657 300</b>	<b>682 500</b>
BELGIQUE-BELGIË	:	22 313	:	:	22 231 <sup>1</sup>	22 978 <sup>1</sup>	:	:	:
DANMARK	14 605	15 242	15 607	15 973	:	17 195	17 497	17 797	18 111
DEUTSCHLAND	:	321 757	:	293 774	:	283 316	276 794	:	:
ELLADA	:	2 244	:	2 880	:	:	:	:	:
ESPAÑA	28 508	29 151	28 590	27 781	27 320	27 558	29 431	30 023	32 669
FRANCE	153 161	156 300	164 379	164 384	161 955	162 042	162 589	:	:
IRELAND	3 032	3 971	4 316	4 498	5 325	6 150	:	:	:
ITALIA	67 496	65 481	63 458	61 993	63 105	60 323	60 915	:	:
NEDERLAND	31 950	29 970	29 440	30 900	36 040	37 456	39 499	:	:
ÖSTERREICH	:	:	:	15 114	:	:	:	:	:
PORTUGAL	1 997	:	1 882	:	:	1 917	:	1 981 <sup>1</sup>	:
SUOMI-FINLAND	:	15 028	:	15 180	16 900	17 798	20 756	22 302	:
SVERIGE	:	33 757	:	35 330	:	41 636	:	43 881	:
UNITED KINGDOM	171 000	159 000	159 000	163 597	157 386	146 369	143 280	139 497	:
<b>EEA<sup>3</sup></b>	<b>865 200</b>	<b>881 400</b>	<b>873 900</b>	<b>866 900</b>	<b>862 000</b>	<b>856 700</b>	<b>858 700</b>	<b>875 900</b>	<b>900 300</b>
ICELAND	232	278	291	398	418	551	461 <sup>1</sup>	579 <sup>1</sup>	:
NORWAY	:	9 967	:	10 689	:	12 090	:	12 942	:

<sup>1</sup> Provisional.<sup>2</sup> Luxembourg not included.<sup>3</sup> Luxembourg and Liechtenstein not included.

**Table 26A**  
**TOTAL R&D PERSONNEL BY REGION**  
**BUSINESS ENTERPRISE SECTOR**

Full time equivalent

	1989	1990	1991	1992	1993	1994	1995	1996	1997
<b>BELGIQUE-BELGIË</b>	<b>22 071</b>	:	<b>22 313</b>	:	:	<b>22 231</b> <sup>1</sup>	<b>22 978</b> <sup>1</sup>	:	:
Bruxelles-Brussel	3 648	:	3 715	:	:	2 513	2 554	:	:
Vlaams Gewest	13 367	:	13 493	:	:	15 192	15 662	:	:
Région Wallonne	4 146	:	4 163	:	:	4 526	4 762	:	:
Not registered by region	911	:	941	:	:	-	-	:	:
<b>DANMARK</b>	<b>13 958</b>	<b>14 605</b>	<b>15 242</b>	<b>15 607</b>	<b>15 973</b>	:	<b>17 195</b>	<b>17 497</b>	<b>17 797</b>
<b>DEUTSCHLAND</b>	<b>296 510</b>	:	<b>321 757</b>	:	<b>293 774</b>	:	<b>283 316</b>	<b>276 794</b>	:
Baden-Württemberg	70 621	:	70 553	:	70 445	:	66 024	:	:
Bayern	75 284	:	72 821	:	67 835	:	64 685	:	:
Berlin	9 018	:	11 925	:	12 375	:	11 076	:	:
Brandenburg	:	:	3 411	:	2 664	:	2 821	:	:
Bremen	3 587	:	3 050	:	3 693	:	3 477	:	:
Hamburg	6 087	:	5 678	:	6 652	:	7 312	:	:
Hessen	34 642	:	34 160	:	31 245	:	29 549	:	:
Mecklenburg-Vorpommern	:	:	1 518	:	882	:	1 018	:	:
Niedersachsen	18 474	:	17 295	:	16 456	:	18 383	:	:
Nordrhein-Westfalen	56 481	:	55 291	:	48 431	:	44 541	:	:
Rheinland-Pfalz	16 512	:	15 140	:	13 038	:	12 684	:	:
Saarland	825	:	602	:	734	:	777	:	:
Sachsen	:	:	13 427	:	8 754	:	9 891	:	:
Sachsen-Anhalt	:	:	7 052	:	3 370	:	3 267	:	:
Schleswig-Holstein	4 967	:	4 287	:	3 248	:	3 272	:	:
Thüringen	:	:	5 547	:	3 952	:	4 538	:	:
<b>ELLADA</b>	<b>1 810</b>	:	<b>2 244</b>	:	<b>2 880</b>	:	:	:	:
Voreia Ellada	217	:	267	:	598	:	:	:	:
Kentriki Ellada	205	:	274	:	337	:	:	:	:
Attiki	1 318	:	1 672	:	1 880	:	:	:	:
Nisia Aigaiou, Kriti	70	:	31	:	65	:	:	:	:
<b>ESPAÑA</b>	<b>25 865</b>	<b>28 508</b>	<b>29 151</b>	<b>28 590</b>	<b>27 781</b>	<b>27 320</b>	<b>27 558</b>	<b>29 431</b>	<b>30 023</b>
Noroeste	727	851	927	1 081	1 110	1 092	844	901	1 007
Noreste	4 808	4 923	5 302	4 867	4 862	4 781	5 332	5 692	5 751
Madrid	9 781	11 058	10 958	10 683	9 986	9 821	8 804	9 403	9 335
Centro (E)	1 382	1 231	1 686	1 570	1 395	1 372	1 025	1 096	1 141
Este	7 650	8 918	8 684	8 623	8 691	8 547	9 494	10 139	10 752
Sur	1 493	1 490	1 541	1 732	1 702	1 673	1 953	2 085	1 885
Canarias	25	37	53	34	35	34	106	114	152
<b>FRANCE</b>	<b>149 821</b>	<b>153 161</b>	<b>156 300</b>	<b>164 379</b>	<b>164 384</b>	<b>161 955</b>	<b>162 042</b>	<b>162 589</b>	:
Île de France	78 004	78 679	79 446	80 989	79 269	77 614	77 063	76 612	:
Bassin Parisien	14 131	15 134	15 830	17 441	17 106	17 663	18 157	18 119	:
Nord-Pas-de-Calais	2 808	2 721	2 880	2 941	3 376	3 185	3 003	2 953	:
Est	6 504	6 886	7 255	8 493	8 722	8 603	9 348	9 633	:
Ouest	6 657	6 868	7 582	9 743	10 507	10 587	10 356	10 654	:
Sud-Ouest	12 911	13 124	13 390	14 051	13 569	13 072	12 623	12 445	:
Centre-Est	18 467	19 266	19 391	20 474	21 507	21 023	21 066	21 606	:
Méditerranée	10 339	10 484	10 526	10 247	10 329	10 209	10 426	10 567	:
Départements d'Outre-Mer <sup>2</sup>	:	:	:	:	:	:	:	:	:

**Table 26A**  
**TOTAL R&D PERSONNEL BY REGION**  
**BUSINESS ENTERPRISE SECTOR**

Full time equivalent

	1989	1990	1991	1992	1993	1994	1995	1996	1997
<b>IRELAND</b>	2 872	3 032	3 971	4 316	4 498	5 325	6 150	:	:
<b>ITALIA</b>	64 944	67 496	65 481	63 458	61 993	63 105	60 323	60 915	:
Nord Ovest	19 431	19 504	19 245	17 586	17 369	17 535	16 456	16 522	:
Lombardia	22 782	24 014	22 182	22 524	21 522	20 889	20 174	19 988	:
Nord Est	4 277	4 468	4 207	4 189	3 742	4 637	4 873	5 033	:
Emilia-Romagna	4 398	5 199	4 755	4 516	4 082	4 789	4 626	4 775	:
Centro (I)	3 255	3 304	3 561	3 248	3 119	3 135	2 984	2 999	:
Lazio	6 112	6 108	6 678	6 412	6 562	6 241	6 130	6 343	:
Abruzzo-Molise	779	852	932	1 141	1 158	1 291	1 241	1 546	:
Campania	1 925	1 945	1 933	2 006	2 455	2 560	2 090	2 162	:
Sud	839	1 034	1 023	929	1 146	1 210	1 093	867	:
Sicilia	993	860	765	694	660	645	572	449	:
Sardegna	153	206	199	213	177	173	84	231	:
<b>NEDERLAND</b>	32 920	31 950	29 970	29 440	30 900	36 040	37 456	39 499	:
Noord-Nederland	:	:	:	:	:	:	:	2 910	:
Oost-Nederland	:	:	:	:	:	:	:	6 572	:
West-Nederland	:	:	:	:	:	:	:	15 283	:
Zuid-Nederland	:	:	:	:	:	:	:	14 734	:
<b>ÖSTERREICH</b>	14 854	:	:	:	15 114	:	:	:	:
Ostösterreich	8 170	:	:	:	8 667	:	:	:	:
Südösterreich	2 462	:	:	:	2 421	:	:	:	:
Westösterreich	4 222	:	:	:	4 025	:	:	:	:
<b>PORTUGAL</b>	:	1 997	:	1 882	:	:	1 917	:	1 981 <sup>1</sup>
Continente	:	1 989	:	1 882	:	:	1 906	:	1 963
Açores	:	-	:	-	:	:	0	:	0
Madeira	:	8	:	-	:	:	10	:	17
<b>SUOMI-FINLAND</b>	14 536	:	15 028	:	15 180	16 900	17 798	20 756	22 302
Manner-Suomi	:	:	:	:	:	:	17 795	:	22 300
Ahvenanmaa/Åland	:	:	:	:	:	:	3	:	2
<b>SVERIGE</b>	35 106	:	33 757	:	35 330	:	41 636	:	43 881
<b>UNITED KINGDOM</b>	176 000	171 000	159 000	159 000	163 597	157 386	146 369	143 280	139 497
North	:	:	:	:	3 185	5 304	5 174	3 623	3 817
Yorkshire and Humberside	:	:	:	:	5 951	6 267	6 205	5 963	5 511
East Midlands	:	:	:	:	14 413	11 923	11 489	11 941	11 114
East Anglia	:	:	:	:	5 391	11 955	13 575	27 622	28 012
South East (UK)	:	:	:	:	82 914	65 419	59 833	42 000	39 237
South West (UK)	:	:	:	:	10 769	14 054	12 743	11 652	11 797
West Midlands	:	:	:	:	16 323	13 023	12 366	12 832	12 049
North West (UK)	:	:	:	:	16 798	19 855	15 594	16 607	17 064
Wales	:	:	:	:	2 520	2 378	2 087	2 204	2 387
Scotland	:	:	:	:	4 542	6 024	6 078	7 025	6 530
Northern Ireland	:	:	:	:	791	1 184	1 225	1 811	1 978
<b>ICELAND</b>	235	232	278	291	398	418	551	461 <sup>1</sup>	579 <sup>1</sup>
<b>NORWAY</b>	10 164	:	9 967	:	10 689	:	12 090	:	12 942

<sup>1</sup> Provisional.

<sup>2</sup> Overseas departments not surveyed.



**R&D PERSONNEL  
BUSINESS ENTERPRISE SECTOR  
Head count**

	1990	1991	1992	1993	1994	1995	1996	1997	1998
<b>EU-15 <sup>2</sup></b>	<b>1 005 800</b>	<b>1 006 900</b>	<b>995 700</b>	<b>987 000</b>	<b>978 500</b>	<b>977 900</b>	<b>970 000</b>	<b>992 400</b>	<b>1 020 500</b>
<b>EUR-11 <sup>2</sup></b>	<b>747 600</b>	<b>766 300</b>	<b>745 700</b>	<b>730 500</b>	<b>723 100</b>	<b>728 400</b>	<b>725 900</b>	<b>751 100</b>	<b>779 700</b>
BELGIQUE-BELGIË	:	26 212	:	:	25 815 <sup>1</sup>	26 682 <sup>1</sup>	:	:	:
DANMARK	21 758	22 081	21 996	21 910	:	25 740	26 191	26 640	27 110
DEUTSCHLAND	:	373 128	:	340 678	:	325 502	316 362	:	:
ELLADA	:	3 165	:	4 462	:	:	:	:	:
ESPAÑA	35 147	36 270	35 142	34 476	33 772	33 068	33 638	36 061	39 221
FRANCE	168 981	174 075	180 843	178 484	177 944	179 249	178 783	:	:
IRELAND	3 562	4 665	5 070	6 815	6 183	7 141	:	:	:
ITALIA	73 659	71 724	69 326	68 147	70 402	67 885	68 321	:	:
NEDERLAND	37 533	35 207	34 584	35 833	41 850	43 033	45 381	:	:
ÖSTERREICH	:	:	:	17 527	:	:	:	:	:
PORTUGAL	3 058	:	2 810	:	:	3 333	:	3 875 <sup>1</sup>	:
SUOMI-FINLAND	:	24 835	:	19 678	19 624	24 243	26 467	29 139	:
SVERIGE	:	39 147	:	40 371	:	47 961	:	49 323	:
UNITED KINGDOM	193 833	176 212	184 386	189 717	182 757	170 739	163 762	159 438	:
<b>EEA <sup>3</sup></b>	<b>1 019 400</b>	<b>1 019 700</b>	<b>1 009 000</b>	<b>1 001 000</b>	<b>993 800</b>	<b>994 700</b>	<b>987 500</b>	<b>1 010 900</b>	<b>1 038 800</b>
ICELAND	398	421	501	779	720	911	793 <sup>1</sup>	996 <sup>1</sup>	:
NORWAY	:	12 409	:	13 272	:	15 937	:	17 549	:

<sup>1</sup> Provisional.

<sup>2</sup> Luxembourg not included.

<sup>3</sup> Luxembourg and Liechtenstein not included.

**Table 27A**  
**TOTAL R&D PERSONNEL BY REGION**  
**BUSINESS ENTERPRISE SECTOR**

Head count

	1989	1990	1991	1992	1993	1994	1995	1996	1997
<b>BELGIQUE-BELGIË</b>	<b>25 928</b>	:	<b>26 212</b>	:	:	<b>25 815</b> <sup>1</sup>	<b>26 682</b> <sup>1</sup>	:	:
Bruxelles-Brussel	4 285	:	4 364	:	:	2 918	2 966	:	:
Vlaams Gewest	15 703	:	15 851	:	:	17 641	18 187	:	:
Région Wallonne	4 870	:	4 890	:	:	5 256	5 530	:	:
Not registered by region	1 070	:	1 105	:	:	-	-	:	:
<b>DANMARK</b>	<b>20 781</b>	<b>21 758</b>	<b>22 081</b>	<b>21 996</b>	<b>21 910</b>	:	<b>25 740</b>	<b>26 191</b>	<b>26 640</b>
<b>DEUTSCHLAND</b>	<b>348 323</b>	:	<b>373 128</b>	:	<b>340 678</b>	:	<b>325 502</b>	<b>316 362</b>	:
Baden-Württemberg	82 962	:	81 817	:	81 692	:	75 855	:	:
Bayern	88 439	:	84 448	:	78 665	:	74 317	:	:
Berlin	10 594	:	13 829	:	14 351	:	12 725	:	:
Brandenburg	:	:	3 956	:	3 089	:	3 241	:	:
Bremen	4 214	:	3 537	:	4 283	:	3 995	:	:
Hamburg	7 151	:	6 585	:	7 714	:	8 401	:	:
Hessen	40 695	:	39 614	:	36 234	:	33 949	:	:
Mecklenburg-Vorpommern	:	:	1 760	:	1 023	:	1 170	:	:
Niedersachsen	21 702	:	20 056	:	19 083	:	21 120	:	:
Nordrhein-Westfalen	66 351	:	64 119	:	56 163	:	51 173	:	:
Rheinland-Pfalz	19 397	:	17 557	:	15 120	:	14 573	:	:
Saarland	969	:	698	:	851	:	893	:	:
Sachsen	:	:	15 571	:	10 152	:	11 364	:	:
Sachsen-Anhalt	:	:	8 178	:	3 908	:	3 753	:	:
Schleswig-Holstein	5 835	:	4 971	:	3 767	:	3 759	:	:
Thüringen	:	:	6 433	:	4 583	:	5 214	:	:
<b>ELLADA</b>	<b>2 126</b>	:	<b>3 165</b>	:	<b>4 462</b>	:	:	:	:
Voreia Ellada	255	:	426	:	1 042	:	:	:	:
Kentriki Ellada	241	:	407	:	712	:	:	:	:
Attiki	1 548	:	2 272	:	2 608	:	:	:	:
Nisia Aigaiou, Kriti	82	:	60	:	99	:	:	:	:
<b>ESPAÑA</b>	<b>31 130</b>	<b>35 147</b>	<b>36 270</b>	<b>35 142</b>	<b>34 476</b>	<b>33 772</b>	<b>33 068</b>	<b>33 638</b>	<b>36 061</b>
Noroeste	875	1 049	1 153	1 329	1 378	1 350	1 140	1 030	1 358
Noreste	5 787	6 069	6 597	5 982	6 034	5 910	6 614	6 506	7 224
Madrid	11 772	13 633	13 634	13 131	12 393	12 140	9 989	10 747	10 694
Centro (E)	1 663	1 518	2 098	1 930	1 731	1 696	1 339	1 253	1 483
Este	9 207	10 995	10 805	10 599	10 785	10 565	11 491	11 588	12 815
Sur	1 796	1 837	1 917	2 129	2 112	2 068	2 372	2 383	2 298
Canarias	30	46	66	42	43	42	123	130	189
<b>FRANCE</b>	<b>166 573</b>	<b>168 981</b>	<b>174 075</b>	<b>180 843</b>	<b>178 484</b>	<b>177 944</b>	<b>179 249</b>	<b>178 783</b>	:
Île de France	86 726	86 806	88 481	89 101	86 068	85 276	85 902	84 243	:
Bassin Parisien	15 711	16 697	17 630	19 188	18 573	19 406	19 549	19 924	:
Nord-Pas-de-Calais	3 122	3 002	3 208	3 236	3 665	3 500	3 525	3 247	:
Est	7 231	7 597	8 080	9 344	9 470	9 453	9 522	10 592	:
Ouest	7 401	7 577	8 444	10 719	11 409	11 632	11 717	11 715	:
Sud-Ouest	14 355	14 479	14 913	15 458	14 732	14 363	14 468	13 685	:
Centre-Est	20 532	21 256	21 596	22 525	23 351	23 098	23 267	23 758	:
Méditerranée	11 495	11 567	11 723	11 273	11 215	11 217	11 299	11 619	:
Départements d'Outre-Mer <sup>2</sup>	:	:	:	:	:	:	:	:	:

**Table 27A**  
**TOTAL R&D PERSONNEL BY REGION**  
**BUSINESS ENTERPRISE SECTOR**

Head count

	1989	1990	1991	1992	1993	1994	1995	1996	1997
<b>IRELAND</b>	<i>3 374</i>	<i>3 562</i>	<i>4 665</i>	<i>5 070</i>	<i>6 815</i>	<i>6 183</i>	<i>7 141</i>	:	:
<b>ITALIA</b>	<b>72 008</b>	<b>73 659</b>	<b>71 724</b>	<b>69 326</b>	<b>68 147</b>	<b>70 402</b>	<b>67 885</b>	<b>68 321</b>	:
Nord Ovest	21 545	21 285	21 080	19 212	19 093	19 052	17 822	17 928	:
Lombardia	25 260	26 207	24 297	24 607	23 658	23 707	22 846	22 772	:
Nord Est	4 742	4 876	4 608	4 576	4 114	5 531	5 935	5 997	:
Emilia-Romagna	4 876	5 674	5 208	4 934	4 487	5 420	5 255	5 424	:
Centro (I)	3 609	3 606	3 901	3 548	3 429	3 765	3 555	3 458	:
Lazio	6 777	6 666	7 315	7 005	7 213	6 764	7 125	7 348	:
Abruzzo-Molise	864	930	1 021	1 247	1 273	1 460	1 311	1 626	:
Campania	2 134	2 123	2 117	2 191	2 699	2 618	2 254	2 192	:
Sud	930	1 128	1 121	1 015	1 260	1 236	1 102	874	:
Sicilia	1 101	939	838	758	726	656	581	461	:
Sardegna	170	225	218	233	195	193	99	241	:
<b>NEDERLAND</b>	<i>38 227</i>	<i>37 533</i>	<i>35 207</i>	<i>34 584</i>	<i>35 833</i>	<i>41 850</i>	<i>43 033</i>	<i>45 381</i>	:
Noord-Nederland	:	:	:	:	:	:	:	3 343	:
Oost-Nederland	:	:	:	:	:	:	:	7 551	:
West-Nederland	:	:	:	:	:	:	:	17 559	:
Zuid-Nederland	:	:	:	:	:	:	:	16 928	:
<b>ÖSTERREICH</b>	<i>17 225</i>	:	:	:	<i>17 527</i>	:	:	:	:
Ostösterreich	<i>9 475</i>	:	:	:	<i>10 051</i>	:	:	:	:
Südösterreich	<i>2 855</i>	:	:	:	<i>2 808</i>	:	:	:	:
Westösterreich	<i>4 896</i>	:	:	:	<i>4 668</i>	:	:	:	:
<b>PORTUGAL</b>	:	<b>3 058</b>	:	<b>2 810</b>	:	:	<b>3 333</b>	:	<b>3 875</b> <sup>1</sup>
Continente	:	3 035	:	2 810	:	:	3 302	:	3 856
Açores	:	-	:	-	:	:	1	:	1
Madeira	:	23	:	-	:	:	30	:	18
<b>SUOMI-FINLAND</b>	<b>18 614</b>	:	<b>24 835</b>	:	<b>19 678</b>	<b>19 624</b>	<b>24 243</b>	<b>26 467</b>	<b>29 139</b>
Manner-Suomi	:	:	:	:	:	:	24 236	:	29 133
Ahvenanmaa/Åland	:	:	:	:	:	:	7	:	6
<b>SVERIGE</b>	<i>40 711</i>	:	<i>39 147</i>	:	<b>40 371</b>	:	<b>47 961</b>	:	<b>49 323</b>
<b>UNITED KINGDOM</b>	<b>206 755</b>	<b>193 833</b>	<b>176 212</b>	<b>184 386</b>	<b>189 717</b>	<b>182 757</b>	<b>170 739</b>	<b>163 762</b>	<b>159 438</b>
North	:	:	:	:	3 694	6 159	6 035	4 141	4 363
Yorkshire and Humberside	:	:	:	:	6 901	7 277	7 238	6 815	6 299
East Midlands	:	:	:	:	16 714	13 845	13 402	13 648	12 703
East Anglia	:	:	:	:	6 252	13 882	15 835	31 571	32 016
South East (UK)	:	:	:	:	96 152	75 965	69 795	48 004	44 846
South West (UK)	:	:	:	:	12 488	16 320	14 865	13 318	13 483
West Midlands	:	:	:	:	18 929	15 122	14 425	14 666	13 771
North West (UK)	:	:	:	:	19 480	23 056	18 190	18 981	19 503
Wales	:	:	:	:	2 922	2 761	2 434	2 519	2 728
Scotland	:	:	:	:	5 267	6 995	7 090	8 029	7 464
Northern Ireland	:	:	:	:	917	1 375	1 429	2 070	2 261
<b>ICELAND</b>	<b>404</b>	<b>398</b>	<b>421</b>	<b>501</b>	<b>779</b>	<b>720</b>	<b>911</b>	<b>793</b> <sup>1</sup>	<b>996</b> <sup>1</sup>
<b>NORWAY</b>	<b>14 154</b>	:	<b>12 409</b>	:	<b>13 272</b>	:	<b>15 937</b>	:	<b>17 549</b>

<sup>1</sup> Provisional.

<sup>2</sup> Overseas departments not surveyed.

**Table 28**
**R&D PERSONNEL**
**BUSINESS ENTERPRISE SECTOR**

Head count as % of the labour force

	1990	1991	1992	1993	1994	1995	1996	1997	1998
<b>EU-15<sup>2</sup></b>	<i>0.64</i>	<i>0.61</i>	<i>0.60</i>	<i>0.60</i>	<i>0.59</i>	<i>0.59</i>	<i>0.58</i>	<i>0.59</i>	:
<b>EUR-11<sup>2</sup></b>	<i>0.64</i>	<i>0.61</i>	<i>0.60</i>	<i>0.58</i>	<i>0.57</i>	<i>0.58</i>	<i>0.57</i>	<i>0.59</i>	:
BELGIQUE-BELGIË	:	<i>0.66</i>	:	:	<i>0.62<sup>1</sup></i>	<i>0.64<sup>1</sup></i>	:	:	:
DANMARK	<i>0.74</i>	<i>0.76</i>	<i>0.76</i>	<i>0.76</i>	:	<i>0.92</i>	<i>0.93</i>	<i>0.94</i>	<i>0.96</i>
DEUTSCHLAND	:	<i>0.95</i>	:	<i>0.87</i>	:	<i>0.84</i>	<i>0.81</i>	:	:
ELLADA	:	<i>0.08</i>	:	<i>0.11</i>	:	:	:	:	:
ESPAÑA	<i>0.23</i>	<i>0.24</i>	<i>0.23</i>	<i>0.23</i>	<i>0.22</i>	<i>0.21</i>	<i>0.21</i>	<i>0.22</i>	<i>0.24</i>
FRANCE	<i>0.70</i>	<i>0.71</i>	<i>0.74</i>	<i>0.72</i>	<i>0.72</i>	<i>0.72</i>	<i>0.71</i>	:	:
IRELAND	<i>0.27</i>	<i>0.35</i>	<i>0.38</i>	<i>0.50</i>	<i>0.44</i>	<i>0.50</i>	:	:	:
ITALIA	<i>0.31</i>	<i>0.30</i>	<i>0.30</i>	<i>0.30</i>	<i>0.31</i>	<i>0.30</i>	<i>0.30</i>	:	:
NEDERLAND	<i>0.55</i>	<i>0.51</i>	<i>0.49</i>	<i>0.51</i>	<i>0.58</i>	<i>0.59</i>	<i>0.61</i>	:	:
ÖSTERREICH	:	:	:	<i>0.47</i>	:	:	:	:	:
PORTUGAL	<i>0.06</i>	:	<i>0.06</i>	:	:	<i>0.07</i>	:	<i>0.08<sup>1</sup></i>	:
SUOMI-FINLAND	:	<i>0.97</i>	:	<i>0.78</i>	<i>0.78</i>	<i>1.00</i>	<i>1.08</i>	<i>1.17</i>	:
SVERIGE	:	<i>0.87</i>	:	<i>0.93</i>	:	<i>1.07</i>	:	<i>1.13</i>	:
UNITED KINGDOM	<i>0.67</i>	<i>0.61</i>	<i>0.65</i>	<i>0.67</i>	<i>0.64</i>	<i>0.60</i>	<i>0.57</i>	<i>0.56</i>	:
<b>EEA<sup>3</sup></b>	<i>0.64</i>	<i>0.61</i>	<i>0.60</i>	<i>0.60</i>	<i>0.59</i>	<i>0.59</i>	<i>0.58</i>	<i>0.59</i>	:
ICELAND	:	<i>0.30</i>	<i>0.35</i>	<i>0.54</i>	<i>0.50</i>	<i>0.62</i>	<i>0.54<sup>1</sup></i>	<i>0.69<sup>1</sup></i>	:
NORWAY	:	<i>0.58</i>	:	<i>0.62</i>	:	<i>0.73</i>	:	<i>0.76</i>	:

<sup>1</sup> Provisional.

<sup>2</sup> Luxembourg not included.

<sup>3</sup> Luxembourg and Liechtenstein not included.

**Table 28A**  
**TOTAL R&D PERSONNEL BY REGION**  
**BUSINESS ENTERPRISE SECTOR**

Head count as % of the labour force

	1989	1990	1991	1992	1993	1994	1995	1996	1997
<b>BELGIQUE-BELGIË</b>	<i>0.66</i>	:	<i>0.66</i>	:	:	<i>0.62</i> <sup>1</sup>	<i>0.64</i> <sup>1</sup>	:	:
Bruxelles-Brussel	<i>1.19</i>	:	<i>1.17</i>	:	:	<i>0.75</i>	<i>0.77</i>	:	:
Vlaams Gewest	<i>0.68</i>	:	<i>0.67</i>	:	:	<i>0.72</i>	<i>0.73</i>	:	:
Région Wallonne	<i>0.39</i>	:	<i>0.39</i>	:	:	<i>0.40</i>	<i>0.42</i>	:	:
<b>DANMARK</b>	<b>0.73</b>	<i>0.74</i>	<b>0.76</b>	<i>0.76</i>	<b>0.76</b>	:	<b>0.92</b>	<i>0.93</i>	<b>0.94</b>
<b>DEUTSCHLAND</b>	<b>1.20</b>	:	<b>0.95</b>	:	<b>0.87</b>	:	<b>0.84</b>	<b>0.81</b>	:
Baden-Württemberg	<i>1.83</i>	:	<i>1.68</i>	:	<i>1.63</i>	:	<i>1.51</i>	:	:
Bayern	<i>1.58</i>	:	<i>1.44</i>	:	<i>1.30</i>	:	<i>1.23</i>	:	:
Berlin	<i>1.00</i>	:	<i>0.75</i>	:	<i>0.79</i>	:	<i>0.70</i>	:	:
Brandenburg	:	:	<i>0.28</i>	:	<i>0.24</i>	:	<i>0.25</i>	:	:
Bremen	<i>1.38</i>	:	<i>1.16</i>	:	<i>1.34</i>	:	<i>1.28</i>	:	:
Hamburg	<i>0.92</i>	:	<i>0.80</i>	:	<i>0.91</i>	:	<i>0.98</i>	:	:
Hessen	<i>1.53</i>	:	<i>1.42</i>	:	<i>1.28</i>	:	<i>1.19</i>	:	:
Mecklenburg-Vorpommern	:	:	<i>0.17</i>	:	<i>0.11</i>	:	<i>0.13</i>	:	:
Niedersachsen	<i>0.66</i>	:	<i>0.58</i>	:	<i>0.54</i>	:	<i>0.59</i>	:	:
Nordrhein-Westfalen	<i>0.89</i>	:	<i>0.83</i>	:	<i>0.70</i>	:	<i>0.66</i>	:	:
Rheinland-Pfalz	<i>1.15</i>	:	<i>0.98</i>	:	<i>0.84</i>	:	<i>0.81</i>	:	:
Saarland	<i>0.21</i>	:	<i>0.15</i>	:	<i>0.18</i>	:	<i>0.20</i>	:	:
Sachsen	:	:	<i>0.62</i>	:	<i>0.46</i>	:	<i>0.50</i>	:	:
Sachsen-Anhalt	:	:	<i>0.53</i>	:	<i>0.29</i>	:	<i>0.27</i>	:	:
Schleswig-Holstein	<i>0.47</i>	:	<i>0.39</i>	:	<i>0.29</i>	:	<i>0.29</i>	:	:
Thüringen	:	:	<i>0.46</i>	:	<i>0.36</i>	:	<i>0.41</i>	:	:
<b>ELLADA</b>	<b>0.05</b>	:	<b>0.08</b>	:	<b>0.11</b>	:	:	:	:
Voreia Ellada	<i>0.02</i>	:	<i>0.03</i>	:	<i>0.08</i>	:	:	:	:
Kentriki Ellada	<i>0.03</i>	:	<i>0.05</i>	:	<i>0.09</i>	:	:	:	:
Attiki	<i>0.11</i>	:	<i>0.16</i>	:	<i>0.17</i>	:	:	:	:
Nisia Aigaiou, Kriti	<i>0.02</i>	:	<i>0.02</i>	:	<i>0.03</i>	:	:	:	:
<b>ESPAÑA</b>	<b>0.21</b>	<b>0.23</b>	<b>0.24</b>	<b>0.23</b>	<b>0.23</b>	<b>0.22</b>	<b>0.21</b>	<b>0.21</b>	<b>0.22</b>
Noroeste	<i>0.05</i>	<i>0.06</i>	<i>0.07</i>	<i>0.07</i>	<i>0.08</i>	<i>0.08</i>	<i>0.07</i>	<i>0.06</i>	<i>0.08</i>
Noreste	<i>0.36</i>	<i>0.38</i>	<i>0.41</i>	<i>0.37</i>	<i>0.37</i>	<i>0.36</i>	<i>0.40</i>	<i>0.39</i>	<i>0.43</i>
Madrid	<i>0.66</i>	<i>0.73</i>	<i>0.74</i>	<i>0.69</i>	<i>0.64</i>	<i>0.62</i>	<i>0.49</i>	<i>0.50</i>	<i>0.50</i>
Centro (E)	<i>0.08</i>	<i>0.08</i>	<i>0.11</i>	<i>0.10</i>	<i>0.09</i>	<i>0.09</i>	<i>0.07</i>	<i>0.06</i>	<i>0.07</i>
Este	<i>0.22</i>	<i>0.26</i>	<i>0.25</i>	<i>0.25</i>	<i>0.25</i>	<i>0.24</i>	<i>0.25</i>	<i>0.25</i>	<i>0.27</i>
Sur	<i>0.06</i>	<i>0.06</i>	<i>0.07</i>	<i>0.07</i>	<i>0.07</i>	<i>0.07</i>	<i>0.08</i>	<i>0.08</i>	<i>0.07</i>
Canarias	<i>0.01</i>	<i>0.01</i>	<i>0.01</i>	<i>0.01</i>	<i>0.01</i>	<i>0.01</i>	<i>0.02</i>	<i>0.02</i>	<i>0.03</i>
<b>FRANCE</b>	<b>0.69</b>	<b>0.70</b>	<b>0.71</b>	<b>0.74</b>	<b>0.72</b>	<b>0.72</b>	<b>0.72</b>	<b>0.71</b>	:
Île de France	<i>1.70</i>	<i>1.69</i>	<i>1.69</i>	<i>1.68</i>	<i>1.62</i>	<i>1.63</i>	<i>1.63</i>	<i>1.59</i>	:
Bassin Parisien	<i>0.37</i>	<i>0.40</i>	<i>0.40</i>	<i>0.44</i>	<i>0.44</i>	<i>0.46</i>	<i>0.45</i>	<i>0.45</i>	:
Nord-Pas-de-Calais	<i>0.20</i>	<i>0.20</i>	<i>0.21</i>	<i>0.21</i>	<i>0.23</i>	<i>0.23</i>	<i>0.23</i>	<i>0.21</i>	:
Est	<i>0.33</i>	<i>0.35</i>	<i>0.39</i>	<i>0.44</i>	<i>0.43</i>	<i>0.43</i>	<i>0.44</i>	<i>0.50</i>	:
Ouest	<i>0.23</i>	<i>0.24</i>	<i>0.26</i>	<i>0.34</i>	<i>0.35</i>	<i>0.35</i>	<i>0.35</i>	<i>0.35</i>	:
Sud-Ouest	<i>0.61</i>	<i>0.58</i>	<i>0.59</i>	<i>0.59</i>	<i>0.58</i>	<i>0.57</i>	<i>0.56</i>	<i>0.51</i>	:
Centre-Est	<i>0.73</i>	<i>0.77</i>	<i>0.78</i>	<i>0.81</i>	<i>0.79</i>	<i>0.75</i>	<i>0.76</i>	<i>0.75</i>	:
Méditerranée	<i>0.46</i>	<i>0.45</i>	<i>0.45</i>	<i>0.44</i>	<i>0.42</i>	<i>0.41</i>	<i>0.41</i>	<i>0.42</i>	:
Départements d'Outre-Mer <sup>2</sup>	:	:	:	:	:	:	:	:	:

**Table 28A**  
**TOTAL R&D PERSONNEL BY REGION**  
**BUSINESS ENTERPRISE SECTOR**

Head count as % of the labour force

	1989	1990	1991	1992	1993	1994	1995	1996	1997
<b>IRELAND</b>	<i>0.26</i>	<i>0.27</i>	<i>0.35</i>	<i>0.38</i>	<i>0.50</i>	<i>0.44</i>	<i>0.50</i>	:	:
<b>ITALIA</b>	<i>0.31</i>	<i>0.31</i>	<i>0.30</i>	<i>0.30</i>	<i>0.30</i>	<i>0.31</i>	<i>0.30</i>	<i>0.30</i>	:
Nord Ovest	0.82	0.81	0.80	0.75	0.76	0.76	0.70	0.69	:
Lombardia	0.66	0.68	0.61	0.63	0.60	0.61	0.59	0.58	:
Nord Est	0.17	0.18	0.16	0.16	0.15	0.20	0.21	0.21	:
Emilia-Romagna	0.27	0.32	0.28	0.28	0.25	0.31	0.30	0.31	:
Centro (I)	0.15	0.14	0.15	0.15	0.14	0.16	0.15	0.14	:
Lazio	0.32	0.31	0.33	0.34	0.35	0.33	0.35	0.35	:
Abruzzo-Molise	0.13	0.14	0.15	0.21	0.21	0.24	0.21	0.26	:
Campania	0.10	0.10	0.10	0.11	0.14	0.13	0.11	0.11	:
Sud	0.04	0.04	0.04	0.04	0.05	0.05	0.05	0.04	:
Sicilia	0.06	0.05	0.04	0.05	0.04	0.04	0.03	0.03	:
Sardegna	0.03	0.03	0.03	0.04	0.03	0.03	0.02	0.04	:
<b>NEDERLAND</b>	<i>0.58</i>	<i>0.55</i>	<i>0.51</i>	<i>0.49</i>	<i>0.51</i>	<i>0.58</i>	<i>0.59</i>	<i>0.61</i>	:
Noord-Nederland	:	:	:	:	:	:	:	0.45	:
Oost-Nederland	:	:	:	:	:	:	:	0.50	:
West-Nederland	:	:	:	:	:	:	:	0.50	:
Zuid-Nederland	:	:	:	:	:	:	:	1.02	:
<b>ÖSTERREICH</b>	<i>0.50</i>	:	:	:	<i>0.47</i>	:	:	:	:
<b>PORTUGAL</b>	:	<i>0.06</i>	:	<i>0.06</i>	:	:	<i>0.07</i>	:	<i>0.08</i> <sup>1</sup>
Continente	:	0.07	:	0.06	:	:	0.07	:	0.08
Açores	:	-	:	-	:	:	0.00	:	0.00
Madeira	:	0.02	:	-	:	:	0.03	:	0.02
<b>SUOMI-FINLAND</b>	<i>0.72</i>	:	<i>0.97</i>	:	<i>0.78</i>	<i>0.78</i>	<i>1.00</i>	<i>1.08</i>	<i>1.17</i>
Manner-Suomi	:	:	:	:	:	:	1.00	:	1.17
Ahvenanmaa/Åland	:	:	:	:	:	:	0.06	:	0.05
<b>SVERIGE</b>	<i>0.91</i>	:	<i>0.87</i>	:	<i>0.93</i>	:	<i>1.07</i>	:	<i>1.13</i>
<b>UNITED KINGDOM</b>	<i>0.72</i>	<i>0.67</i>	<i>0.61</i>	<i>0.65</i>	<i>0.67</i>	<i>0.64</i>	<i>0.60</i>	<i>0.57</i>	<i>0.56</i>
North	:	:	:	:	0.26	0.43	0.43	0.29	:
Yorkshire and Humberside	:	:	:	:	0.28	0.30	0.30	0.28	0.26
East Midlands	:	:	:	:	0.82	0.68	0.65	0.66	0.61
East Anglia	:	:	:	:	0.59	1.29	1.47	2.95	:
South East (UK)	:	:	:	:	1.06	0.84	0.77	0.53	:
South West (UK)	:	:	:	:	0.53	0.69	0.63	0.56	0.56
West Midlands	:	:	:	:	0.73	0.58	0.56	0.57	0.53
North West (UK)	:	:	:	:	0.65	0.77	0.62	0.64	:
Wales	:	:	:	:	0.23	0.21	0.19	0.19	0.21
Scotland	:	:	:	:	0.21	0.28	0.28	0.33	0.30
Northern Ireland	:	:	:	:	0.13	0.20	0.20	0.29	0.31
<b>ICELAND</b>	:	:	<i>0.30</i>	<i>0.35</i>	<i>0.54</i>	<i>0.50</i>	<i>0.62</i>	<i>0.54</i> <sup>1</sup>	<i>0.69</i> <sup>1</sup>
<b>NORWAY</b>	<i>0.66</i>	:	<i>0.58</i>	:	<i>0.62</i>	:	<i>0.73</i>	:	<i>0.76</i>

<sup>1</sup> Provisional.

<sup>2</sup> Overseas departments not surveyed.

**R&D PERSONNEL  
GOVERNMENT SECTOR**  
Full time equivalent

	1990	1991	1992	1993	1994	1995	1996	1997	1998
<b>EU-15<sup>2</sup></b>	<b>258 600</b>	<b>283 100</b>	<b>266 300</b>	<b>261 900</b>	<b>264 700</b>	<b>263 200</b>	<b>263 200</b>	<b>264 600</b>	<b>264 300</b>
<b>EUR-11<sup>2</sup></b>	<b>210 000</b>	<b>235 300</b>	<b>216 300</b>	<b>214 700</b>	<b>219 100</b>	<b>220 300</b>	<b>221 400</b>	<b>224 100</b>	<b>225 700</b>
BELGIQUE-BELGIË	:	2 611	:	:	2 026 <sup>1</sup>	2 021 <sup>1</sup>	:	:	:
DANMARK	4 402	4 380	4 648	4 829	:	5 439	5 971	6 137	6 303
DEUTSCHLAND <sup>4</sup>	:	88 300	:	71 224	74 178	75 148	74 725	:	:
ELLADA	:	4 491	:	4 828	:	4 908	:	:	:
ESPAÑA	17 170	17 519	16 679	17 267	17 549	17 155	17 866	19 189	19 251
FRANCE	65 207	65 659	62 252	61 884	62 322	62 523	62 815	:	:
IRELAND	1 134	1 146	1 157	1 049	1 079	1 113	:	:	:
ITALIA	33 113	32 567	32 868	33 164	32 768	33 039	32 225	:	:
NEDERLAND <sup>4</sup>	14 950	14 890	14 930	15 190	15 970	16 020	16 924	:	:
ÖSTERREICH	:	:	:	2 107	:	:	:	:	:
PORTUGAL	4 230	:	3 956	:	:	4 716	:	5 248 <sup>1</sup>	:
SUOMI-FINLAND <sup>4</sup>	:	6 654	:	6 655	6 849	6 691	:	6 827	:
SVERIGE	:	2 965	:	3 289	:	3 518	:	3 334	:
UNITED KINGDOM	37 057	35 989	37 569	34 280	32 158	28 960	27 486	25 883	:
<b>EEA<sup>3</sup></b>	<b>263 500</b>	<b>287 900</b>	<b>271 300</b>	<b>267 200</b>	<b>270 100</b>	<b>268 600</b>	<b>268 700</b>	<b>270 000</b>	<b>269 800</b>
ICELAND	534	471	476	538	554	563	588 <sup>1</sup>	591 <sup>1</sup>	:
NORWAY <sup>4</sup>	:	4 312	:	4 744	:	4 893	:	4 873	:

<sup>1</sup> Provisional.

<sup>2</sup> Luxembourg not included.

<sup>3</sup> Luxembourg and Liechtenstein not included.

<sup>4</sup> PNP included (D since 1992).

**Table 29A**  
**TOTAL R&D PERSONNEL BY REGION**  
**GOVERNMENT SECTOR**

Full time equivalent

	1989	1990	1991	1992	1993	1994	1995	1996	1997
<b>BELGIQUE-BELGIË</b>	<b>3 120</b>	:	<b>2 611</b>	:	:	<b>2 026</b> <sup>1</sup>	<b>2 021</b> <sup>1</sup>	:	:
Bruxelles-Brussel	:	:	:	:	:	744	741	:	:
Vlaams Gewest	:	:	:	:	:	859	874	:	:
Région Wallonne	:	:	:	:	:	424	406	:	:
<b>DANMARK</b>	<b>4 423</b>	<b>4 402</b>	<b>4 380</b>	<b>4 648</b>	<b>4 829</b>	:	<b>5 439</b>	<b>5 971</b>	<b>6 137</b>
<b>DEUTSCHLAND</b> <sup>2</sup>	<b>60 270</b>	:	<b>88 300</b>	:	<b>71 224</b>	<b>74 178</b>	<b>75 148</b>	<b>74 725</b>	:
Baden-Württemberg	12 297	:	12 953	:	12 570	12 790	12 852	12 284	:
Bayern	9 006	:	9 468	:	9 189	9 848	9 940	9 845	:
Berlin	6 257	:	:	:	9 118	9 145	9 943	9 579	:
Brandenburg	:	:	:	:	2 191	2 416	2 911	2 762	:
Bremen	571	:	599	:	844	858	864	844	:
Hamburg	2 822	:	2 890	:	2 829	3 124	2 789	2 809	:
Hessen	3 253	:	3 395	:	3 544	3 646	3 215	3 214	:
Mecklenburg-Vorpommern	:	:	:	:	1 183	1 054	1 122	1 180	:
Niedersachsen	6 818	:	7 063	:	6 647	6 821	6 655	7 160	:
Nordrhein-Westfalen	13 100	:	13 022	:	13 134	14 160	13 782	13 659	:
Rheinland-Pfalz	1 220	:	1 291	:	1 033	1 123	1 143	1 267	:
Saarland	163	:	275	:	390	453	435	503	:
Sachsen	:	:	:	:	3 437	3 563	3 863	3 952	:
Sachsen-Anhalt	:	:	:	:	1 324	1 341	1 547	1 577	:
Schleswig-Holstein	2 095	:	2 141	:	2 182	2 201	2 362	2 238	:
Thüringen	:	:	:	:	1 250	1 389	1 395	1 498	:
Not registered by region	2 669	:	35 2033	:	359	245	331	353	:
<b>ELLADA</b>	<b>4 298</b>	:	<b>4 491</b>	:	<b>4 828</b>	:	<b>4 908</b>	:	:
Voreia Ellada	882	:	870	:	911	:	887	:	:
Kentriki Ellada	414	:	419	:	455	:	399	:	:
Attiki	2 482	:	2 518	:	2 546	:	2 490	:	:
Nisia Aigaiou, Kriti	520	:	684	:	916	:	1 132	:	:
<b>ESPAÑA</b>	<b>14 605</b>	<b>17 170</b>	<b>17 519</b>	<b>16 679</b>	<b>17 267</b>	<b>17 549</b>	<b>17 155</b>	<b>17 866</b>	<b>19 189</b>
Noroeste	845	1 052	1 036	985	973	817	1 249	1 299	1 382
Noreste	723	914	886	754	944	774	772	803	1 088
Madrid	8 641	10 084	9 860	9 338	9 412	10 726	9 065	9 441	9 684
Centro (E)	572	716	850	830	799	642	820	854	878
Este	1 727	2 030	2 438	2 271	2 347	2 389	2 453	2 556	3 044
Sur	1 792	2 011	2 063	2 184	2 264	1 743	2 297	2 393	2 608
Canarias	307	363	386	317	528	458	499	519	505
<b>FRANCE</b>	<b>65 190</b>	<b>65 207</b>	<b>65 659</b>	<b>62 252</b>	<b>61 884</b>	<b>62 322</b>	<b>62 523</b>	<b>62 815</b>	:
Île de France	20 556	20 378	20 395	19 931	19 280	18 961	18 701	18 541	:
Bassin Parisien	2 125	2 074	2 068	1 930	1 937	1 950	1 936	2 072	:
Nord-Pas-de-Calais	403	458	401	550	564	577	607	498	:
Est	1 100	1 031	1 132	1 126	1 133	1 139	1 156	1 181	:
Ouest	4 404	4 357	4 683	3 042	3 164	3 265	3 220	3 206	:
Sud-Ouest	3 088	3 208	3 267	3 680	3 795	3 917	3 949	3 886	:
Centre-Est	4 380	4 456	4 384	4 184	4 191	4 240	4 355	4 466	:
Méditerranée	6 656	6 760	6 906	6 774	6 794	6 867	7 192	7 471	:
Départements d'Outre-Mer	1 436	1 443	1 374	1 420	1 382	1 353	1 383	1 450	:
Not registered by region	21 043	21 042	21 049	19 616	19 644	20 053	20 025	20 044	:



**Table 29A**  
**TOTAL R&D PERSONNEL BY REGION**  
**GOVERNMENT SECTOR**  
Full time equivalent

	1989	1990	1991	1992	1993	1994	1995	1996	1997
<b>IRELAND</b>	1 107	1 134	1 146	1 157	1 049	1 079	1 113	:	:
<b>ITALIA</b>	31 510	33 113	32 567	32 868	33 164	32 768	33 039	32 225	:
Nord Ovest	2 387	2 614	2 625	2 794	2 833	2 696	2 476	2 555	:
Lombardia	4 706	5 102	4 983	5 112	5 103	4 361	4 603	4 324	:
Nord Est	2 155	2 117	1 759	1 737	1 741	1 817	1 970	1 873	:
Emilia-Romagna	2 056	1 921	1 806	1 999	2 110	2 209	1 803	1 805	:
Centro (I)	2 345	2 166	1 932	2 133	1 948	2 385	2 484	2 137	:
Lazio	14 690	15 716	16 186	15 555	15 805	14 701	14 866	14 718	:
Abruzzo-Molise	143	121	141	350	387	430	448	562	:
Campania	1 238	1 289	1 212	1 266	1 270	1 673	1 813	1 558	:
Sud	833	807	823	768	829	1 166	1 225	1 244	:
Sicilia	629	856	609	630	641	793	829	867	:
Sardegna	328	404	489	523	496	537	522	582	:
<b>NEDERLAND<sup>2</sup></b>	14 360	14 950	14 890	14 930	15 190	15 970	16 020	16 924	:
Noord-Nederland	:	:	:	:	:	:	:	485	:
Oost-Nederland	:	:	:	:	:	:	:	4 535	:
West-Nederland	:	:	:	:	:	:	:	11 622	:
Zuid-Nederland	:	:	:	:	:	:	:	282	:
<b>ÖSTERREICH</b>	1 673	:	:	:	2 107	:	:	:	:
Ostösterreich	1 215	:	:	:	1 673	:	:	:	:
Südösterreich	236	:	:	:	178	:	:	:	:
Westösterreich	222	:	:	:	255	:	:	:	:
<b>PORTUGAL</b>	:	4 230	:	3 956	:	:	4 716	:	5 248 <sup>1</sup>
Continente	:	4 104	:	3 812	:	:	4 384	:	4 844
Açores	:	95	:	100	:	:	62	:	134
Madeira	:	31	:	43	:	:	270	:	271
<b>SUOMI-FINLAND<sup>2</sup></b>	6 414	:	6 654	:	6 655	6 849	6 691	:	6 827
Manner-Suomi	:	:	:	:	:	:	6 671	:	6 824
Ahvenanmaa/Åland	:	:	:	:	:	:	20	:	3
<b>SVERIGE</b>	2 637	:	2 965	:	3 289	:	3 518	:	3 334
<b>UNITED KINGDOM</b>	36 000	37 057	35 989	37 569	34 280	32 158	28 960	27 486	25 883
North	:	:	:	192	188	183	186	194	41
Yorkshire and Humberside	:	:	:	461	577	539	502	678	581
East Midlands	:	:	:	870	833	854	848	868	841
East Anglia	:	:	:	2 702	2 694	2 880	2 714	2 749	3 896
South East (UK)	:	:	:	21 769	18 383	16 656	14 556	13 152	10 868
South West (UK)	:	:	:	3 591	3 744	3 579	3 121	3 175	3 046
West Midlands	:	:	:	2 422	2 283	2 231	1 996	2 090	1 988
North West (UK)	:	:	:	741	728	773	742	710	794
Wales	:	:	:	565	561	535	388	352	327
Scotland	:	:	:	4 048	4 074	3 716	3 691	3 314	3 300
Northern Ireland	:	:	:	208	215	212	218	204	201
<b>ICELAND</b>	542	534	471	476	538	554	563	588 <sup>1</sup>	591 <sup>1</sup>
<b>NORWAY<sup>2</sup></b>	4 269	:	4 312	:	4 744	:	4 893	:	4 873

<sup>1</sup> Provisional.

<sup>2</sup> PNP included (D since 1992).

<sup>3</sup> New "Länder" included.

**Table 30**
**R&D PERSONNEL**  
**GOVERNMENT SECTOR**  
 Head count

	1990	1991	1992	1993	1994	1995	1996	1997	1998
<b>EU-15<sup>2</sup></b>	<b>343 900</b>	<b>361 700</b>	<b>347 300</b>	<b>332 700</b>	<b>339 100</b>	<b>336 500</b>	<b>325 400</b>	<b>324 100</b>	<b>323 500</b>
<b>EUR-11<sup>2</sup></b>	<b>274 600</b>	<b>293 700</b>	<b>277 100</b>	<b>266 600</b>	<b>272 500</b>	<b>271 000</b>	<b>264 600</b>	<b>264 800</b>	<b>266 800</b>
BELGIQUE-BELGIË	:	3 461	:	:	2 685 <sup>1</sup>	2 678 <sup>1</sup>	:	:	:
DANMARK	10 493	10 122	10 017	9 912	:	11 507	12 413	12 758	13 103
DEUTSCHLAND <sup>4</sup>	:	117 006	:	94 379	98 293	97 414	88 841	:	:
ELLADA	:	5 656	:	7 145	:	10 259	:	:	:
ESPAÑA	23 883	24 746	24 452	24 430	23 496	22 562	21 241	25 620	25 521
FRANCE	68 589	68 915	63 850	64 173	64 361	64 575	65 683	:	:
IRELAND	1 503	1 519	1 534	1 390	1 430	1 443	:	:	:
ITALIA	39 650	39 193	39 308	39 550	40 712	40 985	41 878	:	:
NEDERLAND <sup>4</sup>	19 819	19 740	19 793	20 088	21 162	20 767	21 937	:	:
ÖSTERREICH	:	:	:	5 330	:	:	:	:	:
PORTUGAL	5 837	:	5 406	:	:	6 210	:	6 738 <sup>1</sup>	:
SUOMI-FINLAND <sup>4</sup>	:	8 601	:	9 077	9 076	8 902	:	9 224	:
SVERIGE	:	3 921	:	3 723	:	5 360	:	5 192	:
UNITED KINGDOM	49 051	47 725	49 683	45 333	42 613	38 375	32 678	30 772	:
<b>EEA<sup>3</sup></b>	<b>350 600</b>	<b>368 300</b>	<b>354 300</b>	<b>340 100</b>	<b>346 500</b>	<b>344 000</b>	<b>332 900</b>	<b>331 600</b>	<b>331 100</b>
ICELAND	749	623	667	780	776	800	823 <sup>1</sup>	828 <sup>1</sup>	:
NORWAY <sup>4</sup>	:	5 997	:	6 541	:	6 692	:	6 697	:

<sup>1</sup> Provisional.

<sup>2</sup> Luxembourg not included.

<sup>3</sup> Luxembourg and Liechtenstein not included.

<sup>4</sup> PNP included (D since 1992).

**Table 30A**  
**TOTAL R&D PERSONNEL BY REGION**  
**GOVERNMENT SECTOR**

Head count

	1989	1990	1991	1992	1993	1994	1995	1996	1997
<b>BELGIQUE-BELGIË</b>	<b>4 136</b>	:	<b>3 461</b>	:	:	<b>2 685</b> <sup>1</sup>	<b>2 678</b> <sup>1</sup>	:	:
Bruxelles-Brussel	:	:	:	:	:	986	982	:	:
Vlaams Gewest	:	:	:	:	:	1 138	1 158	:	:
Région Wallonne	:	:	:	:	:	562	538	:	:
<b>DANMARK</b>	<b>10 860</b>	<b>10 493</b>	<b>10 122</b>	<b>10 017</b>	<b>9 912</b>	:	<b>11 507</b>	<b>12 413</b>	<b>12 758</b>
<b>DEUTSCHLAND</b> <sup>2</sup>	<b>79 902</b>	:	<b>117 006</b>	:	<b>94 379</b>	<b>98 293</b>	<b>97 414</b>	<b>88 841</b>	:
Baden-Württemberg	16 302	:	17 164	:	16 657	16 948	16 660	14 604	:
Bayern	11 939	:	12 546	:	12 176	13 050	12 885	11 705	:
Berlin	8 295	:	:	:	12 082	12 118	12 889	11 388	:
Brandenburg	:	:	:	:	2 903	3 201	3 774	3 284	:
Bremen	757	:	794	:	1 118	1 137	1 120	1 003	:
Hamburg	3 741	:	3 830	:	3 749	4 140	3 615	3 340	:
Hessen	4 313	:	4 499	:	4 696	4 831	4 168	3 821	:
Mecklenburg-Vorpommern	:	:	:	:	1 568	1 397	1 454	1 403	:
Niedersachsen	9 039	:	9 359	:	8 808	9 039	8 627	8 513	:
Nordrhein-Westfalen	17 367	:	17 255	:	17 404	18 763	17 866	16 239	:
Rheinland-Pfalz	1 617	:	1 711	:	1 369	1 488	1 482	1 506	:
Saarland	216	:	364	:	517	600	564	598	:
Sachsen	:	:	:	:	4 554	4 721	5 008	4 699	:
Sachsen-Anhalt	:	:	:	:	1 754	1 777	2 005	1 875	:
Schleswig-Holstein	2 777	:	2 837	:	2 891	2 917	3 062	2 661	:
Thüringen	:	:	:	:	1 656	1 841	1 808	1 781	:
Not registered by region	3 538	:	46 647	:	476	325	429	420	:
<b>ELLADA</b>	<b>5 935</b>	:	<b>5 656</b>	:	<b>7 145</b>	:	<b>10 259</b>	:	:
Voreia Ellada	1 218	:	1 076	:	1 433	:	2 443	:	:
Kentriki Ellada	572	:	528	:	708	:	1 390	:	:
Attiki	3 427	:	3 328	:	3 530	:	4 089	:	:
Nisia Aigaiou, Kriti	718	:	724	:	1 474	:	2 337	:	:
<b>ESPAÑA</b>	<b>21 766</b>	<b>23 883</b>	<b>24 746</b>	<b>24 452</b>	<b>24 430</b>	<b>23 496</b>	<b>22 562</b>	<b>21 241</b>	<b>25 620</b>
Noroeste	1 258	1 463	1 463	1 444	1 377	1 094	2 796	1 544	2 967
Noreste	1 079	1 271	1 252	1 105	1 336	1 036	1 317	955	1 708
Madrid	12 878	14 027	13 927	13 690	13 316	14 361	10 338	11 224	10 678
Centro (E)	852	996	1 201	1 217	1 130	860	1 330	1 015	1 491
Este	2 574	2 824	3 444	3 329	3 321	3 199	3 290	3 039	4 341
Sur	2 671	2 797	2 914	3 202	3 203	2 334	2 820	2 845	3 699
Canarias	458	505	545	465	747	613	671	617	736
<b>FRANCE</b>	<b>69 401</b>	<b>68 589</b>	<b>68 915</b>	<b>63 850</b>	<b>64 173</b>	<b>64 361</b>	<b>64 575</b>	<b>65 683</b>	:
Île de France	21 884	21 435	21 406	20 678	20 325	19 876	19 985	19 784	:
Bassin Parisien	2 263	2 182	2 171	2 002	2 042	2 044	2 055	2 211	:
Nord-Pas-de-Calais	428	481	421	571	595	605	609	531	:
Est	1 171	1 085	1 188	1 169	1 195	1 194	1 201	1 260	:
Ouest	4 688	4 583	4 915	3 156	3 335	3 422	3 441	3 421	:
Sud-Ouest	3 287	3 374	3 429	3 817	4 000	4 106	4 128	4 147	:
Centre-Est	4 663	4 688	4 601	4 341	4 418	4 444	4 468	4 765	:
Méditerranée	7 086	7 110	7 248	7 028	7 163	7 198	7 237	7 972	:
Départements d'Outre-Mer	1 528	1 518	1 442	1 473	1 457	1 418	1 426	1 547	:
Not registered by region	22 402	22 133	22 093	19 616	19 644	20 053	20 025	20 044	:

**Table 30A**  
**TOTAL R&D PERSONNEL BY REGION**  
**GOVERNMENT SECTOR**

Head count

	1989	1990	1991	1992	1993	1994	1995	1996	1997
<b>IRELAND</b>	<i>1 468</i>	<i>1 503</i>	<i>1 519</i>	<i>1 534</i>	<i>1 390</i>	<i>1 430</i>	<i>1 443</i>	:	:
<b>ITALIA</b>	<b>37 385</b>	<b>39 650</b>	<b>39 193</b>	<b>39 308</b>	<b>39 550</b>	<b>40 712</b>	<b>40 985</b>	<b>41 878</b>	:
Nord Ovest	2 832	3 130	3 159	3 342	3 379	3 622	2 649	3 449	:
Lombardia	5 584	6 109	5 997	6 114	6 086	8 030	8 155	8 065	:
Nord Est	2 557	2 535	2 117	2 077	2 076	2 391	2 958	2 509	:
Emilia-Romagna	2 439	2 300	2 174	2 391	2 516	3 023	2 575	3 057	:
Centro (I)	2 782	2 594	2 325	2 551	2 323	2 922	2 565	2 802	:
Lazio	17 429	18 819	19 479	18 603	18 848	15 480	16 356	15 960	:
Abruzzo-Molise	170	145	170	419	462	601	761	804	:
Campania	1 469	1 543	1 459	1 514	1 515	1 805	1 833	1 832	:
Sud	988	966	991	918	989	1 226	1 324	1 610	:
Sicilia	746	1 025	733	754	764	975	1 196	1 082	:
Sardegna	389	484	589	625	592	638	613	708	:
<b>NEDERLAND<sup>2</sup></b>	<i>19 037</i>	<i>19 819</i>	<i>19 740</i>	<i>19 793</i>	<i>20 088</i>	<i>21 162</i>	<i>20 767</i>	<i>21 937</i>	:
Noord-Nederland	:	:	:	:	:	:	:	257	:
Oost-Nederland	:	:	:	:	:	:	:	5 172	:
West-Nederland	:	:	:	:	:	:	:	16 370	:
Zuid-Nederland	:	:	:	:	:	:	:	138	:
<b>ÖSTERREICH</b>	<b>4 622</b>	:	:	:	<b>5 330</b>	:	:	:	:
Ostösterreich	3 385	:	:	:	4 178	:	:	:	:
Südösterreich	569	:	:	:	423	:	:	:	:
Westösterreich	668	:	:	:	729	:	:	:	:
<b>PORTUGAL</b>	:	<b>5 837</b>	:	<b>5 406</b>	:	:	<b>6 210</b>	:	<b>6 738<sup>1</sup></b>
Continente	:	5 642	:	5 209	:	:	5 789	:	6 101
Açores	:	155	:	137	:	:	100	:	194
Madeira	:	40	:	59	:	:	321	:	443
<b>SUOMI-FINLAND<sup>2</sup></b>	<b>8 234</b>	:	<b>8 601</b>	:	<b>9 077</b>	<b>9 076</b>	<b>8 902</b>	:	<b>9 224</b>
Manner-Suomi	:	:	:	:	:	:	8 877	:	9 216
Ahvenanmaa/Åland	:	:	:	:	:	:	25	:	8
<b>SVERIGE</b>	<i>3 487</i>	:	<i>3 921</i>	:	<i>3 723</i>	:	<i>5 360</i>	:	<i>5 192</i>
<b>UNITED KINGDOM</b>	<b>47 725</b>	<b>49 051</b>	<b>47 725</b>	<b>49 683</b>	<b>45 333</b>	<b>42 613</b>	<b>38 375</b>	<b>32 678</b>	<b>30 772</b>
North	:	:	:	254	249	242	246	231	49
Yorkshire and Humberside	:	:	:	610	763	714	665	806	691
East Midlands	:	:	:	1 151	1 102	1 132	1 124	1 032	1 000
East Anglia	:	:	:	3 573	3 563	3 816	3 596	3 268	4 632
South East (UK)	:	:	:	28 788	24 310	22 071	19 288	15 636	12 921
South West (UK)	:	:	:	4 749	4 951	4 743	4 136	3 775	3 621
West Midlands	:	:	:	3 203	3 019	2 956	2 645	2 485	2 364
North West (UK)	:	:	:	980	963	1 024	983	844	944
Wales	:	:	:	747	742	709	514	419	389
Scotland	:	:	:	5 353	5 388	4 924	4 891	3 940	3 923
Northern Ireland	:	:	:	275	284	281	289	243	239
<b>ICELAND</b>	<b>759</b>	<b>749</b>	<b>623</b>	<b>667</b>	<b>780</b>	<b>776</b>	<b>800</b>	<b>823<sup>1</sup></b>	<b>828<sup>1</sup></b>
<b>NORWAY<sup>2</sup></b>	<b>5 932</b>	:	<b>5 997</b>	:	<b>6 541</b>	:	<b>6 692</b>	:	<b>6 697</b>

<sup>1</sup> Provisional.

<sup>2</sup> PNP included (D since 1992).

<sup>3</sup> New "Länder" included.

**R&D PERSONNEL  
GOVERNMENT SECTOR**  
Head count as % of the labour force

	1990	1991	1992	1993	1994	1995	1996	1997	1998
<b>EU-15<sup>2</sup></b>	<i>0.22</i>	<i>0.22</i>	<i>0.21</i>	<i>0.20</i>	<i>0.20</i>	<i>0.20</i>	<i>0.19</i>	<i>0.19</i>	:
<b>EUR-11<sup>2</sup></b>	<i>0.24</i>	<i>0.23</i>	<i>0.22</i>	<i>0.21</i>	<i>0.22</i>	<i>0.21</i>	<i>0.21</i>	<i>0.21</i>	:
BELGIQUE-BELGIË	:	<i>0.09</i>	:	:	<i>0.06<sup>1</sup></i>	<i>0.06<sup>1</sup></i>	:	:	:
DANMARK	<i>0.36</i>	<i>0.35</i>	<i>0.35</i>	<i>0.34</i>	:	<i>0.41</i>	<i>0.44</i>	<i>0.45</i>	<i>0.46</i>
DEUTSCHLAND <sup>4</sup>	:	<i>0.30</i>	:	<i>0.24</i>	<i>0.25</i>	<i>0.25</i>	<i>0.23</i>	:	:
ELLADA	:	<i>0.14</i>	:	<i>0.18</i>	:	<i>0.24</i>	:	:	:
ESPAÑA	<i>0.16</i>	<i>0.16</i>	<i>0.16</i>	<i>0.16</i>	<i>0.15</i>	<i>0.14</i>	<i>0.13</i>	<i>0.16</i>	<i>0.16</i>
FRANCE	<i>0.29</i>	<i>0.28</i>	<i>0.26</i>	<i>0.26</i>	<i>0.26</i>	<i>0.26</i>	<i>0.26</i>	<i>0.26</i>	:
IRELAND	<i>0.11</i>	<i>0.11</i>	<i>0.11</i>	<i>0.10</i>	<i>0.10</i>	<i>0.10</i>	:	:	:
ITALIA	<i>0.17</i>	<i>0.16</i>	<i>0.17</i>	<i>0.17</i>	<i>0.18</i>	<i>0.18</i>	<i>0.18</i>	:	:
NEDERLAND <sup>4</sup>	<i>0.29</i>	<i>0.28</i>	<i>0.28</i>	<i>0.28</i>	<i>0.29</i>	<i>0.28</i>	<i>0.30</i>	:	:
ÖSTERREICH	:	:	:	<i>0.14</i>	:	:	:	:	:
PORTUGAL	<i>0.12</i>	:	<i>0.12</i>	:	:	<i>0.13</i>	:	<i>0.14<sup>1</sup></i>	:
SUOMI-FINLAND <sup>4</sup>	:	<i>0.34</i>	:	<i>0.36</i>	<i>0.36</i>	<i>0.37</i>	:	<i>0.37</i>	:
SVERIGE	:	<i>0.09</i>	:	<i>0.09</i>	:	<i>0.12</i>	:	<i>0.12</i>	:
UNITED KINGDOM	<i>0.17</i>	<i>0.17</i>	<i>0.17</i>	<i>0.16</i>	<i>0.15</i>	<i>0.14</i>	<i>0.11</i>	<i>0.11</i>	:
<b>EEA<sup>3</sup></b>	<i>0.22</i>	<i>0.22</i>	<i>0.21</i>	<i>0.20</i>	<i>0.21</i>	<i>0.20</i>	<i>0.20</i>	<i>0.19</i>	:
ICELAND	:	<i>0.44</i>	<i>0.47</i>	<i>0.54</i>	<i>0.53</i>	<i>0.54</i>	<i>0.56<sup>1</sup></i>	<i>0.57<sup>1</sup></i>	:
NORWAY <sup>4</sup>	:	<i>0.28</i>	:	<i>0.31</i>	:	<i>0.31</i>	:	<i>0.29</i>	:

<sup>1</sup> Provisional.

<sup>2</sup> Luxembourg not included.

<sup>3</sup> Luxembourg and Liechtenstein not included.

<sup>4</sup> PNP included (D since 1992).

**Table 31A**  
**TOTAL R&D PERSONNEL BY REGION**  
**GOVERNMENT SECTOR**

Head count as % of the labour force

	1989	1990	1991	1992	1993	1994	1995	1996	1997
<b>BELGIQUE-BELGIË</b>	<i>0.11</i>	:	<i>0.09</i>	:	:	<i>0.06</i> <sup>1</sup>	<i>0.06</i> <sup>1</sup>	:	:
Bruxelles-Brussel	:	:	:	:	:	<i>0.25</i>	<i>0.26</i>	:	:
Vlaams Gewest	:	:	:	:	:	<i>0.05</i>	<i>0.05</i>	:	:
Région Wallonne	:	:	:	:	:	<i>0.04</i>	<i>0.04</i>	:	:
<b>DANMARK</b>	<b>0.38</b>	<b>0.36</b>	<b>0.35</b>	<b>0.35</b>	<b>0.34</b>	:	<b>0.41</b>	<b>0.44</b>	<b>0.45</b>
<b>DEUTSCHLAND<sup>2</sup></b>	<b>0.27</b>	:	<b>0.30</b>	:	<b>0.24</b>	<b>0.25</b>	<b>0.25</b>	<b>0.23</b>	:
Baden-Württemberg	<i>0.36</i>	:	<i>0.35</i>	:	<i>0.33</i>	<i>0.34</i>	<i>0.33</i>	<i>0.29</i>	:
Bayern	<i>0.21</i>	:	<i>0.21</i>	:	<i>0.20</i>	<i>0.22</i>	<i>0.21</i>	<i>0.19</i>	:
Berlin	<i>0.78</i>	:	:	:	<i>0.67</i>	<i>0.66</i>	<i>0.70</i>	<i>0.63</i>	:
Brandenburg	:	:	:	:	<i>0.22</i>	<i>0.25</i>	<i>0.30</i>	<i>0.25</i>	:
Bremen	<i>0.25</i>	:	<i>0.26</i>	:	<i>0.35</i>	<i>0.36</i>	<i>0.36</i>	<i>0.32</i>	:
Hamburg	<i>0.48</i>	:	<i>0.47</i>	:	<i>0.44</i>	<i>0.49</i>	<i>0.42</i>	<i>0.40</i>	:
Hessen	<i>0.16</i>	:	<i>0.16</i>	:	<i>0.17</i>	<i>0.17</i>	<i>0.15</i>	<i>0.13</i>	:
Mecklenburg-Vorpommern	:	:	:	:	<i>0.17</i>	<i>0.15</i>	<i>0.16</i>	<i>0.15</i>	:
Niedersachsen	<i>0.27</i>	:	<i>0.27</i>	:	<i>0.25</i>	<i>0.25</i>	<i>0.24</i>	<i>0.24</i>	:
Nordrhein-Westfalen	<i>0.23</i>	:	<i>0.22</i>	:	<i>0.22</i>	<i>0.24</i>	<i>0.23</i>	<i>0.21</i>	:
Rheinland-Pfalz	<i>0.10</i>	:	<i>0.10</i>	:	<i>0.08</i>	<i>0.08</i>	<i>0.08</i>	<i>0.08</i>	:
Saarland	<i>0.05</i>	:	<i>0.08</i>	:	<i>0.11</i>	<i>0.13</i>	<i>0.13</i>	<i>0.14</i>	:
Sachsen	:	:	:	:	<i>0.21</i>	<i>0.21</i>	<i>0.22</i>	<i>0.21</i>	:
Sachsen-Anhalt	:	:	:	:	<i>0.13</i>	<i>0.13</i>	<i>0.14</i>	<i>0.14</i>	:
Schleswig-Holstein	<i>0.23</i>	:	<i>0.22</i>	:	<i>0.22</i>	<i>0.22</i>	<i>0.23</i>	<i>0.20</i>	:
Thüringen	:	:	:	:	<i>0.13</i>	<i>0.14</i>	<i>0.14</i>	<i>0.14</i>	:
<b>ELLADA</b>	<b>0.15</b>	:	<b>0.14</b>	:	<b>0.18</b>	:	<b>0.24</b>	:	:
Voreia Ellada	<i>0.09</i>	:	<i>0.08</i>	:	<i>0.11</i>	:	<i>0.17</i>	:	:
Kentriki Ellada	<i>0.06</i>	:	<i>0.06</i>	:	<i>0.08</i>	:	<i>0.16</i>	:	:
Attiki	<i>0.24</i>	:	<i>0.23</i>	:	<i>0.23</i>	:	<i>0.26</i>	:	:
Nisia Aigaiou, Kriti	<i>0.20</i>	:	<i>0.20</i>	:	<i>0.38</i>	:	<i>0.61</i>	:	:
<b>ESPAÑA</b>	<b>0.15</b>	<b>0.16</b>	<b>0.16</b>	<b>0.16</b>	<b>0.16</b>	<b>0.15</b>	<b>0.14</b>	<b>0.13</b>	<b>0.16</b>
Noroeste	<i>0.07</i>	<i>0.08</i>	<i>0.08</i>	<i>0.08</i>	<i>0.08</i>	<i>0.06</i>	<i>0.16</i>	<i>0.09</i>	<i>0.17</i>
Noreste	<i>0.07</i>	<i>0.08</i>	<i>0.08</i>	<i>0.07</i>	<i>0.08</i>	<i>0.06</i>	<i>0.08</i>	<i>0.06</i>	<i>0.10</i>
Madrid	<i>0.72</i>	<i>0.75</i>	<i>0.75</i>	<i>0.72</i>	<i>0.69</i>	<i>0.73</i>	<i>0.51</i>	<i>0.52</i>	<i>0.50</i>
Centro (E)	<i>0.04</i>	<i>0.05</i>	<i>0.06</i>	<i>0.06</i>	<i>0.06</i>	<i>0.04</i>	<i>0.07</i>	<i>0.05</i>	<i>0.07</i>
Este	<i>0.06</i>	<i>0.07</i>	<i>0.08</i>	<i>0.08</i>	<i>0.08</i>	<i>0.07</i>	<i>0.07</i>	<i>0.07</i>	<i>0.09</i>
Sur	<i>0.09</i>	<i>0.10</i>	<i>0.10</i>	<i>0.11</i>	<i>0.11</i>	<i>0.08</i>	<i>0.09</i>	<i>0.09</i>	<i>0.11</i>
Canarias	<i>0.08</i>	<i>0.09</i>	<i>0.09</i>	<i>0.08</i>	<i>0.13</i>	<i>0.10</i>	<i>0.11</i>	<i>0.10</i>	<i>0.11</i>
<b>FRANCE</b>	<b>0.29</b>	<b>0.29</b>	<b>0.28</b>	<b>0.26</b>	<b>0.26</b>	<b>0.26</b>	<b>0.26</b>	<b>0.26</b>	:
Île de France	<i>0.43</i>	<i>0.42</i>	<i>0.41</i>	<i>0.39</i>	<i>0.38</i>	<i>0.38</i>	<i>0.38</i>	<i>0.37</i>	:
Bassin Parisien	<i>0.05</i>	<i>0.05</i>	<i>0.05</i>	<i>0.05</i>	<i>0.05</i>	<i>0.05</i>	<i>0.05</i>	<i>0.05</i>	:
Nord-Pas-de-Calais	<i>0.03</i>	<i>0.03</i>	<i>0.03</i>	<i>0.04</i>	<i>0.04</i>	<i>0.04</i>	<i>0.04</i>	<i>0.03</i>	:
Est	<i>0.05</i>	<i>0.05</i>	<i>0.06</i>	<i>0.05</i>	<i>0.05</i>	<i>0.05</i>	<i>0.06</i>	<i>0.06</i>	:
Ouest	<i>0.14</i>	<i>0.14</i>	<i>0.15</i>	<i>0.10</i>	<i>0.10</i>	<i>0.10</i>	<i>0.10</i>	<i>0.10</i>	:
Sud-Ouest	<i>0.14</i>	<i>0.14</i>	<i>0.14</i>	<i>0.15</i>	<i>0.16</i>	<i>0.16</i>	<i>0.16</i>	<i>0.15</i>	:
Centre-Est	<i>0.17</i>	<i>0.17</i>	<i>0.17</i>	<i>0.16</i>	<i>0.15</i>	<i>0.14</i>	<i>0.15</i>	<i>0.15</i>	:
Méditerranée	<i>0.28</i>	<i>0.27</i>	<i>0.28</i>	<i>0.28</i>	<i>0.27</i>	<i>0.26</i>	<i>0.26</i>	<i>0.29</i>	:
Départements d'Outre-Mer	:	:	:	:	:	:	:	:	:

**Table 31A**  
**TOTAL R&D PERSONNEL BY REGION**  
**GOVERNMENT SECTOR**

Head count as % of the labour force

	1989	1990	1991	1992	1993	1994	1995	1996	1997
<b>IRELAND</b>	<i>0.11</i>	<i>0.11</i>	<i>0.11</i>	<i>0.11</i>	<i>0.10</i>	<i>0.10</i>	<i>0.10</i>	:	:
<b>ITALIA</b>	<i>0.16</i>	<i>0.17</i>	<i>0.16</i>	<i>0.17</i>	<i>0.17</i>	<i>0.18</i>	<i>0.18</i>	<i>0.18</i>	:
Nord Ovest	0.11	0.12	0.12	0.13	0.13	0.14	0.10	0.13	:
Lombardia	0.15	0.16	0.15	0.16	0.16	0.21	0.21	0.21	:
Nord Est	0.09	0.09	0.08	0.07	0.07	0.09	0.11	0.09	:
Emilia-Romagna	0.14	0.13	0.12	0.13	0.14	0.17	0.15	0.17	:
Centro (I)	0.11	0.10	0.09	0.11	0.10	0.12	0.11	0.12	:
Lazio	0.83	0.88	0.88	0.89	0.92	0.76	0.80	0.77	:
Abruzzo-Molise	0.03	0.02	0.03	0.07	0.07	0.10	0.12	0.13	:
Campania	0.07	0.07	0.07	0.08	0.08	0.09	0.09	0.09	:
Sud	0.04	0.04	0.04	0.04	0.04	0.05	0.06	0.07	:
Sicilia	0.04	0.05	0.04	0.04	0.05	0.06	0.07	0.06	:
Sardegna	0.06	0.07	0.09	0.10	0.09	0.10	0.10	0.11	:
<b>NEDERLAND<sup>2</sup></b>	<i>0.29</i>	<i>0.29</i>	<i>0.28</i>	<i>0.28</i>	<i>0.28</i>	<i>0.29</i>	<i>0.28</i>	<i>0.30</i>	:
Noord-Nederland	:	:	:	:	:	:	:	0.03	:
Oost-Nederland	:	:	:	:	:	:	:	0.34	:
West-Nederland	:	:	:	:	:	:	:	0.47	:
Zuid-Nederland	:	:	:	:	:	:	:	0.01	:
<b>ÖSTERREICH</b>	<i>0.13</i>	:	:	:	<i>0.14</i>	:	:	:	:
<b>PORTUGAL</b>	:	<i>0.12</i>	:	<i>0.12</i>	:	:	<i>0.13</i>	:	<i>0.14<sup>1</sup></i>
Continente	:	0.12	:	0.12	:	:	0.13	:	0.13
Açores	:	0.16	:	0.15	:	:	0.11	:	0.20
Madeira	:	0.03	:	0.05	:	:	0.30	:	0.39
<b>SUOMI-FINLAND<sup>2</sup></b>	<i>0.32</i>	:	<i>0.34</i>	:	<i>0.36</i>	<i>0.36</i>	<i>0.37</i>	:	<i>0.37</i>
Manner-Suomi	:	:	:	:	:	:	0.37	:	0.37
Ahvenanmaa/Åland	:	:	:	:	:	:	0.21	:	0.07
<b>SVERIGE</b>	<i>0.08</i>	:	<i>0.09</i>	:	<i>0.09</i>	:	<i>0.12</i>	:	<i>0.12</i>
<b>UNITED KINGDOM</b>	<i>0.17</i>	<i>0.17</i>	<i>0.17</i>	<i>0.17</i>	<i>0.16</i>	<i>0.15</i>	<i>0.14</i>	<i>0.11</i>	<i>0.11</i>
North	:	:	:	0.02	0.02	0.02	0.02	0.02	:
Yorkshire and Humberside	:	:	:	0.03	0.03	0.03	0.03	0.03	0.03
East Midlands	:	:	:	0.06	0.05	0.06	0.05	0.05	0.05
East Anglia	:	:	:	0.34	0.33	0.36	0.33	0.31	:
South East (UK)	:	:	:	0.32	0.27	0.24	0.21	0.17	:
South West (UK)	:	:	:	0.20	0.21	0.20	0.17	0.16	0.15
West Midlands	:	:	:	0.12	0.12	0.11	0.10	0.10	0.09
North West (UK)	:	:	:	0.03	0.03	0.03	0.03	0.03	:
Wales	:	:	:	0.06	0.06	0.05	0.04	0.03	0.03
Scotland	:	:	:	0.21	0.22	0.20	0.20	0.16	0.16
Northern Ireland	:	:	:	0.04	0.04	0.04	0.04	0.03	0.03
<b>ICELAND</b>	:	:	<i>0.44</i>	<i>0.47</i>	<i>0.54</i>	<i>0.53</i>	<i>0.54</i>	<i>0.56<sup>1</sup></i>	<i>0.57<sup>1</sup></i>
<b>NORWAY<sup>2</sup></b>	<i>0.28</i>	:	<i>0.28</i>	:	<i>0.31</i>	:	<i>0.31</i>	:	<i>0.29</i>

<sup>1</sup> Provisional.

<sup>2</sup> PNP included (D since 1992).

**Table 32**
**R&D PERSONNEL**  
**HIGHER EDUCATION SECTOR**  
 Full time equivalent

	1990	1991	1992	1993	1994	1995	1996	1997	1998
<b>EU-15<sup>2</sup></b>	<b>350 700</b>	<b>390 900</b>	<b>416 500</b>	<b>432 300</b>	<b>440 600</b>	<b>436 900</b>	<b>450 200</b>	<b>459 200</b>	<b>466 000</b>
<b>EUR-11<sup>2</sup></b>	<b>267 400</b>	<b>305 000</b>	<b>325 900</b>	<b>336 000</b>	<b>341 400</b>	<b>334 000</b>	<b>344 100</b>	<b>350 200</b>	<b>354 100</b>
BELGIQUE-BELGIË	:	14 800	:	:	13 034 <sup>1</sup>	13 015 <sup>1</sup>	:	:	:
DANMARK	5 731	5 796	:	6 216	:	7 213	7 373	7 533	7 693
DEUTSCHLAND	:	103 864	:	110 020	:	100 674	102 160	:	:
ELLADA	:	4 170	:	6 767	:	9 417	:	:	:
ESPAÑA	23 654	25 359	27 552	30 685	34 642	34 330	38 956	36 843	36 962
FRANCE	64 893	67 166	79 291	81 413	83 614	85 383	85 869	:	:
IRELAND	2 549	2 744	3 009	3 589	4 169	4 848	:	:	:
ITALIA	44 308	45 593	46 529	47 014	47 950	48 427	49 148	:	:
NEDERLAND	25 380	25 730	26 170	26 530	26 050	24 860	24 398	:	:
ÖSTERREICH	:	:	:	7 136	:	:	:	:	:
PORTUGAL	4 840	:	6 249	:	:	5 894	:	8 666 <sup>1</sup>	:
SUOMI-FINLAND	:	7 662	:	8 422	8 582	9 146	:	11 855	:
SVERIGE	:	16 810	:	17 765	:	17 301	:	18 197	:
UNITED KINGDOM	56 848	59 153	61 821	65 527	:	:	:	:	:
<b>EEA<sup>3</sup></b>	<b>356 700</b>	<b>397 300</b>	<b>423 200</b>	<b>439 300</b>	<b>447 800</b>	<b>444 400</b>	<b>457 600</b>	<b>466 800</b>	<b>473 900</b>
ICELAND	317	397	420	374	385	530	408 <sup>1</sup>	557 <sup>1</sup>	:
NORWAY	:	5 973	:	6 658	:	6 955	:	7 062	:

<sup>1</sup> Provisional.<sup>2</sup> Luxembourg not included.<sup>3</sup> Luxembourg and Liechtenstein not included.



**Table 32A**  
**TOTAL R&D PERSONNEL BY REGION**  
**HIGHER EDUCATION SECTOR**

Full time equivalent

	1989	1990	1991	1992	1993	1994	1995	1996	1997
<b>BELGIQUE-BELGIË</b>	<b>14 540</b>	:	<b>14 800</b>	:	:	<b>13 034</b> <sup>1</sup>	<b>13 015</b> <sup>1</sup>	:	:
Bruxelles-Brussel	:	:	:	:	:	3 153	3 119	:	:
Vlaams Gewest	:	:	:	:	:	6 313	6 327	:	:
Région Wallonne	:	:	:	:	:	3 569	3 569	:	:
<b>DANMARK</b>	<b>5 666</b>	<b>5 731</b>	<b>5 796</b>	:	<b>6 216</b>	:	<b>7 213</b>	<b>7 373</b>	<b>7 533</b>
<b>DEUTSCHLAND</b>	<b>69 668</b>	:	<b>103 864</b>	:	<b>110 020</b>	:	<b>100 674</b>	<b>102 160</b>	:
Baden-Württemberg	11 446	:	15 109	:	:	:	12 967	13 468	:
Bayern	10 637	:	12 615	:	:	:	12 377	12 800	:
Berlin	5 399	:	:	:	:	:	8 241	7 680	:
Brandenburg	:	:	:	:	:	:	1 246	1 267	:
Bremen	620	:	1 166	:	:	:	892	1 042	:
Hamburg	3 347	:	3 666	:	:	:	3 036	3 099	:
Hessen	6 668	:	7 711	:	:	:	6 894	6 622	:
Mecklenburg-Vorpommern	:	:	:	:	:	:	1 797	1 749	:
Niedersachsen	8 054	:	9 517	:	:	:	7 398	7 773	:
Nordrhein-Westfalen	16 775	:	20 127	:	:	:	17 971	18 185	:
Rheinland-Pfalz	2 825	:	3 500	:	:	:	3 075	3 193	:
Saarland	1 579	:	1 535	:	:	:	1 259	1 259	:
Sachsen	:	:	:	:	:	:	5 938	6 281	:
Sachsen-Anhalt	:	:	:	:	:	:	2 641	2 502	:
Schleswig-Holstein	2 317	:	2 698	:	:	:	2 380	2 374	:
Thüringen	:	:	:	:	:	:	2 322	2 305	:
Not registered by region	:	:	26 220 <sup>2</sup>	:	:	:	10 238	10 564	:
<b>ELLADA</b>	<b>3 279</b>	:	<b>4 170</b>	:	<b>6 767</b>	:	<b>9 417</b>	:	:
Voreia Ellada	1 143	:	1 428	:	2 471	:	3 123	:	:
Kentriki Ellada	475	:	612	:	1 025	:	1 390	:	:
Attiki	1 447	:	1 846	:	2 823	:	4 264	:	:
Nisia Aigaiou, Kriti	215	:	284	:	448	:	640	:	:
<b>ESPAÑA</b>	<b>22 500</b>	<b>23 654</b>	<b>25 359</b>	<b>27 552</b>	<b>30 685</b>	<b>34 642</b>	<b>34 330</b>	<b>38 956</b>	<b>36 843</b>
Noroeste	1 461	1 580	1 824	2 157	2 199	2 684	3 205	2 993	4 155
Noreste	1 864	2 463	2 651	2 852	3 004	3 383	3 322	3 957	3 700
Madrid	4 518	4 945	4 845	5 109	5 980	6 499	7 370	7 338	6 626
Centro (E)	1 577	1 672	1 847	2 227	3 482	3 767	2 978	4 698	4 478
Este	4 537	4 777	5 475	5 993	6 720	8 174	9 965	11 784	9 740
Sur	2 834	3 149	3 577	4 807	4 790	5 260	6 198	6 529	6 896
Canarias	555	674	891	1 187	1 290	1 331	1 292	1 657	1 248
Not registered by region	5 155	4 393	4 250	3 220	3 220	3 544	-	-	-
<b>FRANCE</b>	<b>63 816</b>	<b>64 893</b>	<b>67 166</b>	<b>79 291</b>	<b>81 413</b>	<b>83 614</b>	<b>85 383</b>	<b>85 869</b>	:
Île de France	:	:	14 768	14 357	14 035	14 284	13 937	13 541	:
Bassin Parisien	:	:	848	1 092	1 136	1 241	1 327	1 341	:
Nord-Pas-de-Calais	:	:	455	451	476	549	588	559	:
Est	:	:	2 711	2 657	2 659	2 732	2 764	2 707	:
Ouest	:	:	954	1 004	1 101	1 211	1 347	1 299	:
Sud-Ouest	:	:	2 177	2 185	2 251	2 382	2 454	2 481	:
Centre-Est	:	:	3 187	3 127	3 205	3 435	3 566	3 548	:
Méditerranée	:	:	3 642	3 611	3 669	3 832	3 952	3 952	:
Départements d'Outre-Mer	:	:	59	11	13	14	18	15	:
Not registered by region	:	:	38 364	50 796	52 868	53 936	55 429	56 426	:

**Table 32A**  
**TOTAL R&D PERSONNEL BY REGION**  
**HIGHER EDUCATION SECTOR**

Full time equivalent

	1989	1990	1991	1992	1993	1994	1995	1996	1997
<b>IRELAND</b>	2 190	2 549	2 744	3 009	3 589	4 169	4 848	:	:
<b>ITALIA</b>	44 042	44 308	45 593	46 529	47 014	47 950	48 427	49 148	:
Nord Ovest	:	:	:	:	:	3 847	3 922	4 047	:
Lombardia	:	:	:	:	:	5 216	5 344	5 503	:
Nord Est	:	:	:	:	:	4 351	4 411	4 370	:
Emilia-Romagna	:	:	:	:	:	4 347	4 460	4 533	:
Centro (I)	:	:	:	:	:	6 929	7 196	7 530	:
Lazio	:	:	:	:	:	7 417	7 982	7 135	:
Abruzzo-Molise	:	:	:	:	:	1 146	1 182	1 256	:
Campania	:	:	:	:	:	5 430	4 607	5 155	:
Sud	:	:	:	:	:	3 133	3 217	3 314	:
Sicilia	:	:	:	:	:	4 456	4 307	4 603	:
Sardegna	:	:	:	:	:	1 678	1 799	1 702	:
<b>NEDERLAND</b>	17 270	25 380	25 730	26 170	26 530	26 050	24 860	24 398	:
<b>ÖSTERREICH</b>	6 058	:	:	:	7 136	:	:	:	:
Ostösterreich	3 197	:	:	:	3 748	:	:	:	:
Südösterreich	1 511	:	:	:	1 791	:	:	:	:
Westösterreich	1 350	:	:	:	1 598	:	:	:	:
<b>PORTUGAL</b>	:	4 840	:	6 249	:	:	5 894	:	8 666 <sup>1</sup>
Continente	:	4 746	:	6 158	:	:	5 695	:	8 423
Açores	:	86	:	72	:	:	149	:	164
Madeira	:	9	:	18	:	:	50	:	80
<b>SUOMI-FINLAND</b>	7 362	:	7 662	:	8 422	8 582	9 146	:	11 855
Manner-Suomi	:	:	:	:	:	:	9 146	:	11 855
Ahvenanmaa/Åland	:	:	:	:	:	:	-	:	-
<b>SVERIGE</b>	17 283	:	16 810	:	17 765	:	17 301	:	18 197
<b>UNITED KINGDOM</b>	55 000	56 848	59 153	61 821	65 527	:	:	:	:
North	:	:	:	2 700	2 900	:	:	:	:
Yorkshire and Humberside	:	:	:	4 900	5 500	:	:	:	:
East Midlands	:	:	:	3 400	3 800	:	:	:	:
East Anglia	:	:	:	3 500	3 900	:	:	:	:
South East (UK)	:	:	:	22 800	24 400	:	:	:	:
South West (UK)	:	:	:	3 200	3 300	:	:	:	:
West Midlands	:	:	:	3 800	3 900	:	:	:	:
North West (UK)	:	:	:	5 600	5 600	:	:	:	:
Wales	:	:	:	2 700	2 700	:	:	:	:
Scotland	:	:	:	8 000	8 100	:	:	:	:
Northern Ireland	:	:	:	1 500	1 500	:	:	:	:
<b>ICELAND</b>	322	317	397	420	374	385	530	408 <sup>1</sup>	557 <sup>1</sup>
<b>NORWAY</b>	5 393	:	5 973	:	6 658	:	6 955	:	7 062

<sup>1</sup> Provisional.

<sup>2</sup> New "Länder" included.

**R&D PERSONNEL  
HIGHER EDUCATION SECTOR  
Head count**

	1990	1991	1992	1993	1994	1995	1996	1997	1998
<b>EU-15<sup>2</sup></b>	<b>604 000</b>	<b>647 400</b>	<b>683 000</b>	<b>710 500</b>	<b>734 500</b>	<b>747 400</b>	<b>781 500</b>	<b>785 100</b>	<b>798 100</b>
<b>EUR-11<sup>2</sup></b>	<b>459 600</b>	<b>499 500</b>	<b>525 900</b>	<b>539 500</b>	<b>554 500</b>	<b>558 200</b>	<b>581 300</b>	<b>578 500</b>	<b>587 900</b>
BELGIQUE-BELGIË	:	24 804	:	:	21 312 <sup>1</sup>	21 281 <sup>1</sup>	:	:	:
DANMARK	9 926	8 674	10 163	11 651	:	12 948	13 521	13 815	14 108
DEUTSCHLAND	:	169 828	:	179 894	:	162 760	168 544	:	:
ELLADA	:	13 168	:	18 811	:	20 658	:	:	:
ESPAÑA	49 022	53 759	59 155	62 192	76 070	89 947	99 435	91 721	94 345
FRANCE	90 738	93 906	104 767	107 561	112 854	114 470	117 858	:	:
IRELAND	4 272	4 599	4 920	5 868	6 817	7 838	:	:	:
ITALIA	66 669	68 983	71 106	71 860	72 735	74 942	75 442	:	:
NEDERLAND	43 122	43 860	43 860	44 463	42 594	40 191	40 252	:	:
ÖSTERREICH	:	:	:	20 039	:	:	:	:	:
PORTUGAL	8 694	:	10 473	:	:	11 138	:	14 985 <sup>1</sup>	:
SUOMI-FINLAND	:	12 410	:	13 344	14 032	14 721	:	16 685	:
SVERIGE	:	27 230	:	34 368	:	44 182	:	47 538	:
UNITED KINGDOM	95 529	98 881	100 140	106 143	:	:	:	:	:
<b>EEA<sup>3</sup></b>	<b>617 000</b>	<b>661 200</b>	<b>697 500</b>	<b>725 600</b>	<b>751 600</b>	<b>766 700</b>	<b>801 400</b>	<b>806 100</b>	<b>816 600</b>
ICELAND	787	1 061	1 043	1 055	955	1 111	1 013 <sup>1</sup>	1 382 <sup>1</sup>	:
NORWAY	:	12 745	:	14 063	:	18 192	:	19 648	:

<sup>1</sup> Provisional.

<sup>2</sup> Luxembourg not included.

<sup>3</sup> Luxembourg and Liechtenstein not included.

**Table 33A**  
**TOTAL R&D PERSONNEL BY REGION**  
**HIGHER EDUCATION SECTOR**

Head count

	1989	1990	1991	1992	1993	1994	1995	1996	1997
<b>BELGIQUE-BELGIË</b>	<i>24 368</i>	:	<i>24 804</i>	:	:	<i>21 312</i> <sup>1</sup>	<i>21 281</i> <sup>1</sup>	:	:
Bruxelles-Brussel	:	:	:	:	:	<i>5 155</i>	<i>5 100</i>	:	:
Vlaams Gewest	:	:	:	:	:	<i>10 322</i>	<i>10 345</i>	:	:
Région Wallonne	:	:	:	:	:	<i>5 836</i>	<i>5 836</i>	:	:
<b>DANMARK</b>	<i>10 555</i>	<i>9 926</i>	<i>8 674</i>	<i>10 163</i>	<i>11 651</i>	:	<i>12 948</i>	<i>13 521</i>	<i>13 815</i>
<b>DEUTSCHLAND</b>	<i>116 760</i>	:	<i>169 828</i>	:	<i>179 894</i>	:	<i>162 760</i>	<i>168 544</i>	:
Baden-Württemberg	<i>19 183</i>	:	<i>24 705</i>	:	:	:	<i>20 964</i>	<i>22 220</i>	:
Bayern	<i>17 827</i>	:	<i>20 627</i>	:	:	:	<i>20 010</i>	<i>21 117</i>	:
Berlin	<i>9 048</i>	:	:	:	:	:	<i>13 323</i>	<i>12 670</i>	:
Brandenburg	:	:	:	:	:	:	<i>2 014</i>	<i>2 090</i>	:
Bremen	<i>1 039</i>	:	<i>1 907</i>	:	:	:	<i>1 442</i>	<i>1 719</i>	:
Hamburg	<i>5 609</i>	:	<i>5 994</i>	:	:	:	<i>4 908</i>	<i>5 113</i>	:
Hessen	<i>11 175</i>	:	<i>12 608</i>	:	:	:	<i>11 146</i>	<i>10 925</i>	:
Mecklenburg-Vorpommern	:	:	:	:	:	:	<i>2 905</i>	<i>2 886</i>	:
Niedersachsen	<i>13 498</i>	:	<i>15 561</i>	:	:	:	<i>11 960</i>	<i>12 824</i>	:
Nordrhein-Westfalen	<i>28 114</i>	:	<i>32 910</i>	:	:	:	<i>29 054</i>	<i>30 002</i>	:
Rheinland-Pfalz	<i>4 735</i>	:	<i>5 723</i>	:	:	:	<i>4 971</i>	<i>5 268</i>	:
Saarland	<i>2 646</i>	:	<i>2 510</i>	:	:	:	<i>2 035</i>	<i>2 077</i>	:
Sachsen	:	:	:	:	:	:	<i>9 600</i>	<i>10 362</i>	:
Sachsen-Anhalt	:	:	:	:	:	:	<i>4 270</i>	<i>4 128</i>	:
Schleswig-Holstein	<i>3 883</i>	:	<i>4 411</i>	:	:	:	<i>3 848</i>	<i>3 917</i>	:
Thüringen	:	:	:	:	:	:	<i>3 754</i>	<i>3 803</i>	:
Not registered by region	:	:	<i>42 872</i> <sup>2</sup>	:	:	:	<i>16 552</i>	<i>17 428</i>	:
<b>ELLADA</b>	<i>10 113</i>	:	<i>13 168</i>	:	<i>18 811</i>	:	<i>20 658</i>	:	:
Voreia Ellada	<i>3 785</i>	:	<i>4 578</i>	:	<i>6 545</i>	:	<i>7 085</i>	:	:
Kentriki Ellada	<i>1 379</i>	:	<i>1 877</i>	:	<i>2 730</i>	:	<i>2 630</i>	:	:
Attiki	<i>4 362</i>	:	<i>5 738</i>	:	<i>8 285</i>	:	<i>9 404</i>	:	:
Nisia Aigaiou, Kriti	<i>587</i>	:	<i>975</i>	:	<i>1 251</i>	:	<i>1 539</i>	:	:
<b>ESPAÑA</b>	<i>46 644</i>	<i>49 022</i>	<i>53 759</i>	<i>59 155</i>	<i>62 192</i>	<i>76 070</i>	<i>89 947</i>	<i>99 435</i>	<i>91 721</i>
Noroeste	<i>3 029</i>	<i>3 275</i>	<i>3 866</i>	<i>4 631</i>	<i>4 492</i>	<i>5 894</i>	<i>7 635</i>	<i>7 640</i>	<i>7 856</i>
Noreste	<i>3 864</i>	<i>5 103</i>	<i>5 620</i>	<i>6 123</i>	<i>6 180</i>	<i>7 429</i>	<i>9 884</i>	<i>10 100</i>	<i>8 932</i>
Madrid	<i>9 367</i>	<i>10 248</i>	<i>10 270</i>	<i>10 969</i>	<i>12 337</i>	<i>14 271</i>	<i>22 428</i>	<i>18 730</i>	<i>21 746</i>
Centro (E)	<i>3 268</i>	<i>3 465</i>	<i>3 915</i>	<i>4 781</i>	<i>6 610</i>	<i>8 272</i>	<i>8 160</i>	<i>11 992</i>	<i>11 336</i>
Este	<i>9 406</i>	<i>9 901</i>	<i>11 606</i>	<i>12 867</i>	<i>13 525</i>	<i>17 949</i>	<i>23 684</i>	<i>30 078</i>	<i>21 264</i>
Sur	<i>5 875</i>	<i>6 527</i>	<i>7 582</i>	<i>10 321</i>	<i>9 608</i>	<i>11 550</i>	<i>14 605</i>	<i>16 665</i>	<i>16 912</i>
Canarias	<i>1 151</i>	<i>1 398</i>	<i>1 889</i>	<i>2 549</i>	<i>2 558</i>	<i>2 923</i>	<i>3 551</i>	<i>4 229</i>	<i>3 675</i>
Not registered by region	<i>10 687</i>	<i>9 105</i>	<i>9 010</i>	<i>6 913</i>	<i>6 881</i>	<i>7 782</i>	-	-	-
<b>FRANCE</b>	<i>89 097</i>	<i>90 738</i>	<i>93 906</i>	<i>104 767</i>	<i>107 561</i>	<i>112 854</i>	<i>114 470</i>	<i>117 858</i>	:
Île de France	:	:	<i>20 647</i>	<i>14 957</i>	<i>14 689</i>	<i>16 009</i>	<i>16 007</i>	<i>16 043</i>	:
Bassin Parisien	:	:	<i>1 186</i>	<i>1 138</i>	<i>1 189</i>	<i>1 391</i>	<i>1 391</i>	<i>1 589</i>	:
Nord-Pas-de-Calais	:	:	<i>636</i>	<i>470</i>	<i>498</i>	<i>615</i>	<i>615</i>	<i>662</i>	:
Est	:	:	<i>3 790</i>	<i>2 768</i>	<i>2 783</i>	<i>3 062</i>	<i>3 062</i>	<i>3 207</i>	:
Ouest	:	:	<i>1 334</i>	<i>1 046</i>	<i>1 152</i>	<i>1 357</i>	<i>1 357</i>	<i>1 539</i>	:
Sud-Ouest	:	:	<i>3 044</i>	<i>2 276</i>	<i>2 356</i>	<i>2 669</i>	<i>2 669</i>	<i>2 939</i>	:
Centre-Est	:	:	<i>4 456</i>	<i>3 258</i>	<i>3 355</i>	<i>3 849</i>	<i>3 849</i>	<i>4 204</i>	:
Méditerranée	:	:	<i>5 092</i>	<i>3 762</i>	<i>3 839</i>	<i>4 295</i>	<i>4 294</i>	<i>4 682</i>	:
Départements d'Outre-Mer	:	:	<i>83</i>	<i>11</i>	<i>14</i>	<i>16</i>	<i>16</i>	<i>18</i>	:
Not registered by region	:	:	<i>53 637</i>	<i>75 080</i>	<i>77 687</i>	<i>79 591</i>	<i>81 210</i>	<i>82 975</i>	:

**Table 33A**  
**TOTAL R&D PERSONNEL BY REGION**  
**HIGHER EDUCATION SECTOR**

Head count

	1989	1990	1991	1992	1993	1994	1995	1996	1997
<b>IRELAND</b>	<i>3 670</i>	<i>4 272</i>	<i>4 599</i>	<i>4 920</i>	<i>5 868</i>	<i>6 817</i>	<i>7 838</i>	:	:
<b>ITALIA</b>	<b>67 256</b>	<b>66 669</b>	<b>68 983</b>	<b>71 106</b>	<b>71 860</b>	<b>72 735</b>	<b>74 942</b>	<b>75 442</b>	:
Nord Ovest	:	:	:	:	:	5 808	6 029	6 226	:
Lombardia	:	:	:	:	:	7 981	8 359	8 612	:
Nord Est	:	:	:	:	:	6 498	6 703	6 591	:
Emilia-Romagna	:	:	:	:	:	6 643	6 929	7 028	:
Centro (I)	:	:	:	:	:	10 569	11 250	11 826	:
Lazio	:	:	:	:	:	11 300	12 505	10 766	:
Abruzzo-Molise	:	:	:	:	:	1 659	1 752	1 874	:
Campania	:	:	:	:	:	8 398	7 199	7 889	:
Sud	:	:	:	:	:	4 707	4 961	5 129	:
Sicilia	:	:	:	:	:	6 612	6 436	6 896	:
Sardegna	:	:	:	:	:	2 560	2 819	2 605	:
<b>NEDERLAND</b>	<i>28 944</i>	<i>43 122</i>	<i>43 860</i>	<i>43 860</i>	<i>44 463</i>	<i>42 594</i>	<i>40 191</i>	<i>40 252</i>	:
<b>ÖSTERREICH</b>	<b>17 009</b>	:	:	:	<b>20 039</b>	:	:	:	:
Ostösterreich	8 794	:	:	:	10 584	:	:	:	:
Südösterreich	4 191	:	:	:	4 830	:	:	:	:
Westösterreich	4 024	:	:	:	4 625	:	:	:	:
<b>PORTUGAL</b>	:	<b>8 694</b>	:	<i>10 473</i>	:	:	<b>11 138</b>	:	<b>14 985</b> <sup>1</sup>
Continente	:	8 566	:	<i>10 322</i>	:	:	10 733	:	14 462
Açores	:	110	:	<i>121</i>	:	:	267	:	296
Madeira	:	18	:	<i>30</i>	:	:	138	:	227
<b>SUOMI-FINLAND</b>	<b>11 689</b>	:	<b>12 410</b>	:	<b>13 344</b>	<i>14 032</i>	<b>14 721</b>	:	<b>16 685</b>
Manner-Suomi	:	:	:	:	:	:	14 721	:	16 685
Ahvenanmaa/Åland	:	:	:	:	:	:	-	:	-
<b>SVERIGE</b>	<i>27 996</i>	:	<i>27 230</i>	:	<b>34 368</b>	:	<b>44 182</b>	:	<b>47 538</b>
<b>UNITED KINGDOM</b>	<i>92 177</i>	<i>95 529</i>	<i>98 881</i>	<i>100 140</i>	<i>106 143</i>	:	:	:	:
North	:	:	:	<i>4 374</i>	<i>4 698</i>	:	:	:	:
Yorkshire and Humberside	:	:	:	<i>7 937</i>	<i>8 909</i>	:	:	:	:
East Midlands	:	:	:	<i>5 507</i>	<i>6 155</i>	:	:	:	:
East Anglia	:	:	:	<i>5 669</i>	<i>6 317</i>	:	:	:	:
South East (UK)	:	:	:	<i>36 932</i>	<i>39 524</i>	:	:	:	:
South West (UK)	:	:	:	<i>5 183</i>	<i>5 345</i>	:	:	:	:
West Midlands	:	:	:	<i>6 155</i>	<i>6 317</i>	:	:	:	:
North West (UK)	:	:	:	<i>9 071</i>	<i>9 071</i>	:	:	:	:
Wales	:	:	:	<i>4 374</i>	<i>4 374</i>	:	:	:	:
Scotland	:	:	:	<i>12 959</i>	<i>13 121</i>	:	:	:	:
Northern Ireland	:	:	:	<i>2 430</i>	<i>2 430</i>	:	:	:	:
<b>ICELAND</b>	<i>798</i>	<i>787</i>	<b>1 061</b>	<i>1 043</i>	<b>1 055</b>	<i>955</i>	<b>1 111</b>	<i>1 013</i> <sup>1</sup>	<i>1 382</i> <sup>1</sup>
<b>NORWAY</b>	<b>11 776</b>	:	<b>12 745</b>	:	<b>14 063</b>	:	<b>18 192</b>	:	<b>19 648</b>

<sup>1</sup> Provisional.

<sup>2</sup> New "Länder" included.

Table 34

**R&D PERSONNEL**  
**HIGHER EDUCATION SECTOR**  
 Head count as % of the labour force

	1990	1991	1992	1993	1994	1995	1996	1997	1998
<b>EU-15<sup>2</sup></b>	<i>0.39</i>	<i>0.39</i>	<i>0.41</i>	<i>0.43</i>	<i>0.44</i>	<i>0.45</i>	<i>0.47</i>	<i>0.47</i>	:
<b>EUR-11<sup>2</sup></b>	<i>0.40</i>	<i>0.40</i>	<i>0.42</i>	<i>0.43</i>	<i>0.44</i>	<i>0.44</i>	<i>0.46</i>	<i>0.45</i>	:
BELGIQUE-BELGIË	:	<i>0.62</i>	:	:	<i>0.51<sup>1</sup></i>	<i>0.51<sup>1</sup></i>	:	:	:
DANMARK	<i>0.34</i>	<i>0.30</i>	<i>0.35</i>	<i>0.41</i>	:	<i>0.46</i>	<i>0.48</i>	<i>0.49</i>	<i>0.50</i>
DEUTSCHLAND	:	<i>0.43</i>	:	<i>0.46</i>	:	<i>0.42</i>	<i>0.43</i>	:	:
ELLADA	:	<i>0.33</i>	:	<i>0.46</i>	:	<i>0.49</i>	:	:	:
ESPAÑA	<i>0.33</i>	<i>0.36</i>	<i>0.39</i>	<i>0.41</i>	<i>0.49</i>	<i>0.58</i>	<i>0.63</i>	<i>0.57</i>	<i>0.58</i>
FRANCE	<i>0.38</i>	<i>0.39</i>	<i>0.43</i>	<i>0.44</i>	<i>0.45</i>	<i>0.46</i>	<i>0.47</i>	:	:
IRELAND	<i>0.32</i>	<i>0.34</i>	<i>0.36</i>	<i>0.43</i>	<i>0.48</i>	<i>0.55</i>	<i>0.54</i>	:	:
ITALIA	<i>0.28</i>	<i>0.29</i>	<i>0.31</i>	<i>0.32</i>	<i>0.32</i>	<i>0.33</i>	<i>0.33</i>	:	:
NEDERLAND	<i>0.63</i>	<i>0.62</i>	<i>0.63</i>	<i>0.63</i>	<i>0.59</i>	<i>0.55</i>	<i>0.54</i>	:	:
ÖSTERREICH	:	:	:	<i>0.54</i>	:	:	:	:	:
PORTUGAL	<i>0.18</i>	:	<i>0.22</i>	:	:	<i>0.23</i>	:	<i>0.31<sup>1</sup></i>	:
SUOMI-FINLAND	:	<i>0.48</i>	:	<i>0.53</i>	<i>0.56</i>	<i>0.61</i>	:	<i>0.67</i>	:
SVERIGE	:	<i>0.60</i>	:	<i>0.80</i>	:	<i>0.98</i>	:	<i>1.09</i>	:
UNITED KINGDOM	<i>0.33</i>	<i>0.35</i>	<i>0.35</i>	<i>0.37</i>	:	:	:	:	:
<b>EEA<sup>3</sup></b>	<i>0.39</i>	<i>0.39</i>	<i>0.42</i>	<i>0.43</i>	<i>0.45</i>	<i>0.46</i>	<i>0.47</i>	<i>0.47</i>	:
ICELAND	:	<i>0.76</i>	<i>0.73</i>	<i>0.73</i>	<i>0.66</i>	<i>0.76</i>	<i>0.69<sup>1</sup></i>	<i>0.95<sup>1</sup></i>	:
NORWAY	:	<i>0.60</i>	:	<i>0.66</i>	:	<i>0.83</i>	:	<i>0.86</i>	:

<sup>1</sup> Provisional.

<sup>2</sup> Luxembourg not included.

<sup>3</sup> Luxembourg and Liechtenstein not included.

**Table 34A**  
**TOTAL R&D PERSONNEL BY REGION**  
**HIGHER EDUCATION SECTOR**

Head count as % of the labour force

	1989	1990	1991	1992	1993	1994	1995	1996	1997
<b>BELGIQUE-BELGIË</b>	<i>0.62</i>	:	<i>0.62</i>	:	:	<i>0.51</i> <sup>1</sup>	<i>0.51</i> <sup>1</sup>	:	:
Bruxelles-Brussel	:	:	:	:	:	<i>1.33</i>	<i>1.33</i>	:	:
Vlaams Gewest	:	:	:	:	:	<i>0.42</i>	<i>0.42</i>	:	:
Région Wallonne	:	:	:	:	:	<i>0.45</i>	<i>0.44</i>	:	:
<b>DANMARK</b>	<i>0.37</i>	<i>0.34</i>	<i>0.30</i>	<i>0.35</i>	<i>0.41</i>	:	<i>0.46</i>	<i>0.48</i>	<i>0.49</i>
<b>DEUTSCHLAND</b>	<i>0.40</i>	:	<i>0.43</i>	:	<i>0.46</i>	:	<i>0.42</i>	<i>0.43</i>	:
Baden-Württemberg	<i>0.42</i>	:	<i>0.51</i>	:	:	:	<i>0.42</i>	<i>0.44</i>	:
Bayern	<i>0.32</i>	:	<i>0.35</i>	:	:	:	<i>0.33</i>	<i>0.35</i>	:
Berlin	<i>0.85</i>	:	:	:	:	:	<i>0.73</i>	<i>0.70</i>	:
Brandenburg	:	:	:	:	:	:	<i>0.16</i>	<i>0.16</i>	:
Bremen	<i>0.34</i>	:	<i>0.62</i>	:	:	:	<i>0.46</i>	<i>0.55</i>	:
Hamburg	<i>0.72</i>	:	<i>0.73</i>	:	:	:	<i>0.57</i>	<i>0.61</i>	:
Hessen	<i>0.42</i>	:	<i>0.45</i>	:	:	:	<i>0.39</i>	<i>0.38</i>	:
Mecklenburg-Vorpommern	:	:	:	:	:	:	<i>0.31</i>	<i>0.31</i>	:
Niedersachsen	<i>0.41</i>	:	<i>0.45</i>	:	:	:	<i>0.34</i>	<i>0.36</i>	:
Nordrhein-Westfalen	<i>0.38</i>	:	<i>0.42</i>	:	:	:	<i>0.37</i>	<i>0.38</i>	:
Rheinland-Pfalz	<i>0.28</i>	:	<i>0.32</i>	:	:	:	<i>0.28</i>	<i>0.29</i>	:
Saarland	<i>0.58</i>	:	<i>0.54</i>	:	:	:	<i>0.46</i>	<i>0.47</i>	:
Sachsen	:	:	:	:	:	:	<i>0.42</i>	<i>0.45</i>	:
Sachsen-Anhalt	:	:	:	:	:	:	<i>0.30</i>	<i>0.30</i>	:
Schleswig-Holstein	<i>0.31</i>	:	<i>0.35</i>	:	:	:	<i>0.29</i>	<i>0.29</i>	:
Thüringen	:	:	:	:	:	:	<i>0.30</i>	<i>0.30</i>	:
<b>ELLADA</b>	<i>0.25</i>	:	<i>0.33</i>	:	<i>0.46</i>	:	<i>0.49</i>	:	:
Voreia Ellada	<i>0.29</i>	:	<i>0.36</i>	:	<i>0.49</i>	:	<i>0.51</i>	:	:
Kentriki Ellada	<i>0.15</i>	:	<i>0.23</i>	:	<i>0.33</i>	:	<i>0.31</i>	:	:
Attiki	<i>0.31</i>	:	<i>0.39</i>	:	<i>0.55</i>	:	<i>0.60</i>	:	:
Nisia Aigaiou, Kriti	<i>0.17</i>	:	<i>0.27</i>	:	<i>0.33</i>	:	<i>0.40</i>	:	:
<b>ESPAÑA</b>	<i>0.32</i>	<i>0.33</i>	<i>0.36</i>	<i>0.39</i>	<i>0.41</i>	<i>0.49</i>	<i>0.58</i>	<i>0.63</i>	<i>0.57</i>
Noroeste	<i>0.17</i>	<i>0.18</i>	<i>0.22</i>	<i>0.26</i>	<i>0.25</i>	<i>0.34</i>	<i>0.45</i>	<i>0.44</i>	<i>0.46</i>
Noreste	<i>0.24</i>	<i>0.32</i>	<i>0.35</i>	<i>0.37</i>	<i>0.38</i>	<i>0.45</i>	<i>0.60</i>	<i>0.61</i>	<i>0.53</i>
Madrid	<i>0.53</i>	<i>0.55</i>	<i>0.55</i>	<i>0.58</i>	<i>0.64</i>	<i>0.73</i>	<i>1.11</i>	<i>0.87</i>	<i>1.02</i>
Centro (E)	<i>0.17</i>	<i>0.17</i>	<i>0.20</i>	<i>0.24</i>	<i>0.33</i>	<i>0.42</i>	<i>0.43</i>	<i>0.61</i>	<i>0.57</i>
Este	<i>0.22</i>	<i>0.23</i>	<i>0.27</i>	<i>0.30</i>	<i>0.31</i>	<i>0.40</i>	<i>0.52</i>	<i>0.66</i>	<i>0.46</i>
Sur	<i>0.21</i>	<i>0.23</i>	<i>0.26</i>	<i>0.35</i>	<i>0.32</i>	<i>0.38</i>	<i>0.47</i>	<i>0.53</i>	<i>0.53</i>
Canarias	<i>0.20</i>	<i>0.25</i>	<i>0.32</i>	<i>0.43</i>	<i>0.44</i>	<i>0.48</i>	<i>0.57</i>	<i>0.68</i>	<i>0.56</i>
<b>FRANCE</b>	<i>0.37</i>	<i>0.38</i>	<i>0.39</i>	<i>0.43</i>	<i>0.44</i>	<i>0.45</i>	<i>0.46</i>	<i>0.47</i>	:

**Table 34A**  
**TOTAL R&D PERSONNEL BY REGION**  
**HIGHER EDUCATION SECTOR**

Head count as % of the labour force

	1989	1990	1991	1992	1993	1994	1995	1996	1997
<b>IRELAND</b>	<i>0.28</i>	<i>0.32</i>	<i>0.34</i>	<i>0.36</i>	<i>0.43</i>	<i>0.48</i>	<i>0.55</i>	:	:
<b>ITALIA</b>	<b>0.29</b>	<b>0.28</b>	<b>0.29</b>	<b>0.31</b>	<b>0.32</b>	<b>0.32</b>	<b>0.33</b>	<b>0.33</b>	:
Nord Ovest	:	:	:	:	:	0.23	0.24	0.24	:
Lombardia	:	:	:	:	:	0.20	0.22	0.22	:
Nord Est	:	:	:	:	:	0.23	0.24	0.23	:
Emilia-Romagna	:	:	:	:	:	0.37	0.40	0.40	:
Centro (I)	:	:	:	:	:	0.44	0.47	0.49	:
Lazio	:	:	:	:	:	0.56	0.61	0.52	:
Abruzzo-Molise	:	:	:	:	:	0.27	0.28	0.30	:
Campania	:	:	:	:	:	0.42	0.36	0.40	:
Sud	:	:	:	:	:	0.20	0.22	0.22	:
Sicilia	:	:	:	:	:	0.40	0.38	0.41	:
Sardegna	:	:	:	:	:	0.41	0.46	0.42	:
<b>NEDERLAND</b>	<i>0.44</i>	<i>0.63</i>	<i>0.62</i>	<i>0.63</i>	<i>0.63</i>	<i>0.59</i>	<i>0.55</i>	<i>0.54</i>	:
<b>ÖSTERREICH</b>	<b>0.49</b>	:	:	:	<b>0.54</b>	:	:	:	:
<b>PORTUGAL</b>	:	<b>0.18</b>	:	<i>0.22</i>	:	:	<b>0.23</b>	:	<b>0.31</b> <sup>1</sup>
Continente	:	0.18	:	<i>0.23</i>	:	:	0.24	:	0.31
Açores	:	0.11	:	<i>0.13</i>	:	:	0.29	:	0.31
Madeira	:	0.01	:	<i>0.03</i>	:	:	0.13	:	0.20
<b>SUOMI-FINLAND</b>	<b>0.45</b>	:	<b>0.48</b>	:	<b>0.53</b>	<i>0.56</i>	<b>0.61</b>	:	<b>0.67</b>
Manner-Suomi	:	:	:	:	:	:	0.61	:	0.67
Ahvenanmaa/Åland	:	:	:	:	:	:	-	:	-
<b>SVERIGE</b>	<i>0.63</i>	:	<i>0.60</i>	:	<b>0.80</b>	:	<b>0.98</b>	:	<b>1.09</b>
<b>UNITED KINGDOM</b>	<i>0.32</i>	<i>0.33</i>	<i>0.35</i>	<i>0.35</i>	<i>0.37</i>	:	:	:	:
North	:	:	:	<i>0.30</i>	<i>0.33</i>	:	:	:	:
Yorkshire and Humberside	:	:	:	<i>0.33</i>	<i>0.36</i>	:	:	:	:
East Midlands	:	:	:	<i>0.27</i>	<i>0.30</i>	:	:	:	:
East Anglia	:	:	:	<i>0.54</i>	<i>0.59</i>	:	:	:	:
South East (UK)	:	:	:	<i>0.41</i>	<i>0.44</i>	:	:	:	:
South West (UK)	:	:	:	<i>0.22</i>	<i>0.23</i>	:	:	:	:
West Midlands	:	:	:	<i>0.24</i>	<i>0.25</i>	:	:	:	:
North West (UK)	:	:	:	<i>0.30</i>	<i>0.30</i>	:	:	:	:
Wales	:	:	:	<i>0.33</i>	<i>0.34</i>	:	:	:	:
Scotland	:	:	:	<i>0.51</i>	<i>0.53</i>	:	:	:	:
Northern Ireland	:	:	:	<i>0.35</i>	<i>0.35</i>	:	:	:	:
<b>ICELAND</b>	:	:	<b>0.76</b>	<i>0.73</i>	<b>0.73</b>	<i>0.66</i>	<b>0.76</b>	<i>0.69</i> <sup>1</sup>	<i>0.95</i> <sup>1</sup>
<b>NORWAY</b>	<b>0.55</b>	:	<b>0.60</b>	:	<b>0.66</b>	:	<b>0.83</b>	:	<b>0.86</b>

<sup>1</sup> Provisional.



**Table 35**  
**EUROPEAN PATENT APPLICATIONS**  
**TOTAL NUMBER**

	1990	1991	1992	1993	1994	1995	1996	1997 <sup>1</sup>	1998 <sup>1</sup>
<b>EU-15</b>	<b>32 311.5</b>	<b>29 150.2</b>	<b>30 739.8</b>	<b>31 730.8</b>	<b>32 126.6</b>	<b>34 410.5</b>	<b>36 490.9</b>	<b>38 094.0</b>	<b>40 023.1</b>
<b>EUR-11</b>	<b>25 898.4</b>	<b>23 053.8</b>	<b>24 667.1</b>	<b>25 456.7</b>	<b>25 556.7</b>	<b>27 409.2</b>	<b>28 983.5</b>	<b>30 647.9</b>	<b>32 516.7</b>
BELGIQUE-BELGIË	698.3	612.2	746.8	886.7	909.6	951.8	955.9	1 012.7	1 105.9
DANMARK	423.7	463.1	471.6	536.4	590.5	625.7	683.0	658.8	629.2
DEUTSCHLAND	13 715.2	11 549.3	12 421.3	13 330.5	12 954.7	14 075.0	14 847.7	16 101.2	17 090.0
ELLADA	29.0	33.7	43.7	44.8	34.9	42.7	47.7	49.4	50.0
ESPAÑA	280.7	332.2	355.7	376.0	461.9	475.9	510.8	545.3	618.0
FRANCE <sup>2</sup>	5 500.8	5 251.5	5 464.1	5 158.5	5 259.5	5 584.5	5 772.7	5 807.2	6 227.0
IRELAND	78.0	68.2	87.8	111.0	93.3	132.7	142.4	133.9	143.5
ITALIA	2 518.3	2 275.4	2 625.5	2 448.4	2 539.2	2 634.7	2 904.2	3 004.0	3 103.5
LUXEMBOURG (GRAND-DUCHÉ)	32.8	40.1	35.1	24.2	41.5	29.4	41.6	51.0	47.8
NEDERLAND	1 837.5	1 624.4	1 647.0	1 672.4	1 731.5	1 809.4	2 108.8	2 237.3	2 166.9
ÖSTERREICH	728.4	706.8	724.3	704.6	754.7	807.2	793.3	840.9	997.0
PORTUGAL	5.3	8.8	13.0	15.6	22.1	15.9	15.2	24.0	19.6
SUOMI-FINLAND	503.1	585.0	546.6	728.8	788.8	892.8	890.9	890.3	997.6
SVERIGE	1 233.3	1 211.0	1 238.6	1 325.1	1 450.6	1 760.7	1 925.7	2 002.4	1 977.4
UNITED KINGDOM	4 727.1	4 388.7	4 318.8	4 367.8	4 493.9	4 572.3	4 850.9	4 735.5	4 849.7

<sup>1</sup> Provisional.

**Table 35A**  
**EUROPEAN PATENT APPLICATIONS**  
**BY REGION**



**TOTAL NUMBER**

	1990	1991	1992	1993	1994	1995	1996	1997 <sup>1</sup>	1998 <sup>1</sup>
<b>EU-15</b>	<b>32 311.5</b>	<b>29 150.2</b>	<b>30 739.8</b>	<b>31 730.8</b>	<b>32 126.6</b>	<b>34 410.5</b>	<b>36 490.9</b>	<b>38 094.0</b>	<b>40 023.1</b>
<b>EUR-11</b>	<b>25 898.4</b>	<b>23 053.8</b>	<b>24 667.1</b>	<b>25 456.7</b>	<b>25 556.7</b>	<b>27 409.2</b>	<b>28 983.5</b>	<b>30 647.9</b>	<b>32 516.7</b>
<b>BELGIQUE-BELGIË</b>	<b>698.3</b>	<b>612.2</b>	<b>746.8</b>	<b>886.7</b>	<b>909.6</b>	<b>951.8</b>	<b>955.9</b>	<b>1 012.7</b>	<b>1 105.9</b>
Bruxelles-Brussel	77.6	51.8	80.0	80.1	85.9	95.5	100.3	98.1	114.2
Vlaams Gewest	419.4	384.5	501.1	614.4	635.8	666.1	659.5	691.8	732.8
Région Wallonne	149.0	158.2	159.4	179.7	184.5	187.3	193.1	218.8	254.3
Not registered by region	52.4	17.6	6.3	12.6	3.4	2.9	3.0	4.1	4.7
<b>DANMARK</b>	<b>423.7</b>	<b>463.1</b>	<b>471.6</b>	<b>536.4</b>	<b>590.5</b>	<b>625.7</b>	<b>683.0</b>	<b>658.8</b>	<b>629.2</b>
<b>DEUTSCHLAND</b>	<b>13 715.2</b>	<b>11 549.3</b>	<b>12 421.3</b>	<b>13 330.5</b>	<b>12 954.7</b>	<b>14 075.0</b>	<b>14 847.7</b>	<b>16 101.2</b>	<b>17 090.0</b>
Baden-Württemberg	3 206.9	2 761.6	2 876.8	2 817.8	2 931.4	3 200.0	3 380.0	3 800.0	4 017.9
Bayern	2 831.5	2 400.5	2 621.7	2 767.8	2 716.3	2 943.0	3 249.3	3 616.3	4 071.3
Berlin	318.6	269.1	286.7	290.6	324.8	369.4	440.7	432.1	403.5
Brandenburg	54.5	45.6	59.2	72.8	34.9	61.2	78.5	79.5	106.7
Bremen	90.7	65.5	44.8	40.7	38.5	42.7	37.9	24.9	39.0
Hamburg	232.4	179.1	204.1	226.0	261.6	281.1	220.7	295.7	313.4
Hessen	1 435.8	1 275.7	1 387.1	1 432.1	1 518.9	1 637.0	1 638.3	1 640.4	1 611.0
Mecklenburg-Vorpommern	42.6	27.7	53.2	23.0	15.3	19.1	22.0	22.5	32.3
Niedersachsen	451.9	431.7	442.7	729.7	740.7	703.5	759.3	985.0	1 138.0
Nordrhein-Westfalen	3 217.4	2 589.8	2 774.0	2 875.4	2 925.5	3 234.8	3 289.9	3 446.5	3 528.6
Rheinland-Pfalz	1 059.2	809.5	899.0	856.4	796.9	935.7	973.7	961.3	904.1
Saarland	75.0	38.8	57.4	84.3	103.1	96.4	101.9	108.4	115.9
Sachsen	92.0	75.4	105.6	356.3	148.5	165.7	182.9	220.2	242.2
Sachsen-Anhalt	6.0	13.3	7.1	147.8	40.6	63.5	67.0	74.3	76.9
Schleswig-Holstein	166.2	136.9	169.0	291.9	225.5	195.0	230.2	214.1	268.4
Thüringen	248.5	237.8	222.8	125.6	72.3	72.6	106.1	83.6	108.4
Not registered by region	186.0	191.4	210.3	192.5	59.8	54.4	69.4	96.3	112.6
<b>ELLADA</b>	<b>29.0</b>	<b>33.7</b>	<b>43.7</b>	<b>44.8</b>	<b>34.9</b>	<b>42.7</b>	<b>47.7</b>	<b>49.4</b>	<b>50.0</b>
Voreia Ellada	8.0	8.0	3.3	8.5	4.0	7.3	11.2	4.7	11.2
Kentriki Ellada	4.0	1.0	3.3	2.0	3.7	2.0	5.5	2.0	2.4
Attiki	16.2	20.0	31.4	29.7	21.6	30.5	26.0	40.4	32.4
Nisia Aigaiou, Kriti	0.5	3.7	2.3	4.6	5.7	2.0	5.0	2.3	3.0
Not registered by region	0.3	1.0	3.3	-	-	1.0	-	-	1.0
<b>ESPAÑA</b>	<b>280.7</b>	<b>332.2</b>	<b>355.7</b>	<b>376.0</b>	<b>461.9</b>	<b>475.9</b>	<b>510.8</b>	<b>545.3</b>	<b>618.0</b>
Noroeste	4.8	8.3	13.2	14.6	18.8	9.7	25.4	18.8	24.9
Noreste	26.8	47.2	51.5	65.0	60.7	50.9	67.7	98.6	92.7
Madrid	74.8	91.7	90.4	107.1	102.4	120.1	122.9	108.0	123.1
Centro (E)	4.8	5.5	9.1	18.8	12.1	21.6	19.8	31.4	27.9
Este	154.3	154.8	172.1	145.5	224.2	247.4	238.3	249.5	309.1
Sur	9.3	20.8	17.5	23.0	31.2	21.2	28.8	32.1	33.8
Canarias	3.0	2.9	1.0	1.0	11.0	5.0	8.0	5.0	6.5
Not registered by region	3.0	1.0	1.0	1.0	1.5	-	-	2.0	-

# Table 35A

## EUROPEAN PATENT APPLICATIONS BY REGION

TOTAL NUMBER

	1990	1991	1992	1993	1994	1995	1996	1997 <sup>1</sup>	1998 <sup>1</sup>
<b>FRANCE</b>	<b>5 500.8</b>	<b>5 251.5</b>	<b>5 464.1</b>	<b>5 158.5</b>	<b>5 259.5</b>	<b>5 584.5</b>	<b>5 772.7</b>	<b>5 807.2</b>	<b>6 227.0</b>
Île de France	2 308.1	2 253.9	2 373.1	2 162.8	2 168.0	2 259.5	2 361.7	2 312.9	2 481.5
Bassin Parisien	662.9	606.9	625.3	588.2	628.6	681.8	704.3	766.5	781.5
Nord-Pas-de-Calais	122.6	129.3	131.7	132.6	132.2	121.7	152.3	133.0	136.0
Est	440.9	402.5	449.4	421.3	424.9	421.4	430.1	449.3	528.6
Ouest	275.3	272.5	258.0	324.8	321.2	374.2	329.2	312.4	397.6
Sud-Ouest	308.0	283.6	301.9	268.1	295.6	298.1	342.6	314.1	340.1
Centre-Est	991.2	880.1	910.3	905.8	921.5	1 009.7	1 026.2	1 113.1	1 135.2
Méditerranée	382.0	410.0	399.4	343.3	349.1	404.8	417.7	393.0	415.0
Départements d'Outre-Mer	0.7	2.9	1.0	2.5	2.4	1.1	2.0	4.3	-
Not registered by region	9.2	10.0	14.1	9.0	16.0	12.2	6.6	8.6	11.5
<b>IRELAND</b>	<b>78.0</b>	<b>68.2</b>	<b>87.8</b>	<b>111.0</b>	<b>93.3</b>	<b>132.7</b>	<b>142.4</b>	<b>133.9</b>	<b>143.5</b>
<b>ITALIA</b>	<b>2 518.3</b>	<b>2 275.4</b>	<b>2 625.5</b>	<b>2 448.4</b>	<b>2 539.2</b>	<b>2 634.7</b>	<b>2 904.2</b>	<b>3 004.0</b>	<b>3 103.5</b>
Nord Ovest	434.2	373.8	406.4	415.9	398.6	409.7	456.8	470.9	448.9
Lombardia	949.9	812.9	965.2	908.8	896.0	904.5	968.5	1 040.8	1 103.3
Nord Est	388.6	328.5	368.4	363.4	385.0	424.4	466.0	474.5	476.5
Emilia-Romagna	281.3	314.9	357.6	303.4	347.7	405.2	447.2	425.2	474.6
Centro (I)	213.5	176.5	228.8	173.8	195.4	189.4	213.3	231.6	232.7
Lazio	159.6	148.3	184.1	161.2	154.8	147.4	163.7	162.8	174.0
Abruzzo-Molise	14.6	24.0	17.1	14.3	19.9	32.8	65.5	52.4	55.1
Campania	12.3	21.3	28.5	37.9	41.4	26.3	37.1	49.3	37.2
Sud	18.0	19.2	25.1	22.1	21.2	18.7	38.7	39.9	39.1
Sicilia	29.0	36.7	27.8	33.7	56.1	58.4	34.6	43.7	47.4
Sardegna	9.2	8.3	7.3	7.4	9.8	7.9	11.9	9.9	8.4
Not registered by region	8.1	11.0	9.1	6.5	13.4	10.0	1.0	3.0	6.4
<b>LUXEMBOURG (GRAND-DUCHÉ)</b>	<b>32.8</b>	<b>40.1</b>	<b>35.1</b>	<b>24.2</b>	<b>41.5</b>	<b>29.4</b>	<b>41.6</b>	<b>51.0</b>	<b>47.8</b>
<b>NEDERLAND</b>	<b>1 837.5</b>	<b>1 624.4</b>	<b>1 647.0</b>	<b>1 672.4</b>	<b>1 731.5</b>	<b>1 809.4</b>	<b>2 108.8</b>	<b>2 237.3</b>	<b>2 166.9</b>
Noord-Nederland	82.1	80.1	70.2	76.1	96.1	100.9	138.0	102.7	95.3
Oost-Nederland	259.3	248.3	231.8	241.0	309.8	337.6	363.0	338.4	335.8
West-Nederland	629.2	616.2	592.2	598.2	631.5	703.3	781.1	754.3	748.5
Zuid-Nederland	861.4	677.7	749.9	754.5	693.8	667.7	820.1	1 039.4	985.3
Not registered by region	5.6	2.2	2.9	2.5	0.2	-	6.7	2.6	1.9
<b>ÖSTERREICH</b>	<b>728.4</b>	<b>706.8</b>	<b>724.3</b>	<b>704.6</b>	<b>754.7</b>	<b>807.2</b>	<b>793.3</b>	<b>840.9</b>	<b>997.0</b>
Ostösterreich	252.1	289.7	297.7	260.5	294.9	317.8	278.4	307.9	336.6
Südösterreich	151.1	150.9	152.8	154.2	129.3	157.7	156.8	134.3	208.6
Westösterreich	324.2	261.5	266.7	285.2	328.0	323.9	355.4	384.4	440.7
Not registered by region	1.0	4.7	7.2	4.7	2.5	7.9	2.8	14.3	11.1
<b>PORTUGAL</b>	<b>5.3</b>	<b>8.8</b>	<b>13.0</b>	<b>15.6</b>	<b>22.1</b>	<b>15.9</b>	<b>15.2</b>	<b>24.0</b>	<b>19.6</b>
Continente	5.3	8.8	13.0	15.6	21.1	14.4	14.2	24.0	19.6
Açores	-	-	-	-	-	-	-	-	-
Madeira	-	-	-	-	1.0	0.5	1.0	-	-
Not registered by region	-	-	-	-	-	1.0	-	-	-
<b>SUOMI-FINLAND</b>	<b>503.1</b>	<b>585.0</b>	<b>546.6</b>	<b>728.8</b>	<b>788.8</b>	<b>892.8</b>	<b>890.9</b>	<b>890.3</b>	<b>997.6</b>
Manner-Suomi	494.8	577.8	543.0	720.7	781.6	885.7	883.5	880.2	991.8
Ahvenanmaa-Åland	1.0	-	-	1.0	-	-	-	3.0	0.3
Not registered by region	7.3	7.2	3.6	7.0	7.2	7.1	7.4	7.1	5.5
<b>SVERIGE</b>	<b>1 233.3</b>	<b>1 211.0</b>	<b>1 238.6</b>	<b>1 325.1</b>	<b>1 450.6</b>	<b>1 760.7</b>	<b>1 925.7</b>	<b>2 002.4</b>	<b>1 977.4</b>
<b>UNITED KINGDOM</b>	<b>4 727.1</b>	<b>4 388.7</b>	<b>4 318.8</b>	<b>4 367.8</b>	<b>4 493.9</b>	<b>4 572.3</b>	<b>4 850.9</b>	<b>4 735.5</b>	<b>4 849.7</b>

<sup>1</sup> Provisional.

**Table 36**  
**EUROPEAN PATENT APPLICATIONS**

BY IPC SECTION

1996

	A	B	C	D	E	F	G	H	TOTAL
<b>EU-15</b>	<b>5 802.1</b>	<b>8 011.4</b>	<b>6 139.4</b>	<b>831.9</b>	<b>1 733.9</b>	<b>3 754.6</b>	<b>4 702.0</b>	<b>5 515.6</b>	<b>36 490.9</b>
<b>EUR-11</b>	<b>4 440.2</b>	<b>6 603.6</b>	<b>4 892.7</b>	<b>684.9</b>	<b>1 394.2</b>	<b>3 013.6</b>	<b>3 664.7</b>	<b>4 289.6</b>	<b>28 983.5</b>
BELGIQUE-BELGIË	129.2	164.6	294.3	32.9	24.5	33.0	148.5	129.1	955.9
DANMARK	179.1	124.6	142.9	11.8	28.4	80.6	61.3	54.4	683.0
DEUTSCHLAND	1 863.2	3 680.5	2 609.0	333.0	739.1	1 785.8	1 772.2	2 064.9	14 847.7
ELLADA	12.7	10.7	9.2	1.9	3.0	4.0	3.8	2.5	47.7
ESPAÑA	149.7	111.1	81.8	9.9	34.5	46.8	42.0	35.0	510.8
FRANCE	1 093.5	1 100.5	920.7	90.6	241.8	590.8	811.6	923.2	5 772.7
IRELAND	46.1	20.8	18.7	-	4.3	5.0	24.5	23.1	142.4
ITALIA	609.0	765.0	378.4	103.5	133.3	259.9	329.8	325.4	2 904.2
LUXEMBOURG (GRAND-DUCHÉ)	2.3	22.8	6.7	0.7	2.3	4.7	2.2	-	41.6
NEDERLAND	353.9	343.6	366.1	24.0	102.8	133.3	357.1	428.0	2 108.8
ÖSTERREICH	110.6	219.0	119.9	30.1	70.5	89.1	79.3	74.8	793.3
PORTUGAL	3.3	1.2	4.6	-	-	2.7	3.5	-	15.2
SUOMI-FINLAND	79.4	174.6	92.7	60.3	41.2	62.6	93.9	286.2	890.9
SVERIGE	338.2	433.9	156.6	61.3	84.0	221.7	226.1	404.1	1 925.7
UNITED KINGDOM	832.0	838.6	938.1	72.1	224.3	434.7	746.2	765.0	4 850.9

**A** HUMAN NECESSITIES

**B** PERFORMING OPERATIONS; TRANSPORTING

**C** CHEMISTRY; METALLURGY

**D** TEXTILES; PAPER

**E** FIXED CONSTRUCTIONS

**F** MECHANICAL ENGINEERING; LIGHTING; HEATING; WEAPONS; BLASTING

**G** PHYSICS

**H** ELECTRICITY

**Table 36A**  
**EUROPEAN PATENT APPLICATIONS**  
**BY REGION**

**1996**

BY IPC SECTION

	A	B	C	D	E	F	G	H	TOTAL
<b>EU-15</b>	<b>5 802.1</b>	<b>8 011.4</b>	<b>6 139.4</b>	<b>831.9</b>	<b>1 733.9</b>	<b>3 754.6</b>	<b>4 702.0</b>	<b>5 515.6</b>	<b>36 490.9</b>
<b>EUR-11</b>	<b>4 440.2</b>	<b>6 603.6</b>	<b>4 892.7</b>	<b>684.9</b>	<b>1 394.2</b>	<b>3 013.6</b>	<b>3 664.7</b>	<b>4 289.6</b>	<b>28 983.5</b>
<b>BELGIQUE-BELGIË</b>	<b>129.2</b>	<b>164.6</b>	<b>294.3</b>	<b>32.9</b>	<b>24.5</b>	<b>33.0</b>	<b>148.5</b>	<b>129.1</b>	<b>955.9</b>
Bruxelles-Brussel	13.6	12.0	40.8	1.6	3.3	3.8	7.1	18.2	100.3
Vlaams Gewest	84.1	110.8	176.3	28.3	15.4	17.5	126.7	100.5	659.5
Région Wallonne	30.3	41.4	76.8	3.0	4.8	11.8	14.5	10.5	193.1
Not registered by region	1.2	0.3	0.3	-	1.0	-	0.2	-	3.0
<b>DANMARK</b>	<b>179.1</b>	<b>124.6</b>	<b>142.9</b>	<b>11.8</b>	<b>28.4</b>	<b>80.6</b>	<b>61.3</b>	<b>54.4</b>	<b>683.0</b>
<b>DEUTSCHLAND</b>	<b>1 863.2</b>	<b>3 680.5</b>	<b>2 609.0</b>	<b>333.0</b>	<b>739.1</b>	<b>1 785.8</b>	<b>1 772.2</b>	<b>2 064.9</b>	<b>14 847.7</b>
Baden Württemberg	396.7	976.2	290.1	94.3	154.2	618.2	403.2	447.0	3 380.0
Bayern	321.5	718.0	298.6	57.2	152.1	397.4	560.5	744.0	3 249.3
Berlin	79.2	74.1	57.6	5.9	16.1	20.3	88.1	99.4	440.7
Brandenburg	9.4	17.1	17.5	1.7	2.9	8.2	6.6	15.2	78.5
Bremen	3.6	9.6	3.1	0.8	3.0	8.7	6.3	3.0	37.9
Hamburg	46.8	34.5	24.2	0.8	8.7	10.0	39.0	56.8	220.7
Hessen	247.0	415.4	407.1	22.6	63.9	140.1	178.9	163.3	1 638.3
Mecklenburg-Vorpommern	4.8	6.0	1.7	-	0.1	1.3	6.6	1.4	22.0
Niedersachsen	114.4	246.4	106.2	6.4	36.2	73.0	80.3	96.6	759.3
Nordrhein-Westfalen	387.3	803.9	867.9	103.7	214.7	379.5	227.5	305.6	3 289.9
Rheinland-Pfalz	141.0	193.4	416.8	18.5	42.0	60.7	59.9	41.5	973.7
Saarland	12.3	33.4	13.2	3.2	17.8	7.3	9.0	5.8	101.9
Sachsen	13.9	44.1	32.8	11.3	6.0	22.2	30.8	21.8	182.9
Sachsen-Anhalt	4.5	18.5	22.3	0.5	4.2	5.8	7.5	3.7	67.0
Schleswig-Holstein	67.0	62.0	22.6	3.0	8.2	20.7	23.5	23.3	230.2
Thüringen	6.3	14.2	21.1	2.7	1.4	5.2	35.6	19.6	106.1
Not registered by region	7.7	13.9	6.2	0.7	7.5	7.4	8.7	17.3	69.4
<b>ELLADA</b>	<b>12.7</b>	<b>10.7</b>	<b>9.2</b>	<b>1.9</b>	<b>3.0</b>	<b>4.0</b>	<b>3.8</b>	<b>2.5</b>	<b>47.7</b>
Voreia Ellada	5.3	2.4	1.5	-	1.0	-	1.0	-	11.2
Kentriki Ellada	0.5	1.1	0.8	-	-	1.0	0.2	2.0	5.5
Attiki	6.5	5.0	6.2	1.2	2.0	3.0	1.6	0.5	26.0
Nisia Aigaiou, Kriti	0.3	2.3	0.7	0.7	-	-	1.0	-	5.0
Not registered by region	-	-	-	-	-	-	-	-	-
<b>ESPAÑA</b>	<b>149.7</b>	<b>111.1</b>	<b>81.8</b>	<b>9.9</b>	<b>34.5</b>	<b>46.8</b>	<b>42.0</b>	<b>35.0</b>	<b>510.8</b>
Noroeste	6.7	5.3	4.8	-	2.0	1.0	1.5	4.2	25.4
Noreste	14.9	18.6	4.0	3.0	4.0	8.5	10.2	4.5	67.7
Madrid	42.4	18.5	22.7	0.5	9.2	6.7	9.3	13.6	122.9
Centro (E)	5.8	1.0	3.1	-	5.0	3.4	-	1.5	19.8
Este	68.6	60.0	42.9	6.4	12.3	21.8	15.6	10.7	238.3
Sur	8.2	4.3	3.8	-	2.0	4.5	5.5	0.5	28.8
Canarias	3.0	3.5	0.5	-	-	1.0	-	-	8.0
Not registered by region	-	-	-	-	-	-	-	-	-
<b>FRANCE</b>	<b>1 093.5</b>	<b>1 100.5</b>	<b>920.7</b>	<b>90.6</b>	<b>241.8</b>	<b>590.8</b>	<b>811.6</b>	<b>923.2</b>	<b>5 772.7</b>
Île de France	418.0	391.2	347.8	11.7	73.0	277.1	398.5	444.4	2 361.7
Bassin Parisien	116.4	198.5	89.0	16.0	30.0	110.0	75.4	69.0	704.3
Nord-Pas-de-Calais	22.0	46.0	40.4	7.6	3.6	14.0	6.8	12.0	152.3
Est	63.0	101.5	83.3	12.9	42.7	28.0	42.9	55.8	430.1
Ouest	62.3	82.4	22.6	1.0	15.9	35.8	40.0	69.2	329.2
Sud-Ouest	63.0	54.8	70.7	7.5	22.1	33.3	45.2	46.2	342.6
Centre-Est	240.9	163.8	184.3	33.0	38.2	64.8	130.0	171.3	1 026.2
Méditerranée	104.7	62.1	80.8	0.9	16.4	26.3	71.4	55.1	417.7
Départements d'Outre-Mer	1.0	-	-	-	-	0.5	0.5	-	2.0
Not registered by region	2.4	0.2	1.9	-	-	1.0	1.0	0.2	6.6

**Table 36A**  
**EUROPEAN PATENT APPLICATIONS**  
**BY REGION**

BY IPC SECTION

1996

	A	B	C	D	E	F	G	H	TOTAL
<b>IRELAND</b>	46.1	20.8	18.7	-	4.3	5.0	24.5	23.1	142.4
<b>ITALIA</b>	609.0	765.0	378.4	103.5	133.3	259.9	329.8	325.4	2 904.2
Nord Ovest	47.2	148.7	31.7	7.4	13.3	73.7	73.5	61.2	456.8
Lombardia	172.1	197.4	155.0	47.9	39.0	66.1	134.8	156.1	968.5
Nord Est	136.3	115.9	53.9	16.7	32.6	40.6	39.5	30.6	466.0
Emilia-Romagna	88.2	187.4	42.9	6.0	28.8	37.4	34.1	22.3	447.2
Centro (I)	42.8	57.7	27.7	21.4	7.7	23.8	15.0	17.3	213.3
Lazio	50.8	29.1	44.6	2.8	4.3	7.5	12.1	12.5	163.7
Abruzzo-Molise	46.2	6.2	4.2	-	2.0	2.0	3.0	1.9	65.5
Campania	10.8	5.3	6.2	0.3	2.0	3.9	4.3	4.3	37.1
Sud	4.6	8.1	10.3	1.0	2.5	3.9	6.6	1.7	38.7
Sicilia	4.7	4.6	-	-	1.0	-	6.8	17.6	34.6
Sardegna	5.4	3.7	1.9	-	-	1.0	-	-	11.9
Not registered by region	-	1.0	-	-	-	-	-	-	1.0
<b>LUXEMBOURG (GRAND-DUCHÉ)</b>	2.3	22.8	6.7	0.7	2.3	4.7	2.2	-	41.6
<b>NEDERLAND</b>	353.9	343.6	366.1	24.0	102.8	133.3	357.1	428.0	2 108.8
Noord-Nederland	38.5	29.3	20.8	3.3	4.5	18.8	10.9	12.0	138.0
Oost-Nederland	64.1	97.5	56.2	7.4	16.3	34.7	54.6	32.3	363.0
West-Nederland	182.5	131.1	180.1	6.1	56.3	43.4	98.3	83.4	781.1
Zuid-Nederland	66.9	81.4	109.0	7.2	25.7	36.5	193.4	300.0	820.1
Not registered by region	2.0	4.3	-	-	-	-	-	0.3	6.7
<b>ÖSTERREICH</b>	110.6	219.0	119.9	30.1	70.5	89.1	79.3	74.8	793.3
Ostösterreich	46.1	61.9	33.8	7.8	27.1	25.6	35.3	40.8	278.4
Südösterreich	14.4	50.2	18.8	5.0	12.3	13.3	22.5	20.4	156.8
Westösterreich	50.1	105.8	66.0	17.2	31.2	50.2	21.4	13.6	355.4
Not registered by region	0.0	1.2	1.3	0.1	-	0.1	0.0	-	2.8
<b>PORTUGAL</b>	3.3	1.2	4.6	-	-	2.7	3.5	-	15.2
Continente	3.3	1.2	4.6	-	-	1.7	3.5	-	14.2
Açores	-	-	-	-	-	-	-	-	-
Madeira	-	-	-	-	-	1.0	-	-	1.0
Not registered by region	-	-	-	-	-	-	-	-	-
<b>SUOMI-FINLAND</b>	79.4	174.6	92.7	60.3	41.2	62.6	93.9	286.2	890.9
Manner-Suomi	76.4	174.5	91.0	60.3	40.8	62.0	93.3	285.2	883.5
Ahvenanmaa-Åland	-	-	-	-	-	-	-	-	-
Not registered by region	3.0	0.1	1.6	-	0.4	0.6	0.7	1.0	7.4
<b>SVERIGE</b>	338.2	433.9	156.6	61.3	84.0	221.7	226.1	404.1	1 925.7
<b>UNITED KINGDOM</b>	832.0	838.6	938.1	72.1	224.3	434.7	746.2	765.0	4 850.9

A HUMAN NECESSITIES

B PERFORMING OPERATIONS; TRANSPORTING

C CHEMISTRY; METALLURGY

D TEXTILES; PAPER

E FIXED CONSTRUCTIONS

F MECHANICAL ENGINEERING; LIGHTING; HEATING; WEAPONS; BLASTING

G PHYSICS

H ELECTRICITY

1997 <sup>1</sup>

BY IPC SECTION

	A	B	C	D	E	F	G	H	TOTAL
<b>EU-15</b>	<b>5 969.8</b>	<b>8 346.2</b>	<b>5 922.9</b>	<b>891.0</b>	<b>1 884.0</b>	<b>3 910.0</b>	<b>5 084.6</b>	<b>6 085.6</b>	<b>38 094.0</b>
<b>EUR-11</b>	<b>4 556.2</b>	<b>7 044.5</b>	<b>4 761.4</b>	<b>748.4</b>	<b>1 531.3</b>	<b>3 230.4</b>	<b>3 925.3</b>	<b>4 850.5</b>	<b>30 647.9</b>
BELGIQUE-BELGIË	141.0	158.7	322.2	28.6	41.7	52.4	160.8	107.4	1 012.7
DANMARK	199.7	101.6	143.7	16.3	39.7	54.0	54.8	49.0	658.8
DEUTSCHLAND	1 969.3	4 041.6	2 488.5	371.5	829.1	1 904.4	2 063.6	2 433.2	16 101.2
ELLADA	13.3	11.1	7.4	-	5.5	6.5	5.0	0.6	49.4
ESPAÑA	126.0	133.7	86.8	20.8	30.2	56.7	47.4	43.7	545.3
FRANCE	1 089.0	1 157.6	852.7	80.8	255.5	575.7	789.1	1 006.8	5 807.2
IRELAND	38.6	24.4	17.0	1.7	6.5	5.7	18.1	22.0	133.9
ITALIA	577.6	820.2	358.1	110.4	153.0	330.1	320.2	334.4	3 004.0
LUXEMBOURG (GRAND-DUCHÉ)	3.5	11.1	14.7	1.8	4.3	6.3	3.0	6.3	51.0
NEDERLAND	369.4	363.6	404.0	31.7	96.9	135.9	369.1	466.9	2 237.3
ÖSTERREICH	145.0	200.2	126.3	28.3	78.8	108.4	65.7	88.3	840.9
PORTUGAL	6.3	3.3	7.5	-	4.0	-	1.9	1.0	24.0
SUOMI-FINLAND	90.5	130.2	83.6	72.7	31.4	54.8	86.6	340.5	890.3
SVERIGE	348.5	437.5	143.3	53.0	93.6	211.5	249.8	465.3	2 002.4
UNITED KINGDOM	852.1	751.6	867.1	73.3	214.0	407.6	849.7	720.3	4 735.5

**A** HUMAN NECESSITIES

**B** PERFORMING OPERATIONS; TRANSPORTING

**C** CHEMISTRY; METALLURGY

**D** TEXTILES; PAPER

**E** FIXED CONSTRUCTIONS

**F** MECHANICAL ENGINEERING; LIGHTING; HEATING; WEAPONS; BLASTING

**G** PHYSICS

**H** ELECTRICITY

<sup>1</sup> Provisional.

**Table 37A**  
**EUROPEAN PATENT APPLICATIONS**  
**BY REGION**

BY IPC SECTION

1997 <sup>1</sup>

	A	B	C	D	E	F	G	H	TOTAL
<b>EU-15</b>	<b>5 969.8</b>	<b>8 346.2</b>	<b>5 922.9</b>	<b>891.0</b>	<b>1 884.0</b>	<b>3 910.0</b>	<b>5 084.6</b>	<b>6 085.6</b>	<b>38 094.0</b>
<b>EUR-11</b>	<b>4 556.2</b>	<b>7 044.5</b>	<b>4 761.4</b>	<b>748.4</b>	<b>1 531.3</b>	<b>3 230.4</b>	<b>3 925.3</b>	<b>4 850.5</b>	<b>30 647.9</b>
<b>BELGIQUE-BELGIË</b>	<b>141.0</b>	<b>158.7</b>	<b>322.2</b>	<b>28.6</b>	<b>41.7</b>	<b>52.4</b>	<b>160.8</b>	<b>107.4</b>	<b>1 012.7</b>
Bruxelles-Brussel	15.9	12.7	40.1	0.8	6.6	6.2	7.2	8.5	98.1
Vlaams Gewest	97.9	107.6	171.6	25.2	24.0	34.4	140.4	90.8	691.8
Région Wallonne	26.5	38.0	108.7	2.6	11.0	11.6	12.9	7.5	218.8
Not registered by region	0.8	0.3	1.9	-	0.1	0.1	0.3	0.6	4.1
<b>DANMARK</b>	<b>199.7</b>	<b>101.6</b>	<b>143.7</b>	<b>16.3</b>	<b>39.7</b>	<b>54.0</b>	<b>54.8</b>	<b>49.0</b>	<b>658.8</b>
<b>DEUTSCHLAND</b>	<b>1 969.3</b>	<b>4 041.6</b>	<b>2 488.5</b>	<b>371.5</b>	<b>829.1</b>	<b>1 904.4</b>	<b>2 063.6</b>	<b>2 433.2</b>	<b>16 101.2</b>
Baden Württemberg	397.5	1 072.0	307.1	136.1	167.8	625.0	534.5	560.1	3 800.0
Bayern	351.2	800.9	307.0	63.8	138.5	427.6	618.2	909.0	3 616.3
Berlin	72.5	59.7	60.8	4.3	10.5	20.4	82.2	121.7	432.1
Brandenburg	7.1	17.2	16.1	0.2	8.9	6.6	12.8	10.5	79.5
Bremen	4.3	10.1	1.7	-	-	3.0	2.5	3.3	24.9
Hamburg	64.4	51.9	29.5	0.7	6.7	14.7	63.6	64.2	295.7
Hessen	285.9	421.5	367.9	28.9	50.8	141.2	177.5	166.9	1 640.4
Mecklenburg-Vorpommern	7.3	5.0	1.2	-	0.5	1.5	5.6	1.5	22.5
Niedersachsen	109.3	362.0	101.1	9.4	57.8	107.6	105.9	132.0	985.0
Nordrhein-Westfalen	402.2	845.6	758.9	91.1	302.4	428.2	283.0	335.3	3 446.5
Rheinland-Pfalz	138.4	201.2	423.6	22.4	32.5	59.2	48.3	35.6	961.3
Saarland	15.4	28.3	9.7	1.7	22.5	15.1	10.7	5.1	108.4
Sachsen	23.9	58.2	37.8	5.7	13.5	16.3	35.8	28.9	220.2
Sachsen-Anhalt	7.2	18.0	24.4	0.3	0.5	7.7	9.3	6.8	74.3
Schleswig-Holstein	69.8	52.3	18.1	3.5	12.0	18.4	25.0	15.1	214.1
Thüringen	8.2	12.8	9.9	1.0	1.4	6.0	29.9	14.4	83.6
Not registered by region	4.8	24.9	13.7	2.5	3.0	5.9	19.0	22.5	96.3
<b>ELLADA</b>	<b>13.3</b>	<b>11.1</b>	<b>7.4</b>	<b>-</b>	<b>5.5</b>	<b>6.5</b>	<b>5.0</b>	<b>0.6</b>	<b>49.4</b>
Voreia Ellada	0.0	2.0	1.7	-	-	1.0	-	-	4.7
Kentriki Ellada	1.3	-	0.7	-	-	-	-	-	2.0
Attiki	11.9	9.1	4.8	-	5.5	5.5	3.0	0.6	40.4
Nisia Aigaiou, Kriti	0.1	-	0.2	-	-	-	2.0	-	2.3
Not registered by region	-	-	-	-	-	-	-	-	-
<b>ESPAÑA</b>	<b>126.0</b>	<b>133.7</b>	<b>86.8</b>	<b>20.8</b>	<b>30.2</b>	<b>56.7</b>	<b>47.4</b>	<b>43.7</b>	<b>545.3</b>
Noroeste	2.9	9.0	4.6	0.3	-	2.0	-	-	18.8
Noreste	12.7	26.0	8.7	10.8	14.3	14.5	6.9	4.7	98.6
Madrid	21.1	20.5	28.0	1.5	2.8	6.9	13.3	14.0	108.0
Centro (E)	9.1	6.2	6.4	-	2.4	4.3	0.8	2.2	31.4
Este	69.1	61.1	35.2	8.2	9.5	22.6	22.4	21.4	249.5
Sur	9.7	9.0	3.2	-	1.3	5.2	2.3	1.5	32.1
Canarias	1.5	1.7	0.3	-	-	1.0	0.5	-	5.0
Not registered by region	-	0.3	0.4	-	-	0.3	1.0	-	2.0
<b>FRANCE</b>	<b>1 089.0</b>	<b>1 157.6</b>	<b>852.7</b>	<b>80.8</b>	<b>255.5</b>	<b>575.7</b>	<b>789.1</b>	<b>1 006.8</b>	<b>5 807.2</b>
Île de France	414.0	409.1	306.9	10.9	89.2	228.1	381.8	472.9	2 312.9
Bassin Parisien	118.5	205.8	113.0	9.9	35.0	125.8	70.4	88.2	766.5
Nord-Pas-de-Calais	21.9	45.7	28.8	3.7	7.6	11.3	11.3	2.7	133.0
Est	81.9	107.9	68.8	14.7	38.7	40.8	48.1	48.2	449.3
Ouest	64.4	63.1	20.0	0.6	17.1	33.9	39.2	74.1	312.4
Sud-Ouest	63.8	48.9	56.2	5.4	12.3	30.6	37.3	59.6	314.1
Centre-Est	238.9	209.1	193.3	34.2	45.9	78.0	127.6	186.2	1 113.1
Méditerranée	84.1	65.2	62.8	1.4	8.4	26.7	71.5	72.9	393.0
Départements d'Outre-Mer	0.3	0.3	1.8	-	0.2	0.7	-	1.0	4.3
Not registered by region	1.2	2.5	1.1	-	1.0	-	1.9	1.0	8.6

<sup>1</sup> Provisional.



# Table 37A

## EUROPEAN PATENT APPLICATIONS BY REGION

1997 <sup>1</sup>

BY IPC SECTION

	A	B	C	D	E	F	G	H	TOTAL
<b>IRELAND</b>	<b>38.6</b>	<b>24.4</b>	<b>17.0</b>	<b>1.7</b>	<b>6.5</b>	<b>5.7</b>	<b>18.1</b>	<b>22.0</b>	<b>133.9</b>
<b>ITALIA</b>	<b>577.6</b>	<b>820.2</b>	<b>358.1</b>	<b>110.4</b>	<b>153.0</b>	<b>330.1</b>	<b>320.2</b>	<b>334.4</b>	<b>3 004.0</b>
Nord Ovest	61.8	152.0	45.5	7.7	21.3	77.4	57.5	47.8	470.9
Lombardia	165.7	235.6	155.5	43.7	59.8	92.2	128.3	160.1	1 040.8
Nord Est	131.9	128.1	29.3	23.7	27.0	61.0	34.9	38.6	474.5
Emilia-Romagna	72.4	193.9	37.6	3.3	18.3	46.2	40.9	12.7	425.2
Centro (I)	60.9	41.6	19.2	26.3	14.0	29.8	21.0	18.7	231.6
Lazio	31.9	28.4	49.1	3.7	5.5	6.3	14.5	23.3	162.8
Abruzzo-Molise	29.3	3.5	5.6	-	1.0	5.0	2.6	5.4	52.4
Campania	4.5	20.9	11.2	-	2.0	0.8	6.9	3.1	49.3
Sud	6.2	7.7	3.6	2.0	0.8	8.5	7.2	3.8	39.9
Sicilia	6.5	5.9	1.0	-	3.0	2.0	5.5	19.9	43.7
Sardegna	5.8	2.6	0.5	-	-	1.0	-	-	9.9
Not registered by region	0.7	-	-	-	0.3	-	1.0	1.0	3.0
<b>LUXEMBOURG (GRAND-DUCHÉ)</b>	<b>3.5</b>	<b>11.1</b>	<b>14.7</b>	<b>1.8</b>	<b>4.3</b>	<b>6.3</b>	<b>3.0</b>	<b>6.3</b>	<b>51.0</b>
<b>NEDERLAND</b>	<b>369.4</b>	<b>363.6</b>	<b>404.0</b>	<b>31.7</b>	<b>96.9</b>	<b>135.9</b>	<b>369.1</b>	<b>466.9</b>	<b>2 237.3</b>
Noord-Nederland	30.7	19.8	21.9	1.1	5.8	13.3	7.2	2.9	102.7
Oost-Nederland	51.6	103.9	56.3	10.4	15.7	28.4	35.2	36.9	338.4
West-Nederland	182.6	135.7	183.5	6.3	53.2	40.1	90.8	62.2	754.3
Zuid-Nederland	103.3	103.2	142.2	13.9	22.1	54.1	236.0	364.6	1 039.4
Not registered by region	1.1	1.0	0.1	-	-	-	-	0.3	2.6
<b>ÖSTERREICH</b>	<b>145.0</b>	<b>200.2</b>	<b>126.3</b>	<b>28.3</b>	<b>78.8</b>	<b>108.4</b>	<b>65.7</b>	<b>88.3</b>	<b>840.9</b>
Ostösterreich	59.0	62.0	41.5	7.5	32.2	31.2	28.5	46.0	307.9
Südösterreich	20.4	30.3	14.8	6.4	13.2	11.1	11.0	27.0	134.3
Westösterreich	63.7	102.4	66.7	13.9	32.2	64.3	26.1	15.2	384.4
Not registered by region	2.0	5.5	3.3	0.5	1.3	1.8	-	-	14.3
<b>PORTUGAL</b>	<b>6.3</b>	<b>3.3</b>	<b>7.5</b>	<b>-</b>	<b>4.0</b>	<b>-</b>	<b>1.9</b>	<b>1.0</b>	<b>24.0</b>
Continente	6.3	3.3	7.5	-	4.0	-	1.9	1.0	24.0
Açores	-	-	-	-	-	-	-	-	-
Madeira	-	-	-	-	-	-	-	-	-
Not registered by region	-	-	-	-	-	-	-	-	-
<b>SUOMI-FINLAND</b>	<b>90.5</b>	<b>130.2</b>	<b>83.6</b>	<b>72.7</b>	<b>31.4</b>	<b>54.8</b>	<b>86.6</b>	<b>340.5</b>	<b>890.3</b>
Manner-Suomi	87.5	126.7	83.1	72.7	30.1	54.3	86.4	339.5	880.2
Ahvenanmaa-Åland	1.0	2.0	-	-	-	-	-	-	3.0
Not registered by region	2.0	1.5	0.5	-	1.3	0.5	0.2	1.1	7.1
<b>SVERIGE</b>	<b>348.5</b>	<b>437.5</b>	<b>143.3</b>	<b>53.0</b>	<b>93.6</b>	<b>211.5</b>	<b>249.8</b>	<b>465.3</b>	<b>2 002.4</b>
<b>UNITED KINGDOM</b>	<b>852.1</b>	<b>751.6</b>	<b>867.1</b>	<b>73.3</b>	<b>214.0</b>	<b>407.6</b>	<b>849.7</b>	<b>720.3</b>	<b>4 735.5</b>

**A** HUMAN NECESSITIES

**B** PERFORMING OPERATIONS; TRANSPORTING

**C** CHEMISTRY; METALLURGY

**D** TEXTILES; PAPER

**E** FIXED CONSTRUCTIONS

**F** MECHANICAL ENGINEERING; LIGHTING; HEATING; WEAPONS; BLASTING

**G** PHYSICS

**H** ELECTRICITY

**Table 38**  
**EUROPEAN PATENT APPLICATIONS**

BY IPC SECTION

1998 <sup>1</sup>

	A	B	C	D	E	F	G	H	TOTAL
<b>EU-15</b>	<b>6 108.4</b>	<b>8 698.7</b>	<b>5 768.7</b>	<b>932.5</b>	<b>1 972.7</b>	<b>4 213.5</b>	<b>5 337.0</b>	<b>6 991.6</b>	<b>40 023.1</b>
<b>EUR-11</b>	<b>4 714.8</b>	<b>7 351.1</b>	<b>4 637.1</b>	<b>787.5</b>	<b>1 644.2</b>	<b>3 590.9</b>	<b>4 198.5</b>	<b>5 592.7</b>	<b>32 516.7</b>
BELGIQUE-BELGIË	175.5	199.0	311.5	28.4	50.1	55.6	145.1	140.7	1 105.9
DANMARK	168.4	96.4	111.3	11.2	33.0	53.3	66.9	88.7	629.2
DEUTSCHLAND	2 046.0	4 137.0	2 383.4	376.0	870.9	2 218.0	2 259.0	2 799.6	17 090.0
ELLADA	16.3	10.5	5.9	-	3.0	9.0	2.6	2.8	50.0
ESPAÑA	138.3	149.7	81.5	16.8	39.9	50.7	58.3	82.7	618.0
FRANCE	1 095.6	1 188.4	862.3	103.3	283.9	596.0	919.5	1 178.0	6 227.0
IRELAND	40.8	26.4	13.8	1.0	8.0	10.0	18.2	25.4	143.5
ITALIA	603.2	878.2	356.5	115.9	162.5	337.3	286.2	363.8	3 103.5
LUXEMBOURG (GRAND-DUCHÉ)	7.1	19.5	9.6	1.8	2.0	5.5	0.8	1.5	47.8
NEDERLAND	346.3	370.8	394.5	13.0	116.0	119.5	327.8	478.9	2 166.9
ÖSTERREICH	161.4	248.5	134.3	35.0	76.7	139.2	84.6	117.3	997.0
PORTUGAL	4.2	2.6	1.9	1.0	3.0	3.8	2.6	0.5	19.6
SUOMI-FINLAND	96.3	131.0	87.8	95.2	31.1	55.2	96.6	404.4	997.6
SVERIGE	317.5	408.3	140.1	60.8	71.7	179.6	223.5	575.9	1 977.4
UNITED KINGDOM	891.4	832.4	874.3	73.0	220.9	380.7	845.5	731.5	4 849.7

**A** HUMAN NECESSITIES

**B** PERFORMING OPERATIONS; TRANSPORTING

**C** CHEMISTRY; METALLURGY

**D** TEXTILES; PAPER

**E** FIXED CONSTRUCTIONS

**F** MECHANICAL ENGINEERING; LIGHTING; HEATING; WEAPONS; BLASTING

**G** PHYSICS

**H** ELECTRICITY

<sup>1</sup> Provisional.

## Table 38A EUROPEAN PATENT APPLICATIONS BY REGION

1998 <sup>1</sup>

BY IPC SECTION

	A	B	C	D	E	F	G	H	TOTAL
<b>EU-15</b>	<b>6 108.4</b>	<b>8 698.7</b>	<b>5 768.7</b>	<b>932.5</b>	<b>1 972.7</b>	<b>4 213.5</b>	<b>5 337.0</b>	<b>6 991.6</b>	<b>40 023.1</b>
<b>EUR-11</b>	<b>4 714.8</b>	<b>7 351.1</b>	<b>4 637.1</b>	<b>787.5</b>	<b>1 644.2</b>	<b>3 590.9</b>	<b>4 198.5</b>	<b>5 592.7</b>	<b>32 516.7</b>
<b>BELGIQUE-BELGIË</b>	<b>175.5</b>	<b>199.0</b>	<b>311.5</b>	<b>28.4</b>	<b>50.1</b>	<b>55.6</b>	<b>145.1</b>	<b>140.7</b>	<b>1 105.9</b>
Bruxelles-Brussel	25.8	10.2	48.8	1.5	4.1	4.0	9.6	10.3	114.2
Vlaams Gewest	119.3	144.2	148.4	24.6	33.0	28.8	121.7	112.7	732.8
Région Wallonne	29.9	44.3	110.7	2.3	13.0	22.8	13.6	17.7	254.3
Not registered by region	0.5	0.3	3.7	-	-	-	0.2	-	4.7
<b>DANMARK</b>	<b>168.4</b>	<b>96.4</b>	<b>111.3</b>	<b>11.2</b>	<b>33.0</b>	<b>53.3</b>	<b>66.9</b>	<b>88.7</b>	<b>629.2</b>
<b>DEUTSCHLAND</b>	<b>2 046.0</b>	<b>4 137.0</b>	<b>2 383.4</b>	<b>376.0</b>	<b>870.9</b>	<b>2 218.0</b>	<b>2 259.0</b>	<b>2 799.6</b>	<b>17 090.0</b>
Baden Württemberg	410.9	1 030.4	312.9	132.8	198.7	763.5	550.5	618.2	4 017.9
Bayern	363.5	874.8	346.6	62.7	157.0	508.9	679.3	1 078.4	4 071.3
Berlin	59.5	55.8	56.8	11.8	7.9	12.9	79.4	119.4	403.5
Brandenburg	9.8	21.0	24.4	4.5	4.1	10.7	15.3	17.0	106.7
Bremen	2.6	13.3	1.6	2.1	2.9	3.9	9.1	3.4	39.0
Hamburg	53.9	72.7	27.2	1.9	9.5	15.5	60.5	72.3	313.4
Hessen	261.7	376.5	342.8	20.2	84.5	168.8	198.3	158.3	1 611.0
Mecklenburg-Vorpommern	8.5	7.1	3.5	1.0	0.9	4.6	3.0	3.8	32.3
Niedersachsen	146.4	368.1	98.3	10.6	67.7	150.3	148.5	148.1	1 138.0
Nordrhein-Westfalen	428.5	901.4	709.7	103.1	237.6	438.8	317.2	392.3	3 528.6
Rheinland-Pfalz	148.7	168.9	328.6	13.7	49.2	49.5	78.0	67.5	904.1
Saarland	12.3	38.0	11.3	1.1	10.3	21.6	10.8	10.4	115.9
Sachsen	17.8	69.4	41.3	4.8	6.7	23.8	28.0	50.2	242.2
Sachsen-Anhalt	10.2	17.1	27.2	0.2	5.7	3.9	8.4	4.5	76.9
Schleswig-Holstein	78.6	68.5	20.0	0.3	16.6	20.1	37.8	26.6	268.4
Thüringen	15.1	18.0	20.2	0.7	5.9	10.5	24.5	13.5	108.4
Not registered by region	18.2	36.1	11.0	4.7	5.9	10.8	10.4	15.6	112.6
<b>ELLADA</b>	<b>16.3</b>	<b>10.5</b>	<b>5.9</b>	<b>-</b>	<b>3.0</b>	<b>9.0</b>	<b>2.6</b>	<b>2.8</b>	<b>50.0</b>
Voreia Ellada	6.0	1.7	-	-	1.0	1.5	1.1	-	11.2
Kentriki Ellada	0.1	1.0	0.4	-	-	-	0.7	0.2	2.4
Attiki	9.2	7.9	4.5	-	1.0	6.5	0.8	2.6	32.4
Nisia Aigaiou, Kriti	1.0	-	1.0	-	1.0	-	-	-	3.0
Not registered by region	-	-	-	-	-	1.0	-	-	1.0
<b>ESPAÑA</b>	<b>138.3</b>	<b>149.7</b>	<b>81.5</b>	<b>16.8</b>	<b>39.9</b>	<b>50.7</b>	<b>58.3</b>	<b>82.7</b>	<b>618.0</b>
Noroeste	6.5	7.1	1.9	0.3	4.0	1.0	2.0	2.1	24.9
Noreste	13.5	22.2	6.9	11.0	10.2	13.9	7.5	7.5	92.7
Madrid	28.7	18.1	26.5	0.5	2.0	8.5	13.7	25.1	123.1
Centro (E)	8.7	6.0	4.7	-	4.0	2.1	-	2.5	27.9
Este	74.7	84.1	38.3	5.0	14.3	19.7	30.9	42.2	309.1
Sur	6.2	10.2	3.0	-	4.5	4.5	2.0	3.3	33.8
Canarias	0.1	2.0	0.3	-	1.0	1.0	2.1	-	6.5
Not registered by region	-	-	-	-	-	-	-	-	-
<b>FRANCE</b>	<b>1 095.6</b>	<b>1 188.4</b>	<b>862.3</b>	<b>103.3</b>	<b>283.9</b>	<b>596.0</b>	<b>919.5</b>	<b>1 178.0</b>	<b>6 227.0</b>
Île de France	410.7	425.2	305.4	17.9	66.5	245.6	450.9	559.5	2 481.5
Bassin Parisien	129.9	209.2	113.7	16.8	42.3	115.8	57.8	96.0	781.5
Nord-Pas-de-Calais	28.7	33.6	33.1	7.8	4.2	10.0	10.5	8.3	136.0
Est	97.8	115.9	81.8	15.9	68.2	48.0	56.9	44.1	528.6
Ouest	74.3	96.6	27.4	2.4	17.8	39.3	47.9	91.9	397.6
Sud-Ouest	65.7	53.2	49.9	6.8	12.2	26.4	49.2	76.7	340.1
Centre-Est	209.2	182.8	185.0	34.4	53.9	86.1	149.5	234.5	1 135.2
Méditerranée	75.8	69.0	65.6	1.4	18.7	22.9	95.4	66.2	415.0
Départements d'Outre-Mer	-	-	-	-	-	-	-	-	-
Not registered by region	3.5	3.1	0.4	-	0.1	2.0	1.6	0.8	11.5

<sup>1</sup> Provisional.

**Table 38A**  
**EUROPEAN PATENT APPLICATIONS**  
**BY REGION**

BY IPC SECTION

1998 <sup>1</sup>

	A	B	C	D	E	F	G	H	TOTAL
<b>IRELAND</b>	40.8	26.4	13.8	1.0	8.0	10.0	18.2	25.4	143.5
<b>ITALIA</b>	603.2	878.2	356.5	115.9	162.5	337.3	286.2	363.8	3 103.5
Nord Ovest	60.2	165.2	29.1	3.3	14.5	66.4	50.7	59.6	448.9
Lombardia	177.2	245.5	145.8	66.1	50.3	117.3	103.3	197.8	1 103.3
Nord Est	117.9	130.8	44.3	23.3	34.8	57.5	42.9	25.0	476.5
Emilia-Romagna	76.0	218.1	39.1	5.4	23.5	52.7	33.7	26.1	474.6
Centro (I)	56.3	59.3	24.3	15.4	22.3	20.1	19.5	15.5	232.7
Lazio	59.5	25.5	55.0	0.1	6.6	5.5	16.2	5.7	174.0
Abruzzo-Molise	28.7	10.1	5.7	1.2	2.0	3.5	1.8	2.2	55.1
Campania	12.4	11.8	7.0	-	2.0	1.0	2.9	0.1	37.2
Sud	7.9	4.6	3.1	-	2.5	9.7	7.5	3.8	39.1
Sicilia	5.0	5.0	1.0	-	1.0	2.5	5.0	28.0	47.4
Sardegna	1.7	1.2	1.2	-	3.0	1.3	-	-	8.4
Not registered by region	0.5	1.2	1.0	1.0	-	-	2.8	-	6.4
<b>LUXEMBOURG (GRAND-DUCHÉ)</b>	7.1	19.5	9.6	1.8	2.0	5.5	0.8	1.5	47.8
<b>NEDERLAND</b>	346.3	370.8	394.5	13.0	116.0	119.5	327.8	478.9	2 166.9
Noord-Nederland	21.0	32.4	9.9	2.2	4.2	8.9	8.8	7.9	95.3
Oost-Nederland	56.4	89.2	60.3	4.9	22.5	25.4	37.5	39.8	335.8
West-Nederland	173.8	140.0	183.7	4.5	60.7	52.4	62.5	71.0	748.5
Zuid-Nederland	94.4	108.3	140.6	1.5	28.6	32.8	219.0	360.2	985.3
Not registered by region	0.7	1.0	0.1	-	-	-	0.1	-	1.9
<b>ÖSTERREICH</b>	161.4	248.5	134.3	35.0	76.7	139.2	84.6	117.3	997.0
Ostösterreich	63.8	81.6	44.9	8.2	18.7	35.6	28.8	55.1	336.6
Südösterreich	19.9	54.3	22.9	8.2	15.4	24.7	22.9	40.3	208.6
Westösterreich	74.2	108.9	64.6	18.6	41.1	78.8	32.6	21.9	440.7
Not registered by region	3.4	3.7	1.9	-	1.5	0.2	0.3	-	11.1
<b>PORTUGAL</b>	4.2	2.6	1.9	1.0	3.0	3.8	2.6	0.5	19.6
Continente	4.2	2.6	1.9	1.0	3.0	3.8	2.6	0.5	19.6
Açores	-	-	-	-	-	-	-	-	-
Madeira	-	-	-	-	-	-	-	-	-
Not registered by region	-	-	-	-	-	-	-	-	-
<b>SUOMI-FINLAND</b>	96.3	131.0	87.8	95.2	31.1	55.2	96.6	404.4	997.6
Manner-Suomi	94.8	129.2	87.8	95.2	31.1	55.2	96.3	402.1	991.8
Ahvenanmaa-Åland	-	-	-	-	-	-	-	0.3	0.3
Not registered by region	1.5	1.8	-	-	-	-	0.3	2.0	5.5
<b>SVERIGE</b>	317.5	408.3	140.1	60.8	71.7	179.6	223.5	575.9	1 977.4
<b>UNITED KINGDOM</b>	891.4	832.4	874.3	73.0	220.9	380.7	845.5	731.5	4 849.7

A HUMAN NECESSITIES

B PERFORMING OPERATIONS; TRANSPORTING

C CHEMISTRY; METALLURGY

D TEXTILES; PAPER

E FIXED CONSTRUCTIONS

F MECHANICAL ENGINEERING; LIGHTING; HEATING; WEAPONS; BLASTING

G PHYSICS

H ELECTRICITY

	1990	1991	1992	1993	1994	1995	1996	1997 <sup>1</sup>	1998 <sup>1</sup>
<b>EU-15</b>	<b>93.04</b>	<b>79.75</b>	<b>83.72</b>	<b>85.97</b>	<b>86.73</b>	<b>92.62</b>	<b>97.92</b>	<b>101.88</b>	<b>106.73</b>
<b>EUR-11</b>	<b>97.30</b>	<b>81.20</b>	<b>86.51</b>	<b>88.78</b>	<b>88.81</b>	<b>94.98</b>	<b>100.15</b>	<b>105.56</b>	<b>111.68</b>
BELGIQUE-BELGIË	70.19	61.30	74.51	88.07	90.05	93.96	94.24	99.47	108.38
DANMARK	82.51	89.99	91.35	103.55	113.64	119.96	130.08	124.89	118.63
DEUTSCHLAND	218.82 <sup>2</sup>	144.81	154.73	164.62	159.27	172.71	181.47	196.33	208.22
ELLADA	2.86	3.30	4.25	4.33	3.36	4.09	4.56	4.71	4.75
ESPAÑA	7.21	8.52	9.11	9.61	11.81	12.15	13.02	13.88	15.69
FRANCE	97.19	92.30	95.50	89.67	91.03	96.25	99.09	99.09	105.83
IRELAND	22.24	19.36	24.76	31.10	26.07	36.90	39.38	36.67	38.63
ITALIA	44.42	40.10	46.26	42.98	44.44	46.01	50.66	52.28	53.88
LUXEMBOURG (GRAND-DUCHÉ)	86.68	104.40	90.02	61.16	103.42	72.26	100.78	121.92	112.17
NEDERLAND	123.40	108.23	108.88	109.76	112.86	117.31	136.11	143.72	137.99
ÖSTERREICH	94.73	90.98	92.06	88.49	94.16	100.40	98.48	104.23	123.42
PORTUGAL	0.54	0.89	1.32	1.58	2.24	1.60	1.53	2.41	1.96
SUOMI-FINLAND	101.14	117.03	108.68	144.16	155.34	175.10	174.11	173.47	193.52
SVERIGE	144.64	140.96	143.29	152.44	165.87	199.70	217.91	226.40	223.46
UNITED KINGDOM	82.46	76.08	74.59	75.18	77.09	78.16	82.62	80.27	81.96

<sup>1</sup> Provisional.

<sup>2</sup> Only West Germany.

**Table 39A**  
**EUROPEAN PATENT APPLICATIONS**  
**BY REGION**

Per MIO population

	1990	1991	1992	1993	1994	1995	1996	1997 <sup>1</sup>	1998 <sup>1</sup>
<b>EU-15</b>	<b>93.04</b>	<b>79.75</b>	<b>83.72</b>	<b>85.97</b>	<b>86.73</b>	<b>92.62</b>	<b>97.92</b>	<b>101.88</b>	<b>106.73</b>
<b>EUR-11</b>	<b>97.30</b>	<b>81.20</b>	<b>86.51</b>	<b>88.78</b>	<b>88.81</b>	<b>94.98</b>	<b>100.15</b>	<b>105.56</b>	<b>111.68</b>
<b>BELGIQUE-BELGIË</b>	<b>70.19</b>	<b>61.30</b>	<b>74.51</b>	<b>88.07</b>	<b>90.05</b>	<b>93.96</b>	<b>94.24</b>	<b>99.47</b>	<b>108.38</b>
Bruxelles-Brussel	80.42	53.96	84.11	84.29	90.51	100.40	105.81	102.99	119.71
Vlaams Gewest	73.06	66.67	86.48	105.48	108.73	113.56	112.15	117.2	123.86
Région Wallonne	45.92	48.55	48.64	54.56	55.84	56.53	58.25	65.76	76.25
<b>DANMARK</b>	<b>82.51</b>	<b>89.99</b>	<b>91.35</b>	<b>103.55</b>	<b>113.64</b>	<b>119.96</b>	<b>130.08</b>	<b>124.89</b>	<b>118.63</b>
<b>DEUTSCHLAND</b>	<b>218.82 <sup>2</sup></b>	<b>144.81</b>	<b>154.73</b>	<b>164.62</b>	<b>159.27</b>	<b>172.71</b>	<b>181.47</b>	<b>196.33</b>	<b>208.22</b>
Baden-Württemberg	333.41	281.16	287.63	277.65	286.44	311.69	327.54	366.28	386.97
Bayern	252.35	209.67	226.09	235.13	228.96	246.98	270.92	300.26	337.78
Berlin	149.53	78.38	83.18	83.84	93.46	106.46	126.96	124.93	116.54
Brandenburg	:	17.67	23.27	28.62	13.75	24.15	30.88	31.12	41.75
Bremen	134.69	96.02	65.57	59.29	56.40	62.77	55.77	36.71	57.45
Hamburg	142.91	108.36	122.33	133.85	153.64	164.92	129.23	173.15	183.38
Hessen	253.66	221.35	237.62	241.80	254.54	273.87	272.60	272.17	267.07
Mecklenburg-Vorpommern	:	14.38	28.11	12.32	8.30	10.40	12.05	12.38	17.74
Niedersachsen	62.04	58.44	59.21	96.29	96.85	91.24	97.59	126.04	145.51
Nordrhein-Westfalen	188.11	149.27	158.43	162.64	164.73	181.67	183.86	192.03	196.45
Rheinland-Pfalz	286.13	215.09	235.26	220.66	202.99	236.93	244.78	240.29	225.79
Saarland	70.41	36.14	53.30	77.80	95.05	88.96	93.96	99.97	106.77
Sachsen	18.77	15.83	22.56	76.77	32.23	36.17	40.06	48.45	53.23
Sachsen-Anhalt	2.02	4.63	2.50	52.84	14.63	23.03	24.47	27.28	28.22
Schleswig-Holstein	64.07	52.14	63.79	108.92	83.68	72.02	84.48	78.07	97.82
Thüringen	:	91.08	86.63	49.34	28.55	28.84	42.37	33.56	43.47
<b>ELLADA</b>	<b>2.86</b>	<b>3.30</b>	<b>4.25</b>	<b>4.33</b>	<b>3.36</b>	<b>4.09</b>	<b>4.56</b>	<b>4.71</b>	<b>4.75</b>
<b>ESPAÑA</b>	<b>7.21</b>	<b>8.52</b>	<b>9.11</b>	<b>9.61</b>	<b>11.81</b>	<b>12.15</b>	<b>13.02</b>	<b>13.88</b>	<b>15.69</b>
Noroeste	1.07	1.87	2.96	3.30	4.32	2.23	5.88	4.36	5.74
Noreste	6.50	11.45	12.50	15.78	14.95	12.57	16.75	24.45	22.90
Madrid	15.35	18.77	18.43	21.78	20.49	23.99	24.51	21.51	24.42
Centro (E)	0.87	1.01	1.66	3.44	2.30	4.10	3.74	5.94	5.26
Este	14.73	14.76	16.40	13.84	21.00	23.14	22.26	23.29	28.74
Sur	1.16	2.57	2.16	2.82	3.78	2.56	3.46	3.84	4.02
Canarias	2.03	1.92	0.67	0.66	7.20	3.24	5.13	3.18	4.12
<b>FRANCE</b>	<b>97.19</b>	<b>92.30</b>	<b>95.50</b>	<b>89.67</b>	<b>91.03</b>	<b>96.25</b>	<b>99.09</b>	<b>99.09</b>	<b>105.83</b>
Île de France	216.70	209.85	219.27	198.28	197.72	205.83	214.17	208.5	222.82
Bassin Parisien	64.57	58.94	60.40	56.66	60.38	65.22	67.20	72.71	73.84
Nord-Pas-de-Calais	30.90	32.58	33.13	33.30	33.13	30.45	38.05	33.02	33.65
Est	87.66	79.95	89.13	83.39	83.86	82.39	83.85	87.07	102.03
Ouest	36.95	36.45	34.31	42.97	42.30	49.20	43.09	40.65	51.53
Sud-Ouest	51.77	47.47	50.29	44.45	48.80	49.04	56.16	51.19	55.20
Centre-Est	148.62	131.11	134.67	133.14	134.82	146.66	148.24	159.83	162.36
Méditerranée	57.74	61.25	59.13	50.41	50.88	58.59	60.04	56.15	59.05

## Table 39A

### EUROPEAN PATENT APPLICATIONS BY REGION

Per MIO population

	1990	1991	1992	1993	1994	1995	1996	1997 <sup>1</sup>	1998 <sup>1</sup>
<b>IRELAND</b>	22.24	19.36	24.76	31.10	26.07	36.90	39.38	36.67	38.63
<b>ITALIA</b>	44.42	40.10	46.26	42.98	44.44	46.01	50.66	52.28	53.88
Nord Ovest	70.78	61.20	66.75	68.30	65.48	67.39	75.31	77.66	73.84
Lombardia	107.47	91.84	109.02	102.32	100.66	101.51	108.51	116.18	122.87
Nord Est	60.25	50.86	56.97	56.02	59.12	65.07	71.31	72.36	72.48
Emilia-Romagna	72.09	80.61	91.54	77.38	88.61	103.29	113.94	107.97	120.25
Centro (I)	37.03	30.58	39.67	30.08	33.77	32.72	36.83	39.91	40.00
Lazio	31.20	28.91	35.81	31.22	29.86	28.37	31.46	31.19	33.27
Abruzzo-Molise	9.25	15.23	10.83	9.02	12.50	20.47	40.87	32.68	34.26
Campania	2.20	3.79	5.07	6.68	7.25	4.58	6.43	8.52	6.41
Sud	2.69	2.85	3.74	3.29	3.13	2.76	5.71	5.89	5.76
Sicilia	5.84	7.38	5.61	6.75	11.16	11.50	6.80	8.56	9.28
Sardegna	5.64	5.05	4.40	4.49	5.89	4.74	7.18	5.94	5.02
<b>LUXEMBOURG (GRAND-DUCHÉ)</b>	86.68	104.40	90.02	61.16	103.42	72.26	100.78	121.92	112.17
<b>NEDERLAND</b>	123.40	108.23	108.88	109.76	112.86	117.31	136.11	143.72	137.99
Noord-Nederland	51.52	50.13	43.81	47.36	59.49	62.16	84.81	62.86	57.82
Oost-Nederland	85.41	81.02	74.92	77.20	98.37	106.25	113.32	104.90	103.20
West-Nederland	90.30	87.69	83.53	83.74	87.83	97.43	107.89	103.79	102.10
Zuid-Nederland	261.54	204.20	224.48	224.32	204.97	196.02	239.51	302.13	283.96
<b>ÖSTERREICH</b>	94.73	90.98	92.06	88.49	94.16	100.40	98.48	104.23	123.42
Ostösterreich	77.81	88.48	89.72	77.64	87.29	93.95	82.14	90.45	98.78
Südösterreich	87.68	87.21	87.68	87.68	73.38	89.36	88.56	75.85	117.65
Westösterreich	118.94	94.58	94.98	100.12	114.08	111.96	122.72	132.86	152.11
<b>PORTUGAL</b>	0.54	0.89	1.32	1.58	2.24	1.60	1.53	2.41	1.96
<b>SUOMI-FINLAND</b>	101.14	117.03	108.68	144.16	155.34	175.10	174.11	173.47	193.52
Manner-Suomi	99.96	116.16	108.51	143.29	154.68	174.57	173.52	172.35	193.33
Ahvenanmaa-Åland	41.32	-	-	40.00	-	-	-	118.58	13.20
<b>SVERIGE</b>	144.64	140.96	143.29	152.44	165.87	199.70	217.91	226.40	223.46
<b>UNITED KINGDOM</b>	82.46	76.08	74.59	75.18	77.09	78.16	82.62	80.27	81.96

<sup>1</sup> Provisional.

<sup>2</sup> Only West Germany.

# Table 40 EUROPEAN PATENT APPLICATIONS

Per MIO labour force

	1990	1991	1992	1993	1994	1995	1996	1997 <sup>1</sup>	1998 <sup>1</sup>
<b>EU-15</b>	<b>206.52</b>	<b>175.57</b>	<b>186.52</b>	<b>192.21</b>	<b>193.67</b>	<b>207.08</b>	<b>217.99</b>	<b>226.47</b>	<b>234.16</b>
<b>EUR-11</b>	<b>222.79</b>	<b>182.92</b>	<b>197.48</b>	<b>203.01</b>	<b>202.34</b>	<b>217.06</b>	<b>227.54</b>	<b>239.23</b>	<b>248.87</b>
BELGIQUE-BELGIË	178.66	153.12	184.80	217.73	219.26	227.54	228.27	240.25	262.36
DANMARK	146.23	159.75	162.71	186.59	214.06	223.75	242.62	232.97	222.52
DEUTSCHLAND	449.80 <sup>2</sup>	295.49	318.54	340.82	329.91	361.26	379.91	411.14	420.20
ELLADA	7.24	8.56	10.95	11.02	8.41	10.16	11.14	11.59	11.74
ESPAÑA	18.72	22.13	23.49	24.64	29.82	30.58	32.18	33.94	38.46
FRANCE	228.73	215.69	222.70	208.69	211.48	223.08	227.79	228.99	245.55
IRELAND	59.04	50.62	64.95	81.11	66.06	92.52	96.13	87.60	93.85
ITALIA	107.00	95.02	115.30	108.09	112.43	116.55	127.45	131.41	135.76
LUXEMBOURG (GRAND-DUCHÉ)	205.39	243.66	208.87	143.36	243.31	176.14	243.70	294.12	275.84
NEDERLAND	270.19	234.48	235.19	236.04	239.70	247.69	284.69	294.19	284.92
ÖSTERREICH	206.06	195.95	196.87	188.69	194.50	210.14	207.71	221.02	262.03
PORTUGAL	1.09	1.74	2.77	3.32	4.65	3.35	3.18	4.95	4.04
SUOMI-FINLAND	195.31	228.59	216.29	290.57	315.26	367.60	364.45	357.06	400.10
SVERIGE	272.61	268.74	279.73	306.72	339.87	391.40	436.78	458.28	452.55
UNITED KINGDOM	164.19	153.14	151.23	153.69	158.25	160.97	170.12	165.32	169.31

<sup>1</sup> Provisional.

<sup>2</sup> Only West Germany.



# Table 40A

## EUROPEAN PATENT APPLICATIONS

### BY REGION

Per MIO labour force

	1990	1991	1992	1993	1994	1995	1996	1997 <sup>1</sup>	1998 <sup>1</sup>
<b>EU-15</b>	<b>206.52</b>	<b>175.57</b>	<b>186.52</b>	<b>192.21</b>	<b>193.67</b>	<b>207.08</b>	<b>217.99</b>	<b>226.47</b>	<b>234.16</b>
<b>EUR-11</b>	<b>222.79</b>	<b>182.92</b>	<b>197.48</b>	<b>203.01</b>	<b>202.34</b>	<b>217.06</b>	<b>227.54</b>	<b>239.23</b>	<b>248.87</b>
<b>BELGIQUE-BELGIË</b>	<b>178.66</b>	<b>153.12</b>	<b>184.80</b>	<b>217.73</b>	<b>219.26</b>	<b>227.54</b>	<b>228.27</b>	<b>240.25</b>	<b>262.36</b>
Bruxelles-Brussel	213.08	138.45	215.72	205.33	222.25	249.00	262.00	251.22	292.60
Vlaams Gewest	181.91	162.91	208.56	254.52	258.86	267.81	265.03	277.07	293.46
Région Wallonne	120.21	125.27	125.73	141.63	141.32	142.72	146.68	164.72	191.48
<b>DANMARK</b>	<b>146.23</b>	<b>159.75</b>	<b>162.71</b>	<b>186.59</b>	<b>214.06</b>	<b>223.75</b>	<b>242.62</b>	<b>232.97</b>	<b>222.52</b>
<b>DEUTSCHLAND</b>	<b>449.80 <sup>2</sup></b>	<b>295.49</b>	<b>318.54</b>	<b>340.82</b>	<b>329.91</b>	<b>361.26</b>	<b>379.91</b>	<b>411.14</b>	<b>420.20</b>
Baden-Württemberg	654.32	565.75	578.36	563.05	586.56	636.73	670.48	751.15	794.23
Bayern	485.38	408.76	438.96	457.16	447.79	489.01	540.10	601.58	677.27
Berlin	283.61	146.83	157.66	160.48	177.22	201.89	244.79	243.41	227.26
Brandenburg	:	32.16	44.69	56.08	26.80	48.00	60.80	60.16	80.76
Bremen	284.45	213.92	140.18	126.98	121.58	136.29	121.82	80.75	126.42
Hamburg	283.59	217.74	249.87	267.47	307.11	327.92	263.13	349.12	369.96
Hessen	515.38	458.02	496.22	506.14	530.21	573.37	570.69	573.44	563.15
Mecklenburg-Vorpommern	:	26.75	54.89	24.23	16.20	20.41	23.54	23.96	34.36
Niedersachsen	132.58	125.83	124.76	205.23	204.98	198.15	211.27	280.01	323.51
Nordrhein-Westfalen	412.02	334.24	351.37	358.08	368.06	414.69	419.73	433.02	443.33
Rheinland-Pfalz	606.97	453.15	498.80	473.18	437.73	517.76	531.72	526.30	494.98
Saarland	161.00	83.09	123.07	182.36	225.56	217.07	230.26	239.91	256.42
Sachsen	:	30.06	45.65	160.46	65.87	73.29	80.20	96.59	106.20
Sachsen-Anhalt	:	8.71	5.00	108.37	29.10	45.32	48.51	53.87	55.77
Schleswig-Holstein	129.71	107.47	130.42	225.73	173.06	148.07	172.81	160.69	201.48
Thüringen	:	171.13	174.59	98.98	55.79	57.07	82.92	64.67	83.83
<b>ELLADA</b>	<b>7.24</b>	<b>8.56</b>	<b>10.95</b>	<b>11.02</b>	<b>8.41</b>	<b>10.16</b>	<b>11.14</b>	<b>11.59</b>	<b>11.74</b>
<b>ESPAÑA</b>	<b>18.72</b>	<b>22.13</b>	<b>23.49</b>	<b>24.64</b>	<b>29.82</b>	<b>30.58</b>	<b>32.18</b>	<b>33.94</b>	<b>38.46</b>
Noroeste	2.64	4.74	7.41	8.29	10.78	5.67	14.80	11.04	14.59
Noreste	16.67	29.11	31.47	39.99	36.58	30.77	40.96	58.14	54.68
Madrid	40.24	49.47	47.65	55.66	52.38	59.45	57.04	50.60	57.68
Centro (E)	2.38	2.79	4.53	9.36	6.12	11.34	9.97	15.75	14.02
Este	36.01	35.80	40.08	33.25	49.89	54.18	51.93	53.51	66.29
Sur	3.24	7.19	5.95	7.72	10.23	6.88	9.13	9.97	10.48
Canarias	5.28	4.91	1.69	1.71	17.99	8.02	12.81	7.60	9.90
<b>FRANCE</b>	<b>228.73</b>	<b>215.69</b>	<b>222.70</b>	<b>208.69</b>	<b>211.48</b>	<b>223.08</b>	<b>227.79</b>	<b>228.99</b>	<b>245.55</b>
Île de France	450.44	430.30	446.33	406.86	413.20	429.19	447.02	437.87	469.80
Bassin Parisien	157.86	138.36	142.46	137.84	148.20	156.99	159.63	173.52	176.91
Nord-Pas-de-Calais	80.41	85.38	84.86	84.61	86.86	80.62	99.25	84.43	86.38
Est	204.97	193.30	209.87	192.34	194.28	195.66	201.53	206.16	242.57
Ouest	85.84	84.74	81.11	100.92	97.52	111.88	99.20	93.79	119.36
Sud-Ouest	124.27	112.44	115.63	105.01	116.79	114.55	126.80	115.40	124.94
Centre-Est	357.75	319.16	325.67	308.11	297.23	329.05	323.33	354.10	361.14
Méditerranée	147.21	155.77	156.61	128.78	127.04	147.34	149.99	145.01	153.13

**Table 40A**  
**EUROPEAN PATENT APPLICATIONS**  
**BY REGION**

Per MIO labour force

	1990	1991	1992	1993	1994	1995	1996	1997 <sup>1</sup>	1998 <sup>1</sup>
<b>IRELAND</b>	<b>59.04</b>	<b>50.62</b>	<b>64.95</b>	<b>81.11</b>	<b>66.06</b>	<b>92.52</b>	<b>96.13</b>	<b>87.60</b>	<b>93.85</b>
<b>ITALIA</b>	<b>107.00</b>	<b>95.02</b>	<b>115.30</b>	<b>108.09</b>	<b>112.43</b>	<b>116.55</b>	<b>127.45</b>	<b>131.41</b>	<b>135.76</b>
Nord Ovest	165.34	141.14	158.83	165.57	158.63	160.98	176.88	185.09	176.42
Lombardia	245.72	203.40	246.32	232.06	229.81	233.26	248.09	265.62	281.57
Nord Est	142.33	117.10	131.93	130.65	138.86	152.40	164.56	166.89	167.58
Emilia-Romagna	160.01	171.69	201.22	171.74	196.19	230.99	252.25	234.00	261.21
Centro (I)	85.62	70.10	94.96	72.11	81.76	78.47	88.21	96.21	96.66
Lazio	74.28	67.32	88.43	78.98	76.36	71.86	78.65	77.85	83.24
Abruzzo-Molise	22.06	36.03	28.13	23.16	32.83	52.96	104.20	85.11	89.43
Campania	5.67	9.66	14.59	19.14	20.47	13.34	18.68	24.31	18.32
Sud	7.05	7.59	10.55	9.50	9.17	8.14	16.83	17.50	17.13
Sicilia	15.54	19.44	16.60	20.15	33.93	34.70	20.71	25.90	28.13
Sardegna	14.03	12.53	11.82	11.85	15.70	12.90	19.32	15.74	13.33
<b>LUXEMBOURG (GRAND-DUCHÉ)</b>	<b>205.39</b>	<b>243.66</b>	<b>208.87</b>	<b>143.36</b>	<b>243.31</b>	<b>176.14</b>	<b>243.70</b>	<b>294.12</b>	<b>275.84</b>
<b>NEDERLAND</b>	<b>270.19</b>	<b>234.48</b>	<b>235.19</b>	<b>236.04</b>	<b>239.70</b>	<b>247.69</b>	<b>284.69</b>	<b>294.19</b>	<b>284.92</b>
Noord-Nederland	121.85	115.40	100.44	108.60	135.79	139.10	185.57	136.13	126.27
Oost-Nederland	188.91	180.49	166.55	168.49	211.70	225.12	239.85	217.25	215.62
West-Nederland	193.57	184.89	175.83	176.07	183.33	203.37	223.29	209.36	207.75
Zuid-Nederland	572.71	444.34	485.68	485.00	431.51	411.56	496.34	614.96	582.97
<b>ÖSTERREICH</b>	<b>206.06</b>	<b>195.95</b>	<b>196.87</b>	<b>188.69</b>	<b>194.50</b>	<b>210.14</b>	<b>207.71</b>	<b>221.02</b>	<b>262.03</b>
Ostösterreich	:	:	:	:	:	193.24	170.27	187.72	205.24
Südösterreich	:	:	:	:	:	199.12	197.51	169.55	263.34
Westösterreich	:	:	:	:	:	230.55	255.58	280.07	321.06
<b>PORTUGAL</b>	<b>1.09</b>	<b>1.74</b>	<b>2.77</b>	<b>3.32</b>	<b>4.65</b>	<b>3.35</b>	<b>3.18</b>	<b>4.95</b>	<b>4.04</b>
<b>SUOMI-FINLAND</b>	<b>195.31</b>	<b>228.59</b>	<b>216.29</b>	<b>290.57</b>	<b>315.26</b>	<b>367.60</b>	<b>364.45</b>	<b>357.06</b>	<b>400.10</b>
Manner-Suomi	:	:	:	:	:	366.47	363.36	354.72	399.68
Ahvenanmaa-Åland	:	:	:	:	:	-	-	250.00	27.50
<b>SVERIGE</b>	<b>272.61</b>	<b>268.74</b>	<b>279.73</b>	<b>306.72</b>	<b>339.87</b>	<b>391.40</b>	<b>436.78</b>	<b>458.28</b>	<b>452.55</b>
<b>UNITED KINGDOM</b>	<b>164.19</b>	<b>153.14</b>	<b>151.23</b>	<b>153.69</b>	<b>158.25</b>	<b>160.97</b>	<b>170.12</b>	<b>165.32</b>	<b>169.31</b>

<sup>1</sup> Provisional.

<sup>2</sup> Only West Germany.

**Table 41**  
**REFERENCE DATA AT NATIONAL LEVEL**

**GROSS DOMESTIC PRODUCT**

In national currencies or ECU at current prices

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
EU-15 <sup>1</sup> Bio ECU <sup>3</sup>	4 821	5 191	5 650	5 890	5 904	6 198	6 437	6 767	7 129	7 456
EUR-11 <sup>1</sup> Bio ECU <sup>3</sup>	3 744	4 081	4 463	4 704	4 748	4 968	5 193	5 421	5 540	5 766
B Bio BEF	6 167	6 554	6 869	7 229	7 405	7 769	8 068	8 305	8 675	9 049
DK Bio DKK	763	798	829	858	870	928	975	1 026	1 079	1 128
D Bio DEM	2 224	2 426	2 854	3 079	3 164	3 328	3 443	3 524	3 624	3 754
EL Bio GRD	10 895	13 143	16 231	18 766	21 136	23 984	26 884	29 698	32 752	35 733
E Bio ESP	46 376	51 538	56 489	60 745	62 643	66 666	71 763	75 823	80 007	85 048
F Bio FRF	6 153	6 499	6 763	6 977	7 043	7 355	7 619	7 825	8 082	8 422
IRL Mio IEP	25 563	27 525	28 700	30 780	33 338	36 449	40 932	45 013	50 896	58 581
I Bio ITL	1 191 961	1 310 659	1 427 571	1 502 493	1 550 296	1 638 666	1 772 254	1 872 635	1 950 680	2 030 658
NL Bio NLG	484	515	542	564	579	608	636	665	706	747
A Bio ATS	1 677	1 813	1 946	2 057	2 125	2 238	2 329	2 415	2 514	2 622
P Bio PTE	8 358	9 838	11 307	12 743	13 446	14 617	15 802	16 809	17 876	19 306
FIN Bio FIM	487	515	491	477	482	511	550	574	622	664
S Bio SEK	1 233	1 360	1 447	1 442	1 446	1 531	1 650	1 688	1 739	1 819
UK Bio GBP	503	545	572	597	628	665	701	742	788	830
EEA <sup>2</sup> Bio ECU <sup>3</sup>	4 916	5 287	5 751	5 993	6 009	6 307	6 555	6 897	7 271	:
IS Bio ISK	308	364	397	398	411	435	452	486	524	:
NO Bio NKR	682	723	763	785	824	868	929	1 020	1 085	1 104

<sup>1</sup> Luxembourg not included.

<sup>2</sup> Luxembourg and Liechtenstein not included.

<sup>3</sup> Current exchange rates.

**Table 41A**  
**REFERENCE DATA AT NATIONAL LEVEL**

**IMPLICIT GDP PRICE INDEX**

(1990 = 100)

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
EU-15 <sup>1</sup>	95.8	100	105.2	108.7	109.6	111.9	113.4	117.2	120.5	122.4
EUR-11 <sup>1</sup>	95.0	100	104.5	108.8	111.0	113.2	115.7	118.9	118.6	119.7
B	96.9	100	103.1	107.0	111.2	113.7	115.4	117.3	118.9	121.0
DK	96.8	100	102.5	104.8	105.3	106.2	108.1	110.2	112.2	114.6
D	96.9	100	103.9	109.7	114.1	116.8	119.4	120.6	121.4	122.6
EL	82.9	100	119.8	137.5	157.5	175.1	192.3	207.5	221.8	232.9
E	93.3	100	107.2	114.5	119.4	124.3	130.3	134.6	137.4	140.4
F	96.8	100	103.3	105.6	108.1	110.0	111.6	113.1	114.3	115.3
IRL	100.7	100	101.7	104.1	108.7	110.0	110.5	112.2	114.7	120.4
I	92.9	100	107.7	112.7	117.7	121.7	127.9	134.2	137.8	141.7
NL	97.9	100	102.9	105.0	107.0	109.0	111.5	113.0	115.6	118.1
A	96.7	100	103.7	108.2	111.2	114.2	116.5	118.8	120.7	122.2
P	88.7	100	112.3	123.5	131.7	140.1	147.7	152.6	156.5	162.5
FIN	94.5	100	102.5	103.2	105.7	107.0	109.6	110.5	113.0	115.1
S	91.9	100	107.6	108.8	111.6	114.3	118.5	119.7	121.2	122.4
UK	92.8	100	107.2	112.3	115.7	117.6	120.6	124.9	128.3	131.3
EEA <sup>2</sup>	95.8	100	105.2	108.5	109.4	111.7	113.2	117.6	120.3	:
IS	85.6	100	107.8	111.7	114.4	116.7	119.9	122.2	126.3	132.1
NO	96.3	100	102.4	102.0	104.2	104.0	107.2	111.7	114.8	114.2

<sup>1</sup> Luxembourg not included.

<sup>2</sup> Luxembourg and Liechtenstein not included.

**Table 41B**  
**REFERENCE DATA AT NATIONAL LEVEL**

**EXCHANGE RATES**

	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
<b>1 ECU = ...</b>											
BEF	43.43	43.38	42.43	42.22	41.59	40.47	39.66	38.55	39.30	40.53	40.62
DKK	7.95	8.05	7.86	7.91	7.81	7.59	7.54	7.33	7.36	7.48	7.50
DEM	2.07	2.07	2.05	2.05	2.02	1.94	1.92	1.87	1.91	1.96	1.97
GRD	167.58	178.84	201.41	225.22	247.03	268.57	288.03	302.99	305.55	309.36	330.73
ESP	137.60	130.41	129.41	128.47	132.53	149.12	158.92	163.00	160.75	165.89	167.18
FRF	7.04	7.02	6.91	6.97	6.85	6.63	6.58	6.53	6.49	6.61	6.60
IEP	0.78	0.78	0.77	0.77	0.76	0.80	0.79	0.83	0.79	0.75	0.79
ITL	1 537.33	1 510.47	1 521.98	1 533.24	1 595.51	1 841.23	1 915.06	2 130.14	1 958.96	1 929.30	1 943.65
NLG	2.33	2.34	2.31	2.31	2.27	2.18	2.16	2.10	2.14	2.21	2.22
ATS	14.59	14.57	14.44	14.43	14.22	13.62	13.54	13.18	13.43	13.82	13.85
PTE	170.06	173.41	181.11	178.61	174.71	188.37	196.90	196.11	195.76	198.59	201.70
FIM	4.94	4.72	4.85	5.00	5.81	6.70	6.19	5.71	5.83	5.88	5.98
SEK	7.24	7.10	7.52	7.48	7.53	9.12	9.16	9.33	8.51	8.65	8.92
GBP	0.66	0.67	0.71	0.70	0.74	0.78	0.78	0.83	0.81	0.69	0.68
ISK	50.78	62.89	74.00	73.01	74.66	79.25	83.11	84.69	84.66	80.44	79.70
NOK	7.70	7.60	7.95	8.02	8.04	8.31	8.37	8.29	8.20	8.02	8.47

**Table 41C**  
**REFERENCE DATA AT NATIONAL LEVEL**

**EXCHANGE RATES**

	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
<b>1 PPS = ...</b>											
BEF	43.34	43.10	42.45	41.61	40.87	40.25	40.10	40.48	40.05	39.67	39.42
DKK	10.45	10.36	10.16	9.75	9.89	9.49	9.37	9.27	9.15	9.14	9.20
DEM	2.34	2.28	2.25	2.22	2.23	2.27	2.23	2.22	2.16	2.13	2.11
GRD	122.56	131.11	151.48	171.25	183.95	198.91	211.00	223.77	231.50	238.83	245.33
ESP	112.60	114.70	117.70	117.30	124.13	126.19	130.46	134.51	134.00	133.62	134.05
FRF	7.34	7.22	7.12	6.92	6.94	7.09	7.12	7.12	7.08	6.97	6.93
IEP	0.80	0.79	0.74	0.71	0.69	0.71	0.69	0.70	0.72	0.73	0.74
ITL	1 470.00	1 485.00	1 527.00	1 554.00	1 577.71	1 655.00	1 648.98	1 708.20	1 735.00	1 731.21	1 735.48
NLG	2.47	2.38	2.33	2.32	2.31	2.30	2.28	2.22	2.26	2.25	2.27
ATS	15.67	15.34	15.15	15.06	15.13	14.96	14.97	15.13	14.73	14.59	14.55
PTE	93.90	99.50	111.60	116.80	125.00	126.17	127.01	131.20	133.60	133.20	134.33
FIM	6.74	6.81	6.89	6.88	6.88	6.57	6.61	6.46	6.48	6.42	6.43
SEK	9.42	9.68	10.08	10.57	10.60	10.61	10.65	10.72	10.59	10.55	10.56
GBP	0.63	0.65	0.66	0.68	0.67	0.69	0.69	0.72	0.71	0.70	0.70
ISK	65.30	75.30	82.60	85.30	85.70	88.77	90.39	83.60	83.80	83.25	:
NKR	9.55	9.69	9.73	9.59	9.22	9.43	9.81	10.08	10.20	10.14	10.28

**Table 42**  
**REFERENCE DATA AT REGIONAL LEVEL**  
**GROSS DOMESTIC PRODUCT BY REGION**  
Mio ECU at current prices and exchange rates

	1989	1990	1991	1992	1993	1994	1995	1996	1997
<b>EU-15<sup>1</sup></b>	<b>4 832 965</b>	<b>5 192 561</b>	<b>5 645 842</b>	<b>5 883 238</b>	<b>5 898 072</b>	<b>6 201 514</b>	<b>6 437 919</b>	<b>6 767 107</b>	<b>7 119 592</b>
<b>EUR-11<sup>1</sup></b>	<b>3 740 507</b>	<b>4 076 315</b>	<b>4 458 235</b>	<b>4 698 320</b>	<b>4 741 265</b>	<b>4 973 282</b>	<b>5 196 308</b>	<b>5 419 659</b>	<b>5 537 224</b>
<b>BELGIQUE-BELGIË</b>	<b>142 077</b>	<b>154 387</b>	<b>162 627</b>	<b>173 639</b>	<b>183 082</b>	<b>193 115</b>	<b>207 098</b>	<b>209 497</b>	<b>212 680</b>
Bruxelles-Brussel	21 290	23 015	23 978	25 537	26 902	27 874	29 439	30 220	:
Vlaams Gewest	83 688	91 540	95 952	102 427	107 972	115 015	123 794	124 928	:
Région Wallonne	37 099	39 833	42 697	45 675	48 208	50 226	53 865	54 348	:
<b>DANMARK</b>	<b>93 395</b>	<b>99 635</b>	<b>102 565</b>	<b>107 494</b>	<b>112 997</b>	<b>120 017</b>	<b>129 378</b>	<b>139 414</b>	<b>140 843</b>
<b>DEUTSCHLAND</b>	<b>1 074 531</b>	<b>1 182 209</b>	<b>1 391 484</b>	<b>1 523 826</b>	<b>1 633 813</b>	<b>1 742 763</b>	<b>1 852 648</b>	<b>1 848 822</b>	<b>1 862 353</b>
Baden-Württemberg	179 918	198 833	214 684	229 886	237 655	251 975	266 661	267 315	:
Bayern	195 238	215 488	237 916	260 509	275 836	292 491	310 270	311 099	:
Berlin	36 056	39 806	53 258	59 149	67 379	71 776	74 877	73 780	:
Brandenburg	:	:	17 304	22 325	27 917	32 213	34 377	35 427	:
Bremen	14 399	16 115	17 573	18 600	19 330	20 267	21 416	21 067	:
Hamburg	42 864	48 079	52 780	56 580	60 289	64 106	68 264	68 487	:
Hessen	113 571	126 777	141 284	155 228	165 259	173 256	184 715	185 463	:
Mecklenburg-Vorpommern	:	:	11 891	15 299	18 359	21 339	22 911	23 209	:
Niedersachsen	105 998	115 854	128 367	138 669	148 215	156 660	166 754	166 090	:
Nordrhein-Westfalen	277 807	302 205	326 678	349 509	367 270	388 887	414 084	409 363	:
Rheinland-Pfalz	55 177	59 934	64 484	68 838	71 761	75 692	80 142	78 249	:
Saarland	16 414	17 863	19 364	20 513	21 139	22 650	24 114	23 710	:
Sachsen	:	:	29 080	37 342	46 975	54 591	59 556	60 750	:
Sachsen-Anhalt	:	:	17 574	23 021	28 902	32 491	34 487	34 574	:
Schleswig-Holstein	37 092	41 255	44 950	48 438	52 398	55 302	58 938	58 402	:
Thüringen	:	:	14 299	19 919	25 130	29 067	31 083	31 836	:
<b>ELLADA</b>	<b>60 921</b>	<b>65 255</b>	<b>72 066</b>	<b>75 968</b>	<b>78 698</b>	<b>83 269</b>	<b>88 728</b>	<b>97 196</b>	<b>105 615</b>
Voreia Ellada	19 115	20 337	22 678	23 671	24 258	25 788	27 478	30 101	:
Kentriki Ellada	13 465	14 354	16 030	16 563	17 005	18 038	19 221	21 055	:
Attiki	22 415	24 183	26 320	28 301	29 724	31 174	33 218	36 388	:
Nisia Aigaiou, Kriti	5 927	6 381	7 038	7 433	7 712	8 269	8 811	9 652	:
<b>ESPAÑA</b>	<b>355 631</b>	<b>398 248</b>	<b>439 706</b>	<b>458 367</b>	<b>420 073</b>	<b>419 497</b>	<b>440 266</b>	<b>471 688</b>	<b>469 802</b>
Noroeste	34 742	37 749	41 331	43 170	39 577	39 157	41 369	44 261	:
Noreste	44 822	49 295	54 269	55 946	50 989	50 802	53 124	56 410	:
Madrid	54 976	62 439	69 264	72 733	67 080	66 973	70 869	76 273	:
Centro (E)	41 494	45 690	50 358	52 434	48 828	48 339	50 758	54 611	:
Este	109 970	123 339	136 458	142 752	130 078	130 612	137 307	146 988	:
Sur	56 362	65 175	72 074	74 235	67 530	67 515	70 057	75 084	:
Canarias	13 263	14 559	15 953	17 096	15 991	16 099	16 783	18 062	:
<b>FRANCE</b>	<b>876 040</b>	<b>939 991</b>	<b>969 849</b>	<b>1 018 837</b>	<b>1 061 766</b>	<b>1 117 265</b>	<b>1 167 604</b>	<b>1 205 071</b>	<b>1 224 333</b>
Île de France	249 192	269 917	280 655	295 895	313 937	329 603	339 669	350 747	:
Bassin Parisien	143 714	153 925	157 712	164 805	169 702	178 809	187 175	192 977	:
Nord-Pas-de-Calais	50 271	53 409	55 517	57 616	59 485	63 040	66 426	67 969	:
Est	71 035	75 435	77 127	81 409	84 523	89 932	94 209	96 954	:
Ouest	96 615	101 854	104 898	112 021	115 969	122 381	127 784	133 357	:
Sud-Ouest	79 211	84 685	86 259	90 854	93 921	98 398	104 283	108 081	:
Centre-Est	97 758	105 474	109 216	113 570	118 171	123 550	130 410	134 092	:
Méditerranée	88 243	95 291	98 464	102 667	106 057	111 551	117 648	120 893	:
Départements d'Outre-Mer	:	:	:	:	:	:	:	:	:

**Table 42**  
**REFERENCE DATA AT REGIONAL LEVEL**  
**GROSS DOMESTIC PRODUCT BY REGION**



Mio ECU at current prices and exchange rates

	1989	1990	1991	1992	1993	1994	1995	1996	1997
<b>IRELAND</b>	<b>32 907</b>	<b>35 851</b>	<b>37 380</b>	<b>40 271</b>	<b>41 396</b>	<b>46 835</b>	<b>51 510</b>	<b>58 367</b>	<b>65 087</b>
<b>ITALIA</b>	<b>785 711</b>	<b>857 009</b>	<b>926 507</b>	<b>935 877</b>	<b>835 571</b>	<b>850 148</b>	<b>827 020</b>	<b>951 503</b>	<b>1 008 946</b>
Nord Ovest	98 762	106 722	113 672	113 969	100 228	103 205	101 266	115 794	:
Lombardia	160 960	174 436	186 026	185 847	165 727	169 717	166 433	191 307	:
Nord Est	102 390	111 618	120 661	123 521	112 132	115 496	114 265	132 275	:
Emilia-Romagna	67 019	73 286	78 695	80 668	72 512	73 940	72 737	84 250	:
Centro (I)	83 315	90 564	97 881	99 325	88 736	89 825	87 493	100 946	:
Lazio	77 532	86 646	94 830	97 006	86 590	86 231	82 700	95 779	:
Abruzzo-Molise	18 516	20 383	22 275	22 728	19 896	20 281	19 693	22 605	:
Campania	53 522	58 700	62 646	62 532	55 621	56 338	53 559	61 411	:
Sud	62 222	66 173	73 471	73 333	65 298	66 765	64 042	73 564	:
Sicilia	45 179	50 479	55 938	56 087	50 246	49 856	47 536	54 112	:
Sardegna	16 293	18 003	20 411	20 862	18 584	18 492	17 298	19 460	:
<b>NEDERLAND</b>	<b>207 219</b>	<b>222 545</b>	<b>234 411</b>	<b>247 756</b>	<b>266 144</b>	<b>281 920</b>	<b>303 215</b>	<b>310 885</b>	<b>317 390</b>
Noord-Nederland	21 559	23 494	25 585	26 301	28 003	28 677	30 607	31 579	:
Oost-Nederland	36 570	39 492	41 463	44 376	48 124	51 099	54 674	55 967	:
West-Nederland	105 326	112 696	118 083	124 727	133 996	142 312	152 707	156 377	:
Zuid-Nederland	43 764	46 864	49 280	52 353	56 021	59 832	65 227	66 962	:
<b>ÖSTERREICH</b>	<b>115 081</b>	<b>125 588</b>	<b>134 837</b>	<b>144 706</b>	<b>156 002</b>	<b>164 962</b>	<b>176 388</b>	<b>179 471</b>	<b>180 956</b>
Östösterreich	53 910	59 107	63 615	68 265	74 318	78 400	84 161	85 748	:
Südösterreich	20 526	22 304	23 753	25 308	27 154	28 929	31 114	31 676	:
Westösterreich	40 644	44 178	47 468	51 134	54 530	57 633	61 113	62 047	:
<b>PORTUGAL</b>	<b>48 198</b>	<b>54 321</b>	<b>63 302</b>	<b>72 937</b>	<b>71 378</b>	<b>74 236</b>	<b>74 236</b>	<b>85 863</b>	<b>89 888</b>
Continente	:	52 405	61 029	70 258	68 752	71 512	71 454	82 654	:
Açores	:	949	1 094	1 280	1 253	1 291	1 280	1 487	:
Madeira	:	967	1 179	1 399	1 373	1 433	1 502	1 722	:
<b>SUOMI-FINLAND</b>	<b>103 112</b>	<b>106 166</b>	<b>98 132</b>	<b>82 104</b>	<b>72 040</b>	<b>82 541</b>	<b>96 323</b>	<b>98 492</b>	<b>105 789</b>
Manner-Suomi	102 442	105 475	97 474	81 532	71 546	81 995	95 742	97 898	:
Ahvenanmaa/Åland	670	691	658	572	494	546	581	593	:
<b>SVERIGE</b>	<b>174 382</b>	<b>181 747</b>	<b>194 290</b>	<b>192 116</b>	<b>159 106</b>	<b>167 808</b>	<b>177 608</b>	<b>199 463</b>	<b>202 947</b>
<b>UNITED KINGDOM</b>	<b>763 760</b>	<b>769 609</b>	<b>818 686</b>	<b>809 340</b>	<b>806 006</b>	<b>857 138</b>	<b>845 897</b>	<b>911 375</b>	<b>1 132 963</b>
North	35 945	35 707	38 289	38 032	37 445	40 133	39 442	41 875	:
Yorkshire and Humberside	59 605	59 947	64 117	62 849	62 121	66 145	66 266	69 911	:
East Midlands	51 356	51 169	54 918	54 093	53 821	58 243	57 192	60 548	:
East Anglia	27 379	27 810	29 647	29 645	29 156	31 186	30 782	33 099	:
South East (UK)	278 227	280 135	295 822	291 781	292 591	307 207	300 924	331 506	:
South West (UK)	58 763	59 391	63 733	63 573	63 020	66 802	66 954	71 106	:
West Midlands	63 997	65 001	68 482	67 995	67 384	72 561	71 931	77 133	:
North West (UK)	77 173	76 764	80 951	79 810	79 774	85 336	83 300	89 298	:
Wales	32 397	32 413	34 363	33 261	32 809	35 731	35 542	37 652	:
Scotland	63 049	65 032	70 151	70 184	69 619	74 117	73 887	78 293	:
Northern Ireland	15 870	16 241	18 214	18 116	18 265	19 678	19 679	20 956	:
<b>EEA<sup>2</sup></b>	<b>4 927 602</b>	<b>5 288 406</b>	<b>5 746 503</b>	<b>5 986 171</b>	<b>6 002 393</b>	<b>6 310 349</b>	<b>6 555 373</b>	<b>6 897 001</b>	<b>7 257 900</b>
<b>ICELAND</b>	<b>4 900</b>	<b>4 922</b>	<b>5 437</b>	<b>5 326</b>	<b>5 193</b>	<b>5 235</b>	<b>5 333</b>	<b>5 721</b>	<b>6 407</b>
<b>NORWAY</b>	<b>89 737</b>	<b>90 923</b>	<b>95 224</b>	<b>97 607</b>	<b>99 128</b>	<b>103 600</b>	<b>112 121</b>	<b>124 173</b>	<b>131 901</b>

<sup>1</sup> Luxembourg not included.

<sup>2</sup> Luxembourg and Liechtenstein not included.

(1000)

	1989	1990	1991	1992	1993	1994	1995	1996	1997
<b>EU-15<sup>1</sup></b>	<b>147 487</b>	<b>149 657</b>	<b>159 105</b>	<b>157 782</b>	<b>157 991</b>	<b>158 660</b>	<b>158 867</b>	<b>159 989</b>	<b>160 607</b>
<b>EUR-11<sup>1</sup></b>	<b>107 499</b>	<b>109 444</b>	<b>119 107</b>	<b>117 905</b>	<b>118 312</b>	<b>119 081</b>	<b>118 968</b>	<b>119 968</b>	<b>120 505</b>
<b>BELGIQUE-BELGIË</b>	<b>3 910</b>	<b>3 908</b>	<b>3 998</b>	<b>4 041</b>	<b>4 073</b>	<b>4 148</b>	<b>4 183</b>	<b>4 188</b>	<b>4 215</b>
Bruxelles - Brussel	361	364	374	371	390	387	384	1 316	1 328
Vlaams Gewest	2 313	2 305	2 361	2 403	2 414	2 456	2 487	383	390
Région Wallonne	1 236	1 239	1 263	1 267	1 269	1 306	1 312	2 488	2 497
<b>DANMARK</b>	<b>2 864</b>	<b>2 898</b>	<b>2 899</b>	<b>2 898</b>	<b>2 875</b>	<b>2 759</b>	<b>2 796</b>	<b>2 815</b>	<b>2 828</b>
<b>DEUTSCHLAND</b>	<b>29 063</b>	<b>30 492</b>	<b>39 086</b>	<b>38 994</b>	<b>39 113</b>	<b>39 267</b>	<b>38 961</b>	<b>39 083</b>	<b>39 162</b>
Baden-Württemberg	4 534	4 901	4 881	4 974	5 005	4 998	5 026	5 041	5 059
Bayern	5 613	5 834	5 873	5 973	6 054	6 066	6 018	6 016	6 011
Berlin	1 064	1 123	1 833	1 818	1 811	1 833	1 830	1 800	1 775
Brandenburg	:	:	1 417	1 324	1 298	1 302	1 276	1 291	1 322
Bremen	304	319	306	320	320	317	313	311	308
Hamburg	775	820	822	817	845	852	857	839	847
Hessen	2 659	2 786	2 785	2 795	2 829	2 865	2 855	2 871	2 861
Mecklenburg-Vorpommern	:	:	1 034	969	948	945	933	933	939
Niedersachsen	3 305	3 408	3 431	3 548	3 555	3 614	3 550	3 594	3 518
Nordrhein-Westfalen	7 432	7 809	7 748	7 895	8 030	7 948	7 801	7 838	7 959
Rheinland-Pfalz	1 691	1 745	1 786	1 802	1 810	1 821	1 807	1 831	1 827
Saarland	453	466	467	466	463	457	444	443	452
Sachsen	:	:	2 509	2 312	2 220	2 255	2 261	2 281	2 280
Sachsen-Anhalt	:	:	1 530	1 409	1 364	1 397	1 402	1 382	1 379
Schleswig-Holstein	1 234	1 282	1 274	1 296	1 293	1 303	1 317	1 332	1 332
Thüringen	:	:	1 390	1 276	1 269	1 296	1 272	1 280	1 293
<b>ELLADA</b>	<b>3 968</b>	<b>4 001</b>	<b>3 935</b>	<b>3 993</b>	<b>4 066</b>	<b>4 154</b>	<b>4 201</b>	<b>4 282</b>	<b>4 261</b>
Voreia Ellada	1 315	1 304	1 287	1 303	1 328	1 359	1 397	1 423	1 432
Kentriki Ellada	898	913	832	835	838	863	849	873	849
Attiki	1 403	1 429	1 460	1 496	1 517	1 548	1 574	1 590	1 591
Nisia Aigaiou, Kriti	351	354	356	360	383	384	381	396	389
<b>ESPAÑA</b>	<b>14 751</b>	<b>14 990</b>	<b>15 014</b>	<b>15 141</b>	<b>15 263</b>	<b>15 488</b>	<b>15 561</b>	<b>15 872</b>	<b>16 066</b>
Noroeste	1 815	1 800	1 760	1 774	1 765	1 743	1 702	1 717	1 706
Noreste	1 596	1 610	1 622	1 637	1 625	1 658	1 655	1 652	1 695
Madrid	1 783	1 858	1 854	1 896	1 925	1 955	2 019	2 154	2 134
Centro (E)	1 968	1 993	1 982	2 007	2 010	1 977	1 908	1 980	1 991
Este	4 195	4 284	4 323	4 294	4 375	4 495	4 566	4 588	4 663
Sur	2 826	2 878	2 891	2 944	2 980	3 048	3 088	3 156	3 221
Canarias	569	568	583	591	584	611	623	624	657
<b>FRANCE</b>	<b>24 062</b>	<b>24 049</b>	<b>24 347</b>	<b>24 536</b>	<b>24 719</b>	<b>24 869</b>	<b>25 033</b>	<b>25 342</b>	<b>25 360</b>
Île de France	5 104	5 124	5 238	5 317	5 316	5 247	5 265	5 283	5 282
Bassin Parisien	4 290	4 199	4 387	4 389	4 267	4 242	4 343	4 412	4 417
Nord-Pas-de-Calais	1 529	1 525	1 514	1 551	1 568	1 521	1 509	1 534	1 575
Est	2 192	2 151	2 082	2 141	2 191	2 187	2 154	2 134	2 179
Ouest	3 251	3 206	3 215	3 181	3 218	3 293	3 345	3 318	3 331
Sud-Ouest	2 366	2 478	2 522	2 611	2 553	2 531	2 603	2 702	2 722
Centre-Est	2 811	2 771	2 758	2 795	2 940	3 100	3 069	3 174	3 143
Méditerranée	2 521	2 595	2 632	2 551	2 666	2 748	2 747	2 785	2 710
Départements d'Outre-Mer	:	:	:	:	:	:	:	:	:

**Table 42A**  
**REFERENCE DATA AT REGIONAL LEVEL**  
**LABOUR FORCE BY REGION**

(1000)

	1989	1990	1991	1992	1993	1994	1995	1996	1997
<b>IRELAND</b>	1 306	1 321	1 347	1 352	1 368	1 413	1 434	1 481	1 529
<b>ITALIA</b>	23 394	23 535	23 947	22 770	22 652	22 584	22 607	22 788	22 860
Nord Ovest	2 635	2 626	2 649	2 559	2 512	2 513	2 545	2 583	2 544
Lombardia	3 843	3 866	3 997	3 918	3 916	3 899	3 878	3 904	3 919
Nord Est	2 734	2 730	2 805	2 793	2 782	2 773	2 785	2 832	2 843
Emilia-Romagna	1 777	1 758	1 834	1 777	1 766	1 772	1 754	1 773	1 817
Centro (I)	2 460	2 494	2 517	2 409	2 410	2 390	2 414	2 418	2 407
Lazio	2 093	2 149	2 204	2 082	2 040	2 028	2 051	2 081	2 091
Abruzzo-Molise	655	660	666	608	618	607	618	628	616
Campania	2 211	2 175	2 204	1 955	1 979	2 020	1 975	1 983	2 029
Sud	2 525	2 554	2 522	2 379	2 331	2 308	2 293	2 296	2 280
Sicilia	1 820	1 866	1 887	1 677	1 673	1 653	1 684	1 672	1 686
Sardegna	641	659	662	613	625	622	610	617	628
<b>LUXEMBOURG</b>	156	160	165	168	169	170	167	171	173
<b>NEDERLAND</b>	6 609	6 801	6 928	7 003	7 085	7 224	7 305	7 407	7 605
Noord-Nederland	643	674	694	699	701	708	725	744	755
Oost-Nederland	1 305	1 373	1 376	1 392	1 431	1 464	1 500	1 513	1 557
West-Nederland	3 219	3 250	3 333	3 368	3 398	3 445	3 458	3 498	3 603
Zuid-Nederland	1 441	1 504	1 525	1 544	1 556	1 608	1 622	1 652	1 690
<b>ÖSTERREICH</b>	3 455	3 535	3 607	3 679	3 734	3 880	3 841	3 819	3 805
Ostösterreich	:	:	:	:	:	:	1 645	1 635	1 640
Südösterreich	:	:	:	:	:	:	792	794	792
Westösterreich	:	:	:	:	:	:	1 405	1 391	1 373
<b>PORTUGAL</b>	4 818	4 878	5 038	4 696	4 714	4 759	4 752	4 780	4 842
Continente	4 591	4 648	4 804	4 487	4 502	4 549	4 551	4 575	4 633
Açores	97	97	100	92	94	94	94	95	96
Madeira	131	133	134	117	117	116	108	111	113
<b>SUOMI-FINLAND</b>	2 583	2 576	2 559	2 527	2 508	2 502	2 429	2 445	2 493
Manner-Suomi	:	:	:	:	:	:	2 417	2 431	2 481
Ahvenanmaa/Åland	:	:	:	:	:	:	12	13	12
<b>SVERIGE</b>	4 475	4 524	4 506	4 428	4 320	4 268	4 498	4 409	4 369
<b>UNITED KINGDOM</b>	28 682	28 790	28 658	28 558	28 419	28 398	28 404	28 515	28 644
North	1 481	1 465	1 459	1 453	1 444	1 431	1 416	1 428	:
Yorkshire and Humberside	2 398	2 440	2 439	2 441	2 448	2 419	2 434	2 416	2 396
East Midlands	2 070	2 064	2 067	2 043	2 047	2 022	2 049	2 078	2 094
East Anglia	1 050	1 074	1 051	1 052	1 064	1 073	1 078	1 071	:
South East (UK)	9 041	9 076	9 032	9 085	9 045	9 018	9 047	9 116	:
South West (UK)	2 351	2 324	2 349	2 340	2 342	2 358	2 373	2 365	2 424
West Midlands	2 638	2 665	2 638	2 583	2 577	2 601	2 577	2 584	2 577
North West (UK)	3 131	3 131	3 120	3 024	3 006	2 987	2 937	2 980	:
Wales	1 346	1 348	1 339	1 307	1 278	1 297	1 302	1 302	1 324
Scotland	2 497	2 514	2 476	2 543	2 479	2 512	2 492	2 467	2 484
Northern Ireland	680	690	689	687	690	680	698	709	726
<b>EEA<sup>3</sup></b>	:	:	161 371	160 055	160 267	160 957	161 194	162 381	163 047
<b>ICELAND</b>	:	:	141	143	144	145	147	146	145
<b>NORWAY</b>	2 155	2 142	2 126	2 130	2 131	2 151	2 180	2 246	2 295

<sup>1</sup> Luxembourg not included.

<sup>2</sup> ILO data.

<sup>3</sup> Luxembourg and Liechtenstein not included.



**Table 42B**  
**REFERENCE DATA AT REGIONAL LEVEL**  
**POPULATION BY REGION**  
(1000)

	1989	1990	1991	1992	1993	1994	1995	1996	1997
<b>EU-15</b>	<b>345 799</b>	<b>347 279</b>	<b>365 543</b>	<b>367 150</b>	<b>369 052</b>	<b>370 425</b>	<b>371 541</b>	<b>372 673</b>	<b>373 786</b>
<b>EUR-11</b>	<b>265 002</b>	<b>266 172</b>	<b>283 924</b>	<b>285 148</b>	<b>286 730</b>	<b>287 781</b>	<b>288 566</b>	<b>289 408</b>	<b>290 318</b>
<b>BELGIQUE-BELGIË</b>	<b>9 928</b>	<b>9 948</b>	<b>9 987</b>	<b>10 022</b>	<b>10 068</b>	<b>10 101</b>	<b>10 131</b>	<b>10 143</b>	<b>10 172</b>
Bruxelles-Brussel	971	964	960	951	950	949	952	948	:
Vlaams Gewest	5 722	5 740	5 768	5 795	5 825	5 847	5 866	5 880	:
Région Wallonne	3 235	3 244	3 259	3 276	3 293	3 305	3 313	3 315	:
<b>DANMARK</b>	<b>5 130</b>	<b>5 135</b>	<b>5 147</b>	<b>5 162</b>	<b>5 181</b>	<b>5 197</b>	<b>5 216</b>	<b>5 251</b>	<b>5 275</b>
<b>DEUTSCHLAND</b>	<b>61 715</b>	<b>62 679</b>	<b>79 753</b>	<b>80 275</b>	<b>80 976</b>	<b>81 338</b>	<b>81 493</b>	<b>81 818</b>	<b>82 012</b>
Baden-Württemberg	9 433	9 619	9 822	10 002	10 149	10 234	10 267	10 319	10 375
Bayern	11 049	11 221	11 449	11 596	11 771	11 863	11 916	11 994	12 044
Berlin	2 068	2 131	3 434	3 446	3 466	3 475	3 470	3 471	3 459
Brandenburg	:	:	2 578	2 543	2 543	2 538	2 536	2 542	2 554
Bremen	662	674	682	684	686	683	680	680	678
Hamburg	1 603	1 626	1 652	1 669	1 689	1 703	1 705	1 708	1 708
Hessen	5 569	5 661	5 763	5 837	5 923	5 967	5 977	6 010	6 027
Mecklenburg-Vorpommern	:	:	1 924	1 892	1 865	1 844	1 832	1 823	1 817
Niedersachsen	7 185	7 284	7 387	7 476	7 578	7 648	7 711	7 780	7 815
Nordrhein-Westfalen	16 874	17 104	17 350	17 510	17 679	17 759	17 806	17 893	17 948
Rheinland-Pfalz	3 653	3 702	3 764	3 821	3 881	3 926	3 949	3 978	4 001
Saarland	1 054	1 065	1 073	1 077	1 084	1 085	1 084	1 084	1 084
Sachsen	5 014	4 900	4 764	4 679	4 641	4 608	4 582	4 567	4 546
Sachsen-Anhalt	3 005	2 965	2 874	2 823	2 797	2 778	2 758	2 739	2 724
Schleswig-Holstein	2 565	2 595	2 626	2 649	2 680	2 695	2 707	2 726	2 742
Thüringen	:	:	2 611	2 572	2 546	2 533	2 517	2 504	2 491
<b>ELLADA</b>	<b>10 058</b>	<b>10 122</b>	<b>10 200</b>	<b>10 296</b>	<b>10 350</b>	<b>10 410</b>	<b>10 443</b>	<b>10 465</b>	<b>10 487</b>
<b>ESPAÑA</b>	<b>38 852</b>	<b>38 925</b>	<b>38 994</b>	<b>39 056</b>	<b>39 114</b>	<b>39 121</b>	<b>39 177</b>	<b>39 242</b>	<b>39 299</b>
Noroeste	4 468	4 461	4 454	4 443	4 432	4 343	4 334	4 326	4 317
Noreste	4 126	4 125	4 123	4 121	4 117	4 058	4 049	4 041	4 032
Madrid	4 851	4 869	4 887	4 903	4 918	4 998	5 004	5 013	5 019
Centro (E)	5 469	5 468	5 467	5 466	5 466	5 269	5 273	5 277	5 281
Este	10 456	10 470	10 483	10 496	10 507	10 679	10 690	10 703	10 714
Sur	8 011	8 052	8 092	8 130	8 168	8 246	8 285	8 326	8 366
Canarias	1 472	1 480	1 489	1 498	1 506	1 528	1 542	1 556	1 570
<b>FRANCE</b>	<b>56 274</b>	<b>56 598</b>	<b>56 893</b>	<b>57 218</b>	<b>57 530</b>	<b>57 779</b>	<b>58 020</b>	<b>58 258</b>	<b>58 603</b>
Île de France	10 564	10 651	10 741	10 822	10 908	10 965	10 978	11 027	:
Bassin Parisien	10 225	10 267	10 297	10 351	10 382	10 412	10 454	10 479	:
Nord-Pas-de-Calais	3 963	3 967	3 967	3 974	3 983	3 989	3 995	4 002	:
Est	5 022	5 029	5 034	5 042	5 053	5 067	5 115	5 130	:
Ouest	7 417	7 449	7 475	7 519	7 557	7 593	7 606	7 640	:
Sud-Ouest	5 915	5 948	5 973	6 003	6 032	6 057	6 080	6 101	:
Centre-Est	6 624	6 669	6 713	6 760	6 804	6 836	6 885	6 923	:
Méditerranée	6 546	6 616	6 694	6 756	6 811	6 861	6 909	6 957	:
Départements d'Outre-Mer	1 411	1 453	1 487	1 529	1 552	:	1 599	:	:

**Table 42B**  
**REFERENCE DATA AT REGIONAL LEVEL**  
**POPULATION BY REGION**

(1000)

	1989	1990	1991	1992	1993	1994	1995	1996	1997
<b>IRELAND</b>	<b>3 515</b>	<b>3 507</b>	<b>3 521</b>	<b>3 547</b>	<b>3 567</b>	<b>3 580</b>	<b>3 595</b>	<b>3 616</b>	<b>3 652</b>
<b>ITALIA</b>	<b>56 652</b>	<b>56 697</b>	<b>56 748</b>	<b>56 757</b>	<b>56 960</b>	<b>57 139</b>	<b>57 269</b>	<b>57 333</b>	<b>57 461</b>
Nord Ovest	6 154	6 134	6 109	6 089	6 090	6 088	6 080	6 066	6 064
Lombardia	8 829	8 839	8 851	8 854	8 882	8 901	8 911	8 925	8 959
Nord Est	6 443	6 449	6 459	6 467	6 487	6 512	6 522	6 535	6 558
Emilia-Romagna	3 902	3 902	3 906	3 907	3 920	3 924	3 923	3 925	3 938
Centro (I)	5 768	5 767	5 769	5 767	5 778	5 786	5 790	5 792	5 802
Lazio	5 098	5 115	5 131	5 142	5 162	5 185	5 193	5 202	5 217
Abruzzo-Molise	1 240	1 243	1 246	1 249	1 256	1 263	1 268	1 271	1 604
Campania	1 570	1 574	1 577	1 580	1 587	1 595	1 600	1 602	5 785
Sud	6 696	6 704	6 712	6 711	6 736	6 756	6 763	6 768	6 770
Sicilia	4 964	4 968	4 970	4 966	4 998	5 025	5 083	5 095	5 101
Sardegna	1 635	1 638	1 645	1 647	1 652	1 657	1 660	1 661	1 663
<b>LUXEMBOURG</b>	<b>375</b>	<b>378</b>	<b>384</b>	<b>390</b>	<b>395</b>	<b>401</b>	<b>407</b>	<b>413</b>	<b>418</b>
<b>NEDERLAND</b>	<b>14 804</b>	<b>14 891</b>	<b>15 008</b>	<b>15 127</b>	<b>15 238</b>	<b>15 342</b>	<b>15 424</b>	<b>15 494</b>	<b>15 567</b>
Noord-Nederland	1 594	1 594	1 598	1 603	1 608	1 615	1 622	1 628	1 634
Oost-Nederland	3 012	3 036	3 065	3 094	3 122	3 150	3 177	3 203	3 226
West-Nederland	6 926	6 967	7 027	7 090	7 144	7 190	7 218	7 239	7 267
Zuid-Nederland	3 272	3 293	3 319	3 341	3 364	3 385	3 406	3 424	3 440
<b>ÖSTERREICH</b>	<b>7 628</b>	<b>7 690</b>	<b>7 769</b>	<b>7 868</b>	<b>7 962</b>	<b>8 015</b>	<b>8 040</b>	<b>8 055</b>	<b>8 068</b>
Ostösterreich	3 214	3 241	3 274	3 318	3 355	3 378	3 382	3 389	3 404
Südösterreich	1 721	1 724	1 730	1 743	1 758	1 762	1 765	1 770	1 771
Westösterreich	2 693	2 725	2 765	2 808	2 848	2 875	2 893	2 896	2 893
<b>PORTUGAL</b>	<b>10 305</b>	<b>9 887</b>	<b>9 868</b>	<b>9 860</b>	<b>9 865</b>	<b>9 888</b>	<b>9 912</b>	<b>9 921</b>	<b>9 934</b>
<b>SUOMI-FINLAND</b>	<b>4 954</b>	<b>4 974</b>	<b>4 999</b>	<b>5 029</b>	<b>5 055</b>	<b>5 078</b>	<b>5 099</b>	<b>5 117</b>	<b>5 132</b>
Manner-Suomi	4 930	4 950	4 974	5 004	5 030	5 053	5 074	5 092	5 107
Ahvenanmaa/Åland	24	24	25	25	25	25	25	25	25
<b>SVERIGE</b>	<b>8 459</b>	<b>8 527</b>	<b>8 591</b>	<b>8 644</b>	<b>8 692</b>	<b>8 745</b>	<b>8 816</b>	<b>8 838</b>	<b>8 845</b>
<b>UNITED KINGDOM</b>	<b>57 151</b>	<b>57 324</b>	<b>57 681</b>	<b>57 900</b>	<b>58 099</b>	<b>58 293</b>	<b>58 500</b>	<b>58 711</b>	<b>58 861</b>



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