



# Redis News

2 □ 1997 Bi-annual

## FOREWORD

### ***R&D and Innovation Statistics in the Year 2000***

Some years ago, the mention of *Year 2000* conjured the vision of some very distant future date. Today, most people have come to realise that this is barely twenty six months from now.

While the euphoria of the millenium will no doubt build up in the coming months, two basic questions will continue to dog a lot of R&D statisticians. The first is *what have we achieved in the last decade?* The second will be *how prepared are we to meet the ever-increasing demand of users for good quality statistical information?*

The past ten years have witnessed intense activities in the development of methodologies. Cooperation and dedication of experts at international level have yielded a lot of fruits. Basic definitions and standard methods have been (and are being) developed while the *ad hoc* nature of work in this field has given way to systematic planning and execution of data collection, treatment, analysis and dissemination.

What had seemed so futuristic some years ago are now gradually being introduced into production

process of the statistical information system. Thanks to the efforts of international groups such as the UNESCO, the OECD, the exemplary work of the *Indicators Group* of DGXII, the EIMS of DGXIII and a number of others.

The biggest achievements for this decade will not be measured by the number of tables or volume of data, nor for that matter number of publications produced. Rather, three basic (and very interrelated yardsticks) will be used.

The first will be the *quality* of our products and the perceived *reliability* of our data. The second will be how close we are getting to understanding and to catering for the *real* needs of our users (and perhaps involving them at the *engineering* stage). The third will be our level of foresight and anticipation of user needs.

In the coming months, while attention will no doubt be focused on the imminent arrival of the millenium, statisticians will have to ask themselves the inevitable questions: *how prepared are we to meet the needs of our users? What will be the implications of the evolving new technologies for our profession? What should (or can) we do to improve the system?*

Through its various statistical research activities, Eurostat has been preoccupied in finding answers to these and many other pertinent questions.

**Photis Nanopoulos**  
 Director



### **..... Stop Press**

Please note that the date of the next meeting of the Working Party on R&D and Innovation Statistics has now been moved to 15-17/12/97. Invitations for this meeting and all the working documents will be sent out as usual. (For more information on this meeting, please see page 7.)

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### *The REDIS Management*

The REDIS (Research Development and Innovation Statistics) Project is one of the projects of the Directorate A. It is managed by Unit A4 (Research, Development, Methods and Data Analysis) headed by Mr. Daniel Defays under the director Mr. Photis Nanopoulos. Mr. Maurits Pino is responsible for the overall coordination and day-to-day running of the project.

There have been some changes to the REDIS team since the last issue of this newsletter. Mr Mikael Åkerblom (seconded from Statistics Finland) who managed the Innovation Statistics project went back to Helsinki while Miss Ruth Magono who worked on the Indicators project (REIST) has moved on to another unit of Eurostat. Mr. Youri Baeyens will leave the CIS team shortly to take up new challenges. He will be replaced by Miss Anne Flottes. In the secretariat, Mrs. Anne-Françoise Van Schingen-Gonry (who was until recently the project secretary) has taken up a new role in the team. She has been replaced by Ms. Anne-Marie Pratiffi.

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It is an important part of our mission to continue serving you to the best of our ability. This newsletter is a mere summary of some of our activities. If you would like some more information, or if you have questions or comments on any of the issues mentioned in it, please do not hesitate to contact us. To ensure that you receive future issues of REDIS News, please notify us of any changes to your address as soon as possible.

Your attention is drawn particularly to the change of address form on page 9. We will appreciate your completing it if and when this becomes necessary.

*REDIS News* is prepared by Unit A4 of Eurostat as a service to users of statistical information on R&D and Innovation. The opinions expressed are those of the authors alone. Neither the European Commission nor any person acting on its behalf is responsible for the use which might be made of the information contained in this newsletter.

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# R&D STATISTICS IN EUROSTAT

## Progress reports on main activities

### Human Resources in Science and Technology (HRST)

The pilot survey on HRST stocks came to an end, with data from eleven EFTA countries received, including some further detailed data from countries which had already responded (sector of economy, regional data etc). Despite the limitations associated with the survey, the main findings were largely positive, with the basic stock indicators calculated in the majority of cases.

The results of the pilot survey were released in an edition of Eurostat's *Statistics in Focus, Research and Development* (1997, No.2 ISSN 1024-7971) which analysed the data in as much detail as was possible. Key indicators were presented graphically, and each of the main aspects of HRST were discussed - analysis by HRST occupations, university and technician level HRST, field of study and so on.

The final part of the pilot survey was completed by way of sending out a questionnaire to all countries, which had responded. This covered such aspects as comparability, keys used for the conversion from national occupation and education systems to the international systems (and possible discrepancies as a result of these transformations), statistical problems, and possible changes which could be undertaken to improve future stock surveys.

The paper describing indicators measuring certain key flows of HRST - inflows via education and migratory flows of HRST - has been finalised. Our current work on the Human Resources in Science and Technology project involves looking at flow data which is currently available, mainly education data.

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### Intangibles

Eurostat has recently received two reports from contractors on intangibles. The first was the final report from the study by Mangematin and Lhuillery "Intangible Activities: What kind of data do we need?". The second was the first interim report of a SUPCOM study executed by Statistics Netherlands (Croes, Vosselman) on ways to actually determine what can and should be measured.

Mangematin and Lhuillery split intangibles into a number of domains and, for each of these, ask what is known (and what is the uncertainty) and what is needed. They aim to find their answers in the scientific literature.

In their chapter on R&D, they identified among others, the need for a depreciation rate of R&D and a price index of the R&D inputs.

Information technology is discussed with an emphasis on its relation with productivity. A chapter is devoted to Human capital. Various aspects of marketing are discussed, of which the most important one is the duration of the effect of marketing. In general this seems to be shorter than a year, implying that it should not be treated as an investment. Lastly they discuss the investment in the ability to innovate.

Every chapter contains a table which reports the authors' overview of the literature with an indication of the type of research and the area of application.

Croes and Vosselman devote the first part of their report to trying to define intangibles in general. They then discuss *rights, technology and innovation, marketing and sales, organisation and information technology.*

*Rights* include concepts like patents, trade marks etc. *Rights* can be seen as an output indicator and therefore provide valuable information on what is going on near the end of the innovation chain.

*Technology and Innovation* proposes among others, to divide various expenditure/cost categories of the OECD Oslo Manual on innovation into intangible investments or not. R&D is dealt with in this chapter.

With marketing and sales, the main issue is to what extent the expenditure is considered to be *investments* or *activities*, i.e. whether they have a long-term impact or not.

Under *organisation*, the authors deal with organisational change such as tentatively discussed in the second edition of the Oslo Manual. They focus on organisational change and especially on those in the accounting system and the way the enterprise deals with the changes in its environment that are induced by the government. Finally they deal with information technology which they treat as software.

The first study is now ready and seems (despite its unfortunately very slow production) an adequate document for its purpose of providing information on a literature basis.

The second study has only recently started, but seems to be on full speed. Its first interim report has raised the hopes for an important contribution towards a systematic treatment of various types of investments in intangibles.

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## Regional R&D Indicators

### **Regional R&D input indicators**

Regional coverage of the R&D input indicators (R&D expenditure, R&D personnel) has been further improved in the 1998 annual publication. For the first time, regional data are now available for all institutional sectors for Belgium (at NUTS 1), Italy (at NUTS 2), and Finland (NUTS 2). Most countries have up-dated their time series.

### **Regional patent data**

Co-operation with the European Patent Office (EPO) for the compilation of regional data on

European patent applications continues. In the 1997 edition of *R&D: Annual Statistics*, time series from 1989 to 1995 are presented. Data are now available for all Member States.

The regionalisation of data on European patent applications is achieved by translating postal codes – taken from the address of the inventor(s) – into NUTS. To maintain the quality of the data, these relational tables from postal codes to NUTS have been up-dated for the data extraction for the 1998 annual publication. Additionally, an improved approach to regionalising the patent data has been prepared in co-operation with the EPO. It is expected that the new method will further improve the quality of data for the 1998 publication.

### **New methodologies – Measurement of employment in high technology sectors**

A feasibility study carried out by the Institute for Employment Studies - IES (Brighton, UK) led to the conclusion that reliable data on employment in high technology sectors at NUTS level 1 could be derived from the Community Labour Force Survey (LFS). Data have been extracted from the LFS and are currently being analysed. The publication of an issue of *Statistics in Focus* on the results is planned for early 1998.

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## Community Innovation Survey (CIS)

CIS-I

### **Release of the CD-ROM**

Eurostat has released a CD-ROM summarising information from the first Community Innovation Survey, which has been jointly supported and implemented by Eurostat and DGXIII, SPRINT Programme and European Innovation Monitoring System (EIMS).

The CIS-I was organised in the 12 old Member States of the European Union, in Norway and in Iceland. With the data received from the countries, Eurostat set up a database that is being used for analysis of innovation from academic and policy-making perspectives.

From this database a CD-ROM has been prepared. It contains a large number of tables (7000). This is a mere tip of the iceberg considering that around 40,000 enterprises that can be ordered in many ways (country, size, primary activity, innovative or not, performing R&D or not, etc.) have answered some 200 questions. This opens boundless opportunities for creating tables.

From the several options considered, it was eventually decided on a set that is considered as being the most relevant set of tables.

The CD-ROM covers economic activities, general information about innovation, sources of information and objectives of innovation, acquisition/transfer of technology, methods for maintaining and increasing competitiveness of innovations, R&D activities, impact (output) and costs of innovation activities and factors hampering innovation.

Some tables could not be completely filled in. Sometimes a country has not included a question in their national questionnaire. More often a series of cells has to be suppressed to protect the confidentiality of the data.

In general one must be very careful with comparisons between countries. Differences in wording in the questionnaire or in sampling techniques between the countries endanger the comparability. In the *help* function of the CD-ROM an indication is given where these problems can be expected.

To order the CD-ROM, please contact the

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### ***Progress report***

At the last EEA working party on R&D and innovation statistics in January 1997, it was decided that the second Community Innovation Survey (CIS-II) should be carried out in 1997.

As at going to press, the new survey is being launched. This time, all the fifteen Member States as well as Norway and Iceland intend to take part. A stricter co-ordination of the work has been

imposed in order to guarantee a much higher comparability between countries. The second survey should allow for more profound analysis.

The target population will consist of enterprises in the manufacturing, as well as in the service sectors. The questionnaire follows very closely the recommendations of the revised version of the Oslo manual. It is the outcome of the work of a task force on innovation and of active discussions between the Member States and the Commission.

To monitor the harmonisation of CIS-II, the Commission (Eurostat together with DGXIII) is actively cooperating with the participating countries. A full documentation on the implementation of CIS-II has been sent out to the Member States.

The exhaustive documentation covers the following subjects:

- Core questionnaire (service and manufacturing sectors)
- Methodological recommendations (target population, survey methodology, collecting and data processing, non-response analysis, etc.)
- Controls and logical checks and methods for estimation of item non-response
- Algorithms for the control and logical checks (manufacturing and service sector)
- Guidelines for data transmission (manufacturing and service sectors)

Eurostat aims to achieve a high degree of harmonisation for the collection of innovation data. In this respect the Member States transmit their questionnaires as well as their survey methodology to Eurostat for comments. National institutes also make relevant remarks on the logical and control checks, the cleaning procedure including the estimation techniques proposed by Eurostat. Hence we are expecting to reach a higher degree of harmonisation for CIS-II than for CIS-I.

To speed up the dissemination of data the participating countries of CIS-II have been asked to provide Eurostat with some preliminary results at an early stage. These will cover the following statistics:

- Population of enterprises
- Innovation input
- Innovation output
- Innovation objectives
- Innovation sources
- Innovation cooperation
- Innovation barriers.

In most of the countries the national innovation survey has already started. The countries which are on the field are: Belgium, Germany, Spain, France, Italy, Luxembourg, Netherlands, Finland, Sweden and the United Kingdom.

Denmark, Greece, Ireland, Austria, and Iceland are expected to start very soon. Norway will send out the questionnaires in January 1998.

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## Database and Publications

### *The Indicators Report*

The work on the second edition of the European Report on Science and Technology Indicators (REIST) is almost finished. The English version (of this DG XII publication) will appear in print end of this year. REIST sets out to analyse the situation of S&T in Europe in its wider economic context, and to compare it with major developments in other parts of the world. Therefore, the geographical scope of REIST is not restricted to EU or OECD member countries, but includes also several Eastern European, Asian, South American and Mediterranean countries.

Several research institutes across Europe were responsible for providing the text to the Report, with many graphs and tables. Eurostat was, and is, responsible for the data. Over the past year, datasets containing S&T variables and general macro-economic indicators have been collected from various sources.

These data-files were handed out to the subcontractors of DGXII. The contractors on the other hand collected data on specialised indicators, for example bibliometrics and patents and delivered them to Eurostat. All data are stored in a database, which will serve as a prime reference source for S&T information, and will also facilitate the work on the next issue of the Report, which will start next year.

Some important contribution to REIST is the Statistical and the Methodological Annex produced by Eurostat. The Statistical Annex consists of 150 pages of tables with data on both S&T and economic variables.

Topics covered are: R&D appropriations, R&D expenditure, R&D personnel, graduates of higher education, bibliometrics, patents, total and high-tech trade, technology balance of payments, innovation, R&D co-operation in Europe, national accounts, price indices, exchange rates, population, labour force and foreign direct investment. The Methodological Annex (of about 40 pages) discusses in detail, underlying concepts and definitions of the indicators.

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### *Research and Development: Annual Statistics 1997*

#### **Just Released !**

The R&D Annual Statistics 1997 brings the readers data on government appropriations on R&D (GBAORD), and expenditures and personnel like in the past. Patent data are provided for the period 1989-1995. Patent data were new in last year's publication and this year they have been improved upon.

A number of difficulties have been cleared up, although some remain. For example, a considerable number of patents cannot be allocated to a region because the postal code cannot be identified or because the link between postal codes and regions is not sufficiently reliable.

There are two new features in the annual publication: the first is a chapter devoted to now- and forecasts and there is a chapter on non-EEA countries. Eurostat is now for the first time able to meet the requests of the users for up to date data on these.

The other new chapter, on non-EEA states, is a consequence of the use of the Indicators Report (REIST) database. In the past, some comparisons were made with the USA and Japan. The width of the comparisons has now been widened substantially.

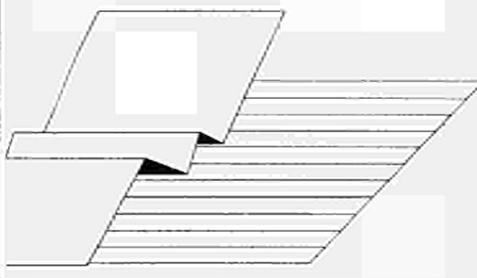
For the 1997 issue, there has been a big acceleration of the production process compared to 1996. This means that information is a lot more fresh. There were two factors, which made this possible: the Member States delivered the data earlier than last year and Eurostat's editing work has been streamlined. For 1998 we hope to be able to cut the process down by one month!

To obtain a copy of this document, please contact your nearest sales office for official EU publications (as shown on page 11 of this newsletter). You may also obtain further information on this and other REDIS publications from the project secretary or by contacting the Eurostat Data shop (see page 11)

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**FORSCHUNG UND ENTWICKLUNG:  
 JÄHRLICHE STATISTIKEN  
 RESEARCH AND DEVELOPMENT:  
 ANNUAL STATISTICS  
 RECHERCHE ET DEVELOPPEMENT:  
 STATISTIQUE ANNUELLES  
 1997**



## Plans for the coming months

The 1997 EEA Working Party Meeting will take place on 15 - 17 December. The major item of the agenda will (as it was last year) be the innovation survey. Discussions will focus on the progress made both by the Member States and Eurostat. The meeting will deal with related issues (CD-ROM, studies, third CIS)

Also to be discussed will be HRST, regional indicators, internal indicators, the REIST report. A new topic for discussion will be that of now/forecasts. (Research and Development: Annual Statistics contains in the 1997 issue, for the first time, a series of nowcasts, which will need to be discussed.)

The Council Decision establishing a multi-annual programme on R&D and Innovation statistics which has been the legal basis for the activities of the project over the past years requires Eurostat to produce a report on the work of the past four years. A draft of this report has been prepared and will eventually be submitted to the Council.

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### Abbreviations and Acronyms used

<b>CIS</b>	Community Innovation Survey
<b>DG</b>	General Directorate (of the European Commission)
<b>EEA</b>	European Economic Area
<b>EPO</b>	European Patent Office
<b>EU</b>	European Union
<b>GBAORD</b>	Government Budget Appropriation or Outlays on R&D
<b>HRST</b>	Human Resources in Science & Technology
<b>NUTS</b>	Nomenclature of Territorial Units for Statistics
<b>OECD</b>	Organisation for Economic Cooperation and Development
<b>R&amp;D</b>	Research and development
<b>REDIS</b>	R&D and Innovation Statistics
<b>REIST</b>	European Report on Science and Technology Indicators
<b>UNESCO</b>	United Nations Educational Scientific and Cultural Organisation

# FOCUS

## .....The European Economic Area Working Party on Research, Development and Innovation Statistics

In the *Focus* section of the preceding issue of this newsletter, we looked at the activities of the EEA Working Party on REDIS, which was created over seven years ago. The group has been responsible for guiding and advising on the various actions of Eurostat in this field.

We noted that close cooperation with international bodies such as the OECD and UNESCO has

meant participation in the discussions at a very broad international level. So has the presence in the meetings of such countries as the USA, Canada, Australia etc.

As promised in that issue, in this concluding part of the FOCUS section, we present the list of other regular non-EU participants to the Working Party.

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**Change of address?**

**REDIS News** aims to keep you informed of our activities on the Research Development and Innovation Statistics project. To ensure that you receive future issues, please notify us of any change of address using the form below. If you will not like to receive any future issues of the publication, please indicate this on the form.

Name as currently printed on label:.....		
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or by mail to: The project secretary, REDIS Project, (Eurostat A4),  
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## OTHER NEWS

# Research in Statistics

### ***New techniques and technologies for statistics***

Eurostat has the preoccupation of meeting the needs of users of European Union's data on research and development and consequently, strives to develop a robust statistical information system in this field. To achieve this, there is a clear need to develop new tools for statistics. A concerted, carefully coordinated, and active programme of statistical research is necessary to make developing of new tools and technologies, aimed as a support to producers of data at an international level, possible. This is the only way to meet the challenges of the millenium.

By jointly developing the tools with the National Statistical Institutes and the wider academic and scientific communities, issues of relevance and practical usability are addressed from the conception stage.

Eurostat supports a wide range of research activities in various fields of statistics with a number of projects being currently executed by public and private institutes on its behalf.

### ***DOSIS and SUP-COM***

There are twelve research topics which are presently being addressed within the framework of the **DOSIS** (Development of Statistical Information Systems) programme funded through the ESPRIT (Information Technologies) and Telematics Applications programme.

In addition, research projects in the field of official statistics are being financed within the framework of **SUP-COM** – a programme intended to provide scientific and technical support to Community policies. A total of twenty six projects (mostly of twelve-month duration) were financed under this programme in 1995, thirty in 1996, and about eighteen other projects are planned to be financed in 1997.

Within Eurostat itself, a number of statistical research issues are being investigated in-house.

### ***Dissemination***

To disseminate results of statistical research activities, two main actions are being undertaken. The first is the development of the statistical research website on the internet. (Please see below for the address of the home-page.)

The second is the organising of a number of scientific seminars, which are intended to provide the forum where new ideas and findings are discussed and experiences shared. Participation in these seminars is opened to anyone anywhere in the world and both scientific and programme committees always reflect very international composition.

Some of the scientific seminars planned by Eurostat for 1998 include:

#### ***Statistical Data Protection***

SDP-98 Seminar, *Lisbon, Portugal 25-27 March 1998*

#### ***R&D in Official Statistics***

##### ***Academic and Official Statistics Cooperation***

AOSC-98 Seminar, *Sinaia, Romania 16-18 April 1998*

##### ***Knowledge Extraction & Symbolic Data Analysis***

KESDA-98 Seminar, *Luxembourg, 27-28 April 1998*

##### ***Seasonal Adjustment Methods***

SAM-98 Seminar, *Bucharest, Romania 21-23 October 1998*

##### ***New Techniques & Technologies for Statistics***

NTTS-98 Seminar, *Sorrento, Italy 4-6 November 1998*

##### ***Exchange of Technology and Know-how***

ETK-98 Seminar, *London, 1998*

It is worth mentioning that Eurostat is currently working on a new scientific review – *Research in Official Statistics ROS*. This is planned to be released shortly.

Contact for further information:

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