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**REPORT FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT AND
THE COUNCIL**

**on the implementation of Decision No 1608/2003/EC of the European Parliament and of
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REPORT FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT AND THE COUNCIL

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EXECUTIVE SUMMARY

Official statistics on science, technology and innovation in the European Union are largely based on Decision No 1608/2003/EC of the European Parliament and of the Council of 22 July 2003 concerning the production and development of Community statistics on science and technology¹. The Commission has implemented this Decision in close cooperation with Member States through regulatory measures, voluntary data collections and through the Union's statistical authority (Eurostat)'s own data production.

This report evaluates the implementation of the individual statistical actions listed in Article 2 of the Decision. These are aimed at establishing a statistical information system on science, technology and innovation to support and monitor EU policies. The report mainly covers developments since the previous report in 2011.

Commission Regulations (EC) No 753/2004 and No 1450/2004 implementing Decision 1608/2003/EC relate to two data collections that are regularly performed within the European Statistical System (ESS) by Member States' statistical authorities. Research and development (R&D) and innovation statistics collected under the Regulations, together with statistics on human resources in science and technology, high-technology industries and knowledge-based services, and patents, have become recognised and widely-quoted reference data for monitoring EU science, technology and innovation policy.

From the reference year 2012 onwards, science, technology and innovation data collections will gradually come under the new Commission Implementing Regulation (EU) No 995/2012, with effect from the October 2013 data transmissions. Commission Regulations (EC) No 753/2004 and No 1450/2004 have thereby been repealed.

The quality of the statistical data has become more important, due to policy setting and monitoring requirements and, in particular, the fact that policy targets are set on the basis of statistical information. The Europe 2020 strategy has set a precise target of raising combined public and private R&D investment levels to 3% of GDP. It is therefore of the utmost importance that the quality of the measurements is (and remains) of a high standard.

The adoption of the above Commission Regulations implementing Decision No 1608/2003/EC improved science, technology and innovation data quality. This has been followed by gradual on-going improvements and close monitoring of quality. Agreeing and implementing international standards and methodology, and constant discussion of their relevance in a dynamic measurement framework, should help to keep the statistics up-to-date and of first-class quality.

¹ Decision No 1608/2003/EC of the European Parliament and of the Council of 22 July 2003 concerning the production and development of Community statistics on science and technology, OJ L 230, 16.9.2003, p. 1.

Further development work on science, technology and innovation statistics will take account of policy priorities and the development of the ESS as a whole. Given the priorities set in the Europe 2020 strategy and its supporting actions, a balance will be sought between novel solutions and measures to further improve existing science, technology and innovation statistics. The link with other business statistics will be strengthened by including R&D and innovation statistics in a future 'Framework Regulation integrating business statistics' currently under discussion within the ESS.

REPORT FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT AND THE COUNCIL

on the implementation of Decision No 1608/2003/EC of the European Parliament and of the Council on science and technology statistics

1. INTRODUCTION

This is the third implementation report submitted by the Commission to the European Parliament and the Council under Article 5 of Decision No 1608/2003/EC (hereinafter ‘the Decision’). The first report was adopted on 14 December 2007² and the second on 11 April 2011³.

In this context, it is worth to recall several recent policy initiatives. In June 2010, the European Council adopted the Europe 2020 strategy for jobs and smart, sustainable and inclusive growth⁴. It also confirmed the five EU headline targets, one of which is to improve the conditions for innovation and research and development, in particular with the aim of raising combined public and private R&D investment levels to 3 % of GDP.

In its Communication of 6 October 2010⁵ on the Innovation Union Flagship Initiative, the Commission proposed an additional indicator reflecting R&D and innovation intensity as well as an annual Innovation Union Scoreboard for monitoring overall progress in innovation performance.

On 17 July 2012, the Commission adopted a Communication on *A Reinforced European Research Area partnership for Excellence and Growth*⁶. It called for urgent structural changes across Europe in a partnership with Member States and stakeholder organisations for the timely delivery of concrete measures to raise the level of excellence of Europe’s public research system. As part of this initiative, a robust European Research Area (ERA) monitoring mechanism (EMM) has been developed based on indicators for actions to monitor ERA policy reforms and their implementation, providing transparency to the Council, the European Parliament and the scientific community, and a basis for the Commission’s own future decisions.

² Report from the Commission to the Council and the European Parliament on the implementation of Decision No 1608/2003/EC of the European Parliament and of the Council. COM(2007) 801.

³ Report from the Commission to the European Parliament and the Council on the implementation of Decision No 1608/2003/EC of the European Parliament and of the Council on science and technology statistics. COM(2011) 184.

⁴ European Council conclusions of 17 June 2010. CO EUR 9, CONCL 2.

⁵ Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions on *Europe 2020 Flagship Initiative Innovation Union*. COM(2010) 546.

⁶ Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions on *A Reinforced European Research Area Partnership for Excellence and Growth*. COM(2012) 392 final.

More recently, in its Communication of 13 September 2013⁷, the Commission presented an indicator to measure performance in innovation output. The indicator intends to support policy-makers to establish new or stronger measures to remove bottlenecks that prevent innovators from translating ideas into products and services that can be successful on the market.

The present report takes stock of the implementation of the statistical information system on science, technology and innovation (STI) required by the Decision and extensively used to support and monitor related EU policies. The report mainly covers developments since the previous report in 2011. The first part focuses on implementation of measures under Article 2 of the Decision. It is followed by chapters on data quality, costs and statistical burden. The final chapter looks ahead to future actions.

2. IMPLEMENTATION OF THE DECISION

2.1 Regulatory measures

The Commission has implemented the Decision through regulatory measures and voluntary data collections in the Member States and through Eurostat's own statistical production.

Most importantly, in 2004, two implementing Regulations came into force:

- Commission Regulation (EC) No 753/2004⁸, which focuses particularly on R&D statistics and also covers statistics on human resources in science and technology (HRST), high-technology industries and knowledge-based services, patents and other science and technology statistics (without assigning tasks directly to Member States or the ESS in general); and
- Commission Regulation (EC) No 1450/2004⁹ on Community statistics on innovation.

The R&D and innovation statistics collected under these Regulations have become recognised and widely-quoted reference data in EU policy monitoring.

In 2012, the 2004 Regulations were replaced by Commission Implementing Regulation (EU) No 995/2012¹⁰, which also amended the detailed requirements for R&D, other science and technology, and innovation statistics.

The need for a new Implementing Regulation arose mainly from the adoption of the Europe 2020 strategy and its various flagship initiatives, together with monitoring of the ERA, which

⁷ Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions on *Measuring innovation output in Europe: towards a new indicator*. COM(2013) 624 final.

⁸ Commission Regulation (EC) No 753/2004 of 22 April 2004 implementing Decision No 1608/2003/EC of the European Parliament and of the Council as regards statistics on science and technology, OJ L 118, 23.4.2004, p. 23.

⁹ Commission Regulation (EC) No 1450/2004 of 13 August 2004 implementing Decision No 1608/2003/EC of the European Parliament and of the Council concerning the production and development of Community statistics on innovation, OJ L 267, 14.8.2004, p. 32.

¹⁰ Commission Implementing Regulation (EU) No 995/2012 of 26 October 2012 laying down detailed rules for the implementation of Decision No 1608/2003/EC of the European Parliament and of the Council concerning the production and development of Community statistics on science and technology, OJ L 299, 27.10.2012, p. 18.

called for agreement on the statistical monitoring framework for the corresponding EU policies. In order to keep the STI data set as relevant as possible for users, it is essential that the indicators used are based on statistics and variables which are regularly produced in the Member States and, as far as possible, covered by statistical legislation.

By specifying the statistical unit required and the uniform quality reporting, the Regulation also took a further step towards harmonising R&D and innovation statistics and strengthening the link with general business statistics.

2.2 Main achievements

The main achievements in the period covered by this report were as follows:

- There was continued growth in the data production volume of R&D expenditure and personnel data, compiled in various dimensions and breakdowns based on the Frascati Manual (OECD 2002);
- Agreement was reached on a further breakdown of data on ‘R&D funded from abroad’;
- A methodology was developed for measuring trans-nationally coordinated research in Europe (as part of Government budget appropriations or outlays for R&D - GBAORD);
- A more complete collection of information on public funding to ICT R&D from the business enterprise sector was initiated;
- The 2012 Community innovation survey was prepared on the basis of the Oslo Manual (OECD, Eurostat 2005) to measure the innovation performance of enterprises using a harmonised survey methodology and questionnaire including an *ad hoc* module on strategies and obstacles for reaching enterprises’ goals (increasing turnover, market share or profit margin; decreasing costs);
- Community innovation survey data at individual enterprise level (‘microdata’) could be accessed more quickly via Eurostat’s SAFE Centre and CD-ROM releases for external researchers; access now also includes the 2010 data set;
- Improvement of the quality and harmonisation of STI data through established quality reporting and the introduction of new quality measures;
- Work has begun on streamlining national data and metadata transmissions by working towards the use of the common ESS tools to support a more efficient and standardised production process;
- The timeliness of preliminary and final data releases has increased, due to improved data production processes in the ESS and more robust follow-up routines;
- Regular data production on employment in knowledge-intensive activities was set up, using an agreed methodology for classification of such activities;
- Regular data processing of statistics on Community trade marks and Community designs began in 2013;

- The publication of *She Figures*, the Commission's 2012 report on women's role in science, was facilitated by gender breakdowns of R&D and HRST data, where appropriate; and
- Classifications used for STI statistics were updated to comply with their revised versions (according to economic activity – NACE, trade products – SITC, education – ISCED, occupation – ISCO and territories - NUTS).

The main dissemination channel for the detailed STI data and related documentation is Eurostat's online database (Eurobase). The Commission also disseminates STI data in several policy reports (e.g. related to the Europe 2020 strategy and the ERA).

2.3 Implementation of STI statistics in Member States

National data collections have been and will further be re-adjusted to meet the revised data requirements of Implementing Regulation (EU) No 995/2012. New data have been requested for the first time in December 2013 for GBAORD, June 2014 for innovation and June 2015 for R&D. Some of this work was already launched during the piloting phase of the new or revised data collections.

Member States' compliance with the mandatory data provision requirements has been very satisfactory and followed up annually in two formal reporting rounds. The number of Member States with missing provisional R&D data for example was reduced to one in 2013 (and two and three in 2011-2012). This improved situation enabled the release of the EU R&D target indicator in 16 and 14 days after the end of the mandatory delivery date (31 October) in 2012 and 2013. Delays were previously 30 to 40 days. Coverage problems and delays in data deliveries have been mainly limited to isolated occurrences affecting national data production systems (e.g. temporary lack of resources, major redesign of production system).

3. DATA QUALITY

The framework for the data quality of STI statistics is the European Statistics Code of Practice¹¹. This covers 15 main principles, of which several relate to the general institutional conditions (professional independence or adequacy of resources) of Member State authorities and organisations contributing to the overall quality of European statistics. Other principles such as sound methodology through manuals are for the STI statistics internationally established and frequently evaluated in joint efforts with the Member States. Several quality principles relating directly to the STI surveys (*inter alia* accuracy, coherence and comparability) are covered and monitored through regular quality reporting.

Eurostat has been collecting national quality reports on R&D and GBAORD statistics since 2007 and for each two-yearly round of the Community innovation survey since 2004. Serious shortcomings have not been identified. However for the R&D statistics some follow-up work has been identified in the form of national quality improvement action plans on R&D statistics (in 2011) in particular in the areas of improving the identification and updating regularly the frame population of R&D performers (enterprises known or assumed to perform R&D). Innovation survey challenges are mainly linked to measurement issues. Constant efforts are required to convey concisely but precisely to enterprise respondents what they are being asked for (*new or significantly improved* products and processes) and encourage them to

¹¹ Recommendation of the Commission on the independence, integrity and accountability of the national and Community statistical authorities. COM(2005) 217.

process the desired information. Similarly quantification of the turnover from innovative products and the innovation expenditures remain challenging to be measured.

Synthesis of the innovation survey quality reports is released in online database together with the data. Regulation (EU) No 995/2012 has made quality reporting part of the mandatory data provision as from 2013.

4. COST AND BURDEN

4.1 STI statistics within the ESS

Eurostat's most recent overall analysis of response burden and production costs in the Member States, launched for 2010, assessed the costs of producing STI (R&D and innovation) statistics as 'medium' and the response burden as 'medium/high'. In this evaluation STI statistics performed in line with most statistical domains which were part of the overall assessment exercise, with somewhat lower production costs and a higher response burden than business statistics in general.

4.2 Detailed information collection on cost and burden

Regular attempts have been made to collect data on the cost and burden of STI data collections. Exact figures have been requested in the quality reporting, but consistent data allowing comparison or evaluation of the overall costs have proved difficult to obtain. Many Member States have pointed out that it will not be possible to separate the cost of the R&D and innovation surveys and data compilations, either from other business and related statistics or from similar activities based only on national needs. Where data are available, reporting methodologies that vary between Member States, and between institutions within Member States, preclude meaningful comparison or publication of the individual cost estimates.

Subject to the above reservations, the average burden measured by time spent filling in the enterprise sector R&D questionnaire for the reference period 2009 varied from 0.3 to six hours among the 13 of 15 Member States for which data are available. An exceptional value of 11 hours was reported by two Member States. Much fewer data are available from other economic sectors, although the periods of time spent filling in the R&D questionnaire in the government sector and higher education, while relatively close to each other, seem to be longer than in the enterprise sector.

As regards the Community innovation survey, the information in the quality reporting from the 2008 and 2010 survey waves reveals that the time spent by innovative enterprises on filling in the questionnaire varied between 0.48 and over three hours. Just two countries reported that more time was needed to fill in the questionnaire in 2010 than in 2008. Non-innovative enterprises spent between 0.24 and 1.85 hours filling in the questionnaire in 2010. Four out of ten countries reported higher costs in 2010 than in 2008, five had lower costs and one reported the same costs for both years.

4.3 Eurostat co-financing of STI data collections in Member States

The calls for grant proposals in 2006 and 2009 were followed by several similar calls under the 2011 Commission budget for co-financing the non-mandatory parts of the R&D or innovation data collections or for studying the feasibility of developing new indicators or financing the surveys on Career Development of Doctorate holders (CDH). In 2011, total financial commitments for STI statistics were €1 019 974 for 13 Member States and Norway.

Phare Multi-Beneficiary Programmes for statistical cooperation, the Transition Facility Multi-Beneficiary Programme for statistical integration and the Instrument for Pre-accession Assistance (programmes from 2004 to 2011) have involved co-financing for a total of €1 518 105 to conduct R&D, innovation and CDH surveys in associated third countries and Member States that joined the Union in 2004 or later.

5. FURTHER DEVELOPMENT OF STI STATISTICS

5.1 Changes in the environment

The Commission Communication on a vision for European statistics¹² calls for more integrated, more intelligent approaches to the production of statistics. This includes integrating statistical tools, making increased use of administrative sources and simplifying and improving the statistical regulatory environment to obtain richer forward-looking statistical data, improve productivity and reduce the response burden.

Now that the implementing rules for STI statistics have been presented more consistently in Regulation (EU) No 995/2012, the next step will be to strengthen the link with other business statistics by including R&D and innovation statistics in a future 'Framework Regulation integrating business statistics', currently under discussion within the ESS. This will also provide the next opportunity to re-evaluate the mandatory content of R&D and innovation data.

On various occasions in recent years, national statistical authorities have reported a lack of resources, raising serious concerns as to their ability to meet existing or new ESS requirements. Priority setting is therefore more crucial than ever, for existing and planned statistical operations alike.

5.2 Improving and evaluating existing STI statistics

Statistics need to be sound and fit for purpose. Existing data collections, on R&D and innovation in particular, will be kept under constant relevance and quality review through the full use of regular compliance monitoring and systematic collection of quality reports. This is now even more important as the Europe 2020 strategy will be monitored partly through sets of STI indicators.

For R&D statistics, efforts are continuing to ensure that underlying data are reported for all R&D performers (or at least estimated when needed, whether or not they are known beforehand) and that these cover all economic sectors and sub-sectors and operating units of all sizes, i.e. the totality of R&D expenditure and personnel in the economy at a given time.

For European innovation statistics, an assessment will be made as to whether extending the coverage (to all business activities, the entire economy) would add sufficient new information to justify the additional resources needed and if this would be methodologically feasible.

As with the new work, improvements in existing STI statistics will be made, where mutually beneficial, in cooperation with the OECD and other international organisations with which coordination has already been stepped up. This includes continuing work to revise methodological reference manuals.

¹² Communication from the Commission to the European Parliament and the Council on the production method of EU statistics: a vision for the next decade. COM(2009) 404.

5.3 New indicators, new uses

Responding to the new user needs is particularly challenging in the present ESS environment, in particular in light of tighter budgets. New indicators and new data sources will nevertheless be frequently requested by the user community. Development work which goes beyond using the existing data sources, including new indicators, new data sources and even further breakdowns of the existing data (as they may involve larger sample sizes or methodological work), will take place only after thorough screening and, to the extent possible, cost/benefit analysis. Feasibility studies and pilot surveys will also be used in this context.

Further internationalisation of R&D, innovation and other enterprise activities pose, in overall terms, even additional challenges for compiling STI statistics now and in the future. This covers both obtaining new statistical data on internationalisation and also mastering business surveys in more globalised world and therefore more complex context.

The European System of National and Regional Accounts (ESA 2010)¹³ is the newest internationally compatible EU accounting framework for a systematic and detailed description of an economy. This will be implemented as from September 2014. A major difference from the previous version (ESA 95) is the recognition of R&D as capital formation rather than considering it intermediary consumption. In other words, instead of R&D activities providing intermediate input to the main production of an enterprise, it will be now recognised as output in its own right and result in an increase in countries' GDP. This modification introduces new requirements for more detailed and broader measurement of R&D. Related to the OECD led revision of the Frascati Manual it is currently under consideration to what extent the R&D surveys, can contribute to R&D capitalisation work and what amendments could possibly be introduced.

¹³ Regulation (EU) No 549/2013 of the European Parliament and of the Council of 21 May 2013 on the European system of national and regional accounts in the European Union, OJ L 174, 26.6.2013, p. 1.