



SCIENCE
RESEARCH
DEVELOPMENT

EUROPEAN
COMMISSION



GENERAL INFORMATION

STANDARDS, MEASUREMENTS AND TESTING

Fourth framework programme of
Research and Technological
Development (1994-1998)



THE FOURTH FRAMEWORK PROGRAMME

1994-1998

Drawing on a budget of 12.3 thousand million Ecus, plus a reserve of 700 million Ecus to be released before 30 June 1996 subject to certain conditions, this research and technological development (RTD) programme covers four main lines of action (see below) intended to form the basis of the European Union's response to three major challenges:

- To promote scientific and technological excellence in Europe, notably with a view to meeting the needs of industry and improving the quality of life in the Member States.
- To achieve a greater degree of *coordination, cooperation and optimization* with regard to the research efforts of the Member States.
- To help to define and implement other Community policies (transport, environment, etc.).

Budget allocated to the various specific programmes under the fourth framework programme (in million of Ecus)

Project 1: programmes of research, technological development and demonstration	
1. Information technology	1,911
2. Telematics	843
3. Communications technologies	630
4. Industrial and materials technologies	1,617
5. Standards, measurements and testing	173
6. Environment and climate	532
7. Marine science and technology	228
8. Biotechnology	552
9. Biomedicine and health	336
10. Agriculture and fisheries	607
11. Clean and efficient energy technologies	967
12. Nuclear fission safety	414
13. Controlled thermonuclear fusion	840
14. Transport	240
15. Socio-economic research	105
16. Direct action and JRC support activities	728
Project 2: Cooperation with third countries and international organizations	
	540
Project 3: Dissemination and utilization of research results	
	293
Project 4: Stimulation for the training and mobility of researchers	
	744
Total	12,300

1994-1998



THE SPECIFIC PROGRAMME STANDARDS, MEASUREMENTS AND TESTING (1994-98)

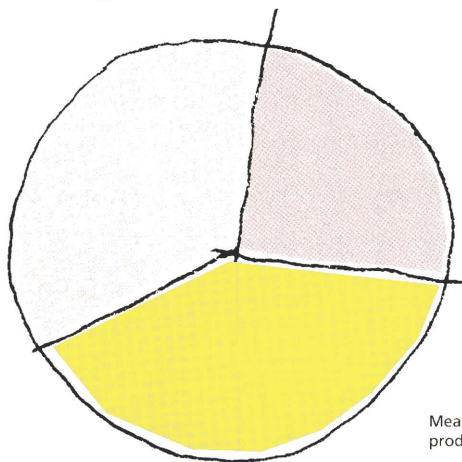
The programme *Standards, measurements and testing* is a Community RTD programme which forms part of the Fourth Framework Programme (1994 to 1998) and which has been allocated a budget of 173 million Ecus over five years. The aim of this programme is to support the research necessary in order to establish the scientific and technical bases needed for the development of European standards and of a common measurement, testing and reference materials infrastructure.

The programme *Standards, Measurements and Testing* is likely to have a major impact on industry, commerce and society. The reasons for this are threefold:

- In order that modern industrial production systems can develop and remain competitive, it is essential that they are backed up by recognized standards and by a reliable measurement and testing infrastructure.
- The effective application of European policies in the industrial, agricultural, energy and services sectors calls for the use of measurement and testing methods that are accepted, recognized and respected not only in Europe, but also throughout the world.
- The quality of life in Europe, in terms of health, safety, the environment and leisure, cannot evolve harmoniously unless it is based on correct and reproducible measurement and testing results, in order to prevent accidents and irreversible deteriorations in public health, the environment and our cultural heritage.

BREAKDOWN OF THE BUDGET FOR THE STANDARDIZATION, MEASUREMENTS AND TESTING PROGRAMME

Research on standards and provision of technical support for trade 35%



Measurements to meet the needs of society to society 25%

Measurements for European quality products 40%



TECHNICAL SPHERES OF INTERVENTION

The RTD work to be undertaken under the *Standards, Measurements and Testing* programme will have the following two objectives:

- To contribute to the effort to improve the competitiveness of European industry.
- To support the development and implementation of Community policies.

MEASUREMENTS FOR QUALITY EUROPEAN PRODUCTS (THEME I)

THE OBJECTIVES:

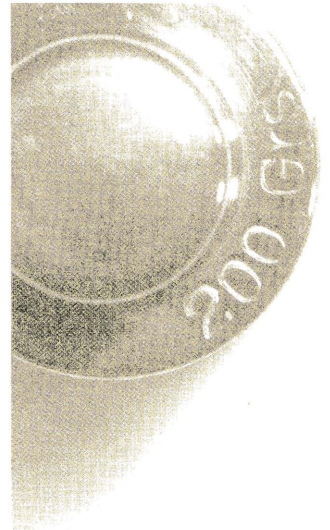
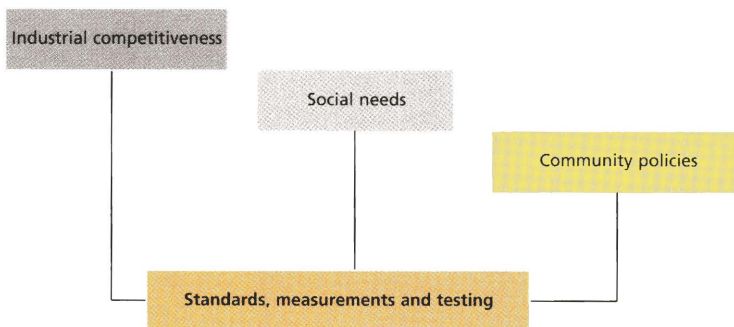
The aim of this action is to develop and promote the measurement and testing methods needed by industry in order to optimize all the stages of production. These activities will seek to contribute to efforts to strengthen the competitive position of European industry and on the world market.

THE PROJECTS:

The RTD projects envisaged in this area cover the principal stages in the production process:

- Basic research.
- Product development.
- Product manufacture.

IMPACT OF THE STANDARDS, MEASUREMENTS AND TESTING PROGRAMME



RESEARCH ON STANDARDS AND PROVISION OF TECHNICAL SUPPORT FOR TRADE (THEME II)

THE OBJECTIVES:

Technical problems frequently arise in the course of the drafting or implementation of directives, regulations or European standards. The solutions to these problems must be based on measurement results and on data compiled through European collaborative studies, working to relatively short deadlines. Over the longer term, the projects will help to facilitate trade as a result of the accreditation and mutual recognition of guarantee certificates.

THE PROJECTS:

The research will concentrate on the development of measurements and testing in the following four areas:

- Research in support of European policies and, in particular, in support of mandated European standards (CEN - European Committee for Standardization, CENELEC - European Committee for Electrotechnical Standardization and ETSI - European Telecommunications Standards Institute).
- Development of a European measurement and testing infrastructure.
- Support for the accreditation and quality assurance of laboratories.
- Support for the needs of customs laboratories.

MEASUREMENTS RELATED TO THE NEEDS OF SOCIETY (THEME III)

THE OBJECTIVES:

Measurements and testing play an important role not only in preserving and improving the quality of life and in monitoring environmental changes but also in safeguarding our cultural heritage and in allowing individuals to realize their full potential.

THE PROJECTS:

The research projects will concentrate on the following areas:

- Health and safety.
- Monitoring of the environment.
- Protection of our cultural heritage.
- Forensic medicine.



PROCEDURES GOVERNING PARTICIPATION

Participation in the programme is open to enterprises, universities and research organizations wishing to develop or improve standards, measurements, testing or any other metrological facility in support of:

- Industrial competitiveness.
- Implementation of Community policies.
- Improvement of the quality of life.

THIS PARTICIPATION MAY TAKE THE FOLLOWING FORMS:

- Research projects.
- Coordination activities ("thematic networks", etc.).
- Accompanying measures (studies, dissemination, training, etc.).

THE PROJECTS MUST POSSESS THE FOLLOWING GENERAL CHARACTERISTICS:

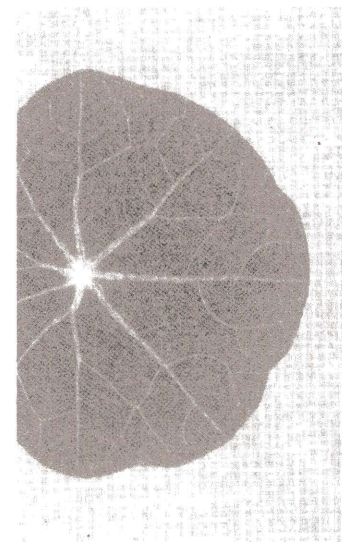
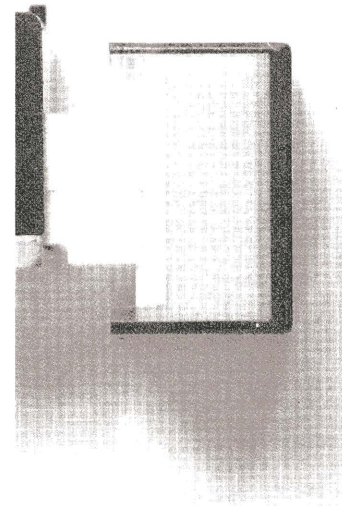
- They must have a clearly defined European and industrial dimension (collaboration with at least two independent enterprises from two Member States).
- They must be innovative and capable of generating significant economic spin-off for industry and commerce.
- They must comply with the participation criteria set out in the information documents published in conjunction with the calls for proposals published regularly under the programme.

Technological stimulation measures (CRAFT) will be implemented with a view to encouraging and facilitating the participation of SMEs in research projects. These activities represent 8.6% of the programme's total budget.

Plans are in hand to launch three principal calls for proposals (1995, 1996 and 1997). However, the measures in favour of the SMEs and coordination of the research projects are to be the subject of a call which will remain open until the end of 1997.

FOR FURTHER INFORMATION, PLEASE CONTACT THE FOLLOWING INFORMATION OFFICES:

- Industrial research and thematic networks:
Fax: + 32-2-295.80.72
- Technological stimulation for SMEs (CRAFT):
Fax: + 32-2-299.33.07



ACHIEVEMENTS OF COMMUNITY RTD

The following are examples of some of the results obtained under the community RTD programmes concerned with standards, measurements and testing:

"MEDICAL" DIAGNOSIS OF ROBOTS

A project involving metrology laboratories, universities and industrial research centres has developed a laser triangulation system for monitoring industrial robots and assessing their performance. Various parameters such as the final position of the arms, the magnitude of the vibrations, etc., are studied in order to estimate the degree of error affecting certain of the basic manipulations performed by a robot. This system is linked to an ISO standard for evaluating the performance of robots. It has been patented by the European Community. In addition, an expert system is to be employed whereby it will be possible to anticipate technical malfunctions and suggest a maintenance program.

IDENTIFICATION OF ADULTERATED WINES

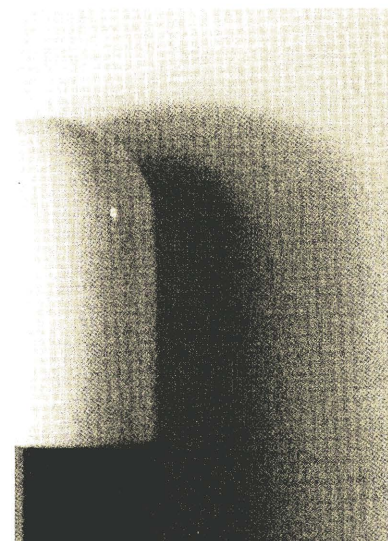
A project of the BCR programme (Community Bureau of References) has developed reference materials whereby it is possible to perfect a reliable technique for identifying wines whose alcohol concentration has been artificially enhanced by the addition of sugar (chaptalization). The method proposed draws on the technique of nuclear magnetic resonance whereby, on the basis of the references developed, it is possible to identify the origin of the alcohol (and hence of the sugar) contained in a wine from the subtle differences in the hydrogen/deuterium isotope ratio of the ethanol molecules. This technique was introduced into European legislation with the object of repressing fraud in this sector.

HIGH-GRADE STEELS

Standardized tests (ISO, CEN and ASTM) are used to monitor the impact-strength properties of steels. Under a project involving national testing laboratories and iron and steel research centres, it has been possible to develop reference materials which are used by industry to check the proper functioning of the machines used for the tests and the quality-control inspections of the batches of steel placed on the market.

PREVENTION OF FOOD POISONING

Seafood must be subjected to regular hygiene checks in order to reduce the risks of food poisoning. A project bringing together marine research laboratories and food-monitoring establishments is developing an analytical method capable of detecting the presence of certain toxins. Similar measures have resulted in the development and improvement of the process of detecting carcinogenic products in cereals and dairy products.



QUANTITATIVE SPIN-OFF

Below are some statistics relating to Community activities in the field of standardization, measurement and testing:

- Number of reference materials developed under the BCR (Community Bureau of Reference) programme: 303.
- Number of laboratories using reference materials: approximately 3000.
- Number of European standards to be developed each year: 300 to 500.
- Estimated annual expenditure on measurements and tests carried out in Europe: approximately 6% of GNP.



STANDARDS, MEASUREMENTS AND TESTS: KEY COMPONENTS OF THE TOTAL QUALITY CONCEPT

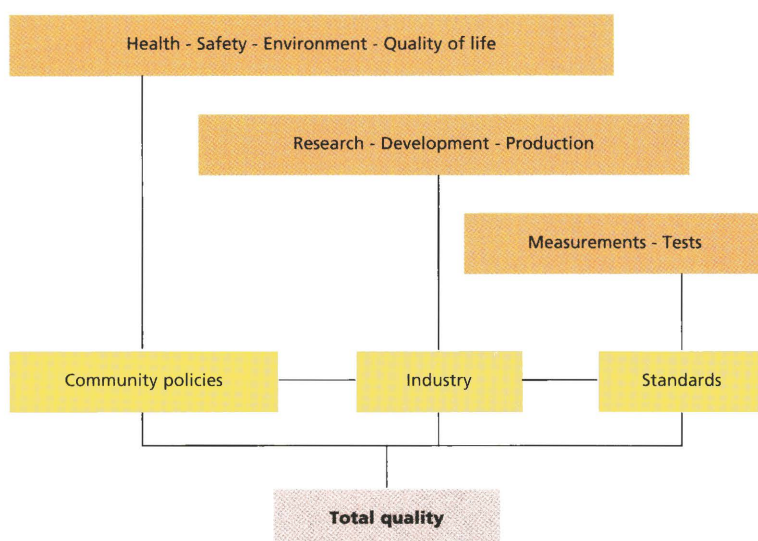
RTD activities in the field of standardization, measurement and testing are instrumental in developing industrial processes conforming to the principles of total quality. Indeed, an essential prerequisite for the attainment of this objective is that modern manufacturing and production processes must be based on measurement and testing systems which provide reliable and comparable results. This essential aim can be achieved only through a common infrastructure of measurements, tests and standards that are recognized internationally.

The activities pursued by the Community in this sector are a perfect illustration of the principle of *subsidiarity*, which seeks to promote action at Community level only when it is apparent that such an approach will prove more effective in dealing with problems than the adoption of a purely national approach.

In the field of prenormative research, action at European level is justified on at least three grounds:

- The need to develop standardization, measurement and testing systems on a firm European - if not global - basis.
- The need to draw on a multiplicity of skills (spread over several organizations and several countries).
- The prospect of large-scale dissemination not only within the European Union but also throughout the world.

FROM RTD TO TOTAL QUALITY



Luxembourg: Office for Official Publications of the European Communities, 1994

ISBN 92-826-9081-4

ECSC-EC-EAEC, Brussels-Luxembourg, 1994

1994 - 8p. - 21,0 x 29,7 cm

CG-86-94-149-EN-C

Printed in Spain

Diseño: D.N.S.C.

Impresión: Benzal, S.A.

