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## **RESEARCH AND STANDARDIZATION**

Greater consideration of the  
**prenormative dimension**  
in Community research programmes  
in order to foster  
**sustainable growth, competitiveness and interoperability**  
of products and services to emerge from research

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## 1. INTRODUCTION

Being one of the tools of quality<sup>1,2,3</sup> in the same way as measurements, testing, management techniques and quality assurance, standards are in a strategic position to promote the competitiveness and interoperability of products and services<sup>4</sup>.

**Standards thus provide a bridge between the technical domain and the regulatory and economic framework.**

The development of new standards and their implementation depend on preliminary research. Their bridge function should thus be taken into account in the selection, direction and content of research projects.

This bridge function is a two-way affair: on the one hand, prenormative research<sup>5</sup> promotes the development of new standards while, on the other hand, the standards create the conditions for better dissemination of the results of the research. In both cases a specific strategy is needed to make the results usable by the standards bodies.

## 2. THE NEED FOR STANDARDS

### 2.1 Economic and social usefulness

The advantages of standards have led to them being adopted in many industrial areas. Standards are indispensable tools in providing commerce with a platform for good working practices. They are also the tool of choice for protecting consumers and the health, safety and environment of citizens. They make for economies of scale and facilitate the interoperability of products and services.

#### General safety of products

The framework Directive 92/59/EEC leaves it to the European standards to define the technical specifications applicable to the products in question. The establishment of these specifications and the implementation of the standards require prior research in numerous fields: ergonomics, construction, engineering, toxicology, biomechanics, etc.

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<sup>1</sup> Quality is now recognized as being a strategic instrument *par excellence*. As such, it has become one of the key factors in the competitiveness of companies and thus their capacity to innovate.<sup>6</sup> Quality and innovation are inseparable. Quality is also a guarantee of the competitiveness of services closely connected the health, safety and environment of European citizens.

<sup>2</sup> European quality promotion policy for improving European competitiveness (SEC (96) 2000).

<sup>3</sup> Benchmarking the competitiveness of European industry (COM (96) 463 final, 9 October 1996).

<sup>4</sup> Services: In this document this term covers all technical services: public or private services with the exception of services in banking, insurance, distribution, education and training.

<sup>5</sup> Prenormative research: All R&D activities including demonstration projects needed to establish a standard plus the activities required for proper implementation.

<sup>6</sup> Green Paper on Innovation (COM (95) 688 final, 20/12/95).

Although it is very difficult to quantify their economic impact, the significance of standards for industry and services is undeniable. For example:

- the use of standardized techniques allows manufacturers to save time and money in developing their own techniques;
- standardization offers a choice of many equally valid solutions which often exist side-by-side and, as a result, it facilitates the design and production of equipment;
- the fact that products and components available on the market are consistent with standards gives potential customers exact knowledge of their technical characteristics, thereby enabling them to make the right choice in terms of quality and price;
- standardized specifications for appliances or components facilitate “interoperability”, i.e. they allow consumers to use appliances and equipment from different sources.

In Europe standards have mainly been developed by the CEN, CENELEC and ETSI<sup>1</sup> using different approaches:

- First and foremost, standards developed at the request of industry in order to establish a coherent market and to define rules and a common framework conducive to trade. These standards enable manufacturers to establish universally-recognized specifications for design, performance, composition, tolerances and other characteristics.

**Rational use of energy in buildings**

*Between 1986 and 1993 twelve national buildings research centres joined forces in a JOULE project (non-nuclear energy) to develop a series of test cells for innovative building components (e.g. super-insulating or smart glazing) and a reliable and rapid procedure of measuring the optical and thermal properties of these components.*

*The consortium cooperated actively throughout the entire period with the CEN's Technical Committee 89 in order to establish standards on the thermal performances of buildings and components. The cells are currently operational and managed by an EEIG.*

*JOULE Joint Opportunities for Unconventional or Long-term Energy Supply  
EEIG European Economic Interest Grouping*

- Secondly, standards mandated by the Commission which have been developed to implement new approach European Directives<sup>2</sup>.

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<sup>1</sup> CEN European Committee for Standardization  
CENELEC European Committee for Electrotechnical Standardization  
ETSI European Telecommunications Standards Institute

<sup>2</sup> Council Resolution: “New approach to technical harmonization and standardization” (OJ No C 136, 4.6.1985).

These standards, which are principally performance standards<sup>1</sup>, enable manufacturers to demonstrate that their products are consistent with the essential requirements set out in the directives. Many of them have needed prior research or post-research work to solve implementing problems. Numerous examples illustrate these activities throughout this document.

**Food packaging**

*In 1992 some 28 million tonnes of plastics were used in the EC as packaging for foodstuffs which had to comply with the provisions of Directive 89/109/EEC, namely:*

- a) not to contaminate foodstuffs through any transfer of constituents;*
- b) not to cause unacceptable changes to the composition of the foodstuffs; and*
- c) not to rob the foodstuffs of their organoleptic properties.*

*The CEN is currently working on the standardization of 33 analytical methods of quantifying the level of contaminants. These methods are being developed as part of a research project in the Standards, Measurements and Testing Programme and are supported via the preparation of certified reference materials.*

- Thirdly, ISO/EN 9000 and EN 45000 standards to define the organization of quality and systems of laboratory accreditation. These standards have made for procedures to evaluate the conformity of products and services which are mutually recognized by the Member States. A similar approach was adopted for the standard ISO 14001 which implements an environmental impact assessment procedure for industrial activities and services.

ISO 9000 standards were first published in 1987. They have since become widely recognized by the industry and the services sector and have been adopted by almost all the members of the International Standards Organization (ISO).

A survey run by Mobile Europe Ltd showed that at the end of 1995 more than 127 000 certificates had been issued throughout the world and that the number was growing constantly.

ISO 9000 certification is often required for major public works contracts and many of the big manufacturing industries have introduced quality systems which are applicable to all their suppliers. At present this certification of such systems is not limited solely to big companies, it also includes small and medium-sized enterprises and is rapidly being extended to the services sector.

Another survey run by the Manchester Business School in 1995 showed that ISO 9000-certified companies had a higher turnover than the national average and a four times better chance of surviving the current economic recession.

- Finally, standards connected to the development of high-technology sectors [information society (including satellites<sup>2</sup>) or biotechnology]. These standards are very important to the competitiveness of industry and services in that they give preference to the European approach at world level.

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<sup>1</sup> Standards which establish the general framework of a system are called **performance standards** as opposed to product standards which describe in detail a product or a process. The flexibility of the standards allows industry to produce competitive products and services at world level while fostering an innovative approach in continually evolving areas and inspiring confidence in users and consumers.

<sup>2</sup> Preparatory document on "EU action plan : satellite communications in the Information Society" (COM(97) 91 final, 5/3/1997).

### **Mobile communications**

*In 1993 the value of output in the EC in telecommunications equipment was ECU 18 425m, 16% more than in the USA and 53% more than in Japan. This reflects the development of standards such as ISDN (Integrated Services Digital Network), GSM (Global System for Mobile Communications) and DECT (Digital European Cordless Telecommunications), all of European origin.*

*RACE and its successor, ACTS, are currently working on the development of standards for the Universal Mobile Telecommunications System (UMTS). These should integrate domestic and professional services whereby individual pieces of equipment will be capable of providing multimedia mobile services.*

RACE Research in Advanced Communications in Europe

ACTS Advanced Communications Technologies and Services

## **2.2 International trade**

The establishment of the big internal market in Europe, the ratification of agreements from the Uruguay Round and the existence of the World Trade Organization (WTO) are accelerating the removal of technical barriers to trade (TBT),<sup>1</sup> in particular by way of the code of good practice.

The Community has thus set two fundamental objectives:

- firstly, to reduce or prevent the establishment of protectionist standards or technical barriers on markets outside the Union;
- secondly, to promote the development and adoption of standards and regulatory approaches among its partners which are compatible with or even based on European practices.

These concerns of the Community are coming increasingly to the forefront, for example, in the transatlantic dialogue within the Transatlantic Advisory Committee on Standards, Certification and Regulatory Policy (TACS).

### **EXTRACT FROM THE TACS REPORT OF JUNE 1996**

*The establishment of a transatlantic market needs the adoption of a multiple strategy, including, in addition to the mutual recognition of agreements, greater use of international standards, the elimination of certification procedures and double verification, the development and use of common industrial standards, the use of functional standards in regulations and directives and greater transparency, participation and cooperation in the process of drafting standards.*

*To sum up, the principle to be adopted should be "once verified accepted by all".*

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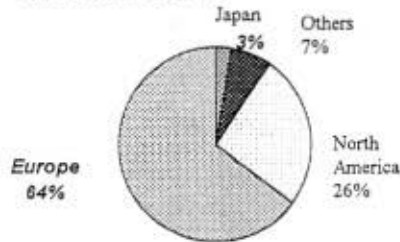
<sup>1</sup> Community external trade policy in the field of standards and conformity assessment (COM (96) 564 final).

International standards make for economies of scale not only for multinational companies but also for SMEs which export or supply parts incorporated in units for export. In short, standards reduce barriers to trade and assist the development of markets in the economic areas where they are applied.

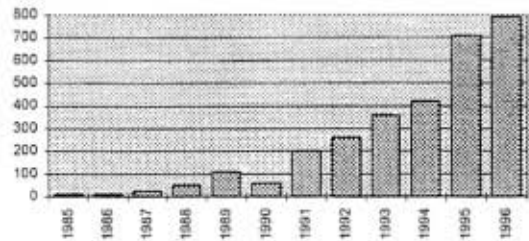
### 2.3 Economic impact of standards

The first figure shows the importance that European organizations attach to international standardization.<sup>1</sup> This is reflected by the number of secretariats within the ISO. The other three figures show the progression in the annual production of standards by the three European standards organizations to meet the needs of industry.

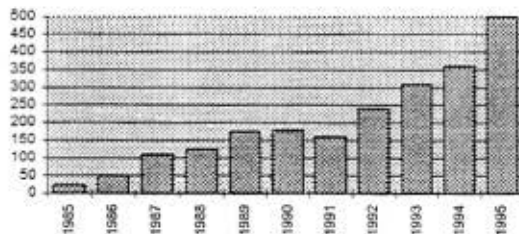
Secretariat of international technical groups by region (end of 1994)



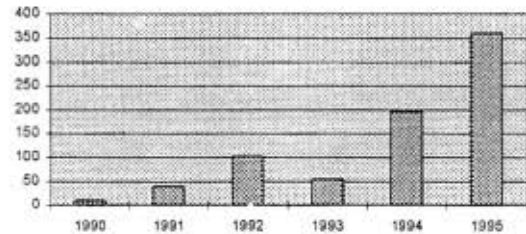
CEN - Annual prod. of standards



CENELEC - Annual prod. of standards



ETSI - Annual prod. of standards



The economic impact of adopting a standard can be illustrated by numerous examples, one of them being the mobile telephones now seen everywhere (see box on previous page).

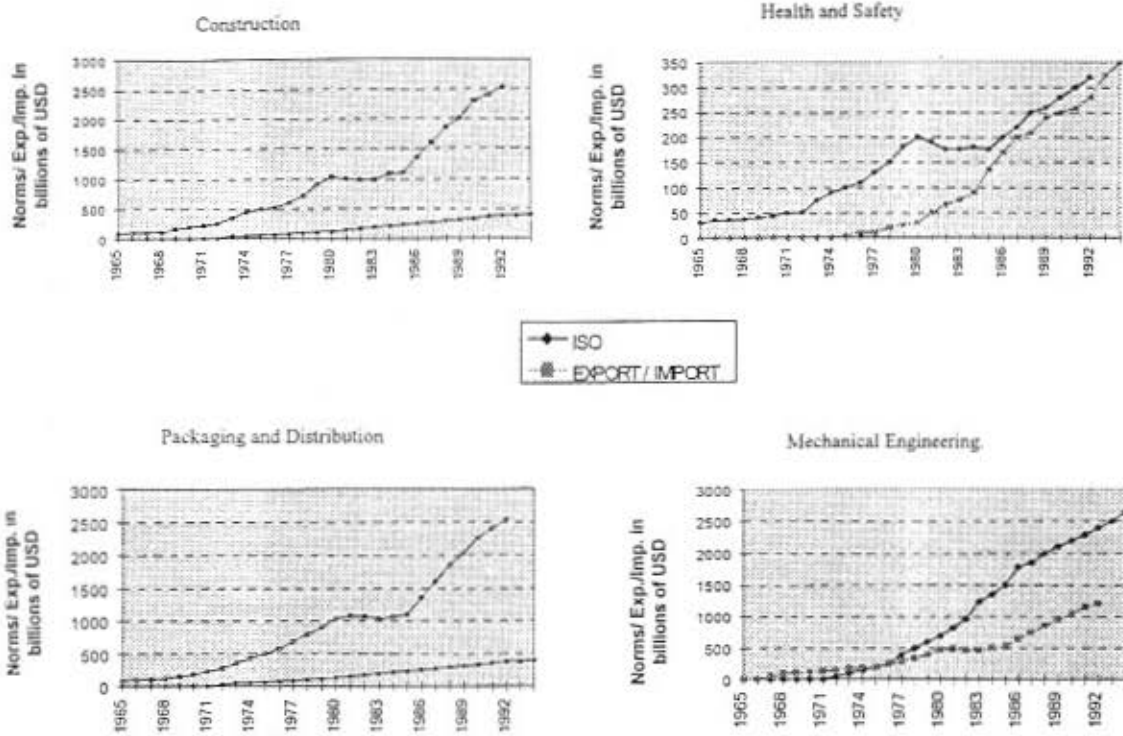
In a similar area connected with data transmission Japan has also had success with the vehicle guidance system. Since the display panels have been standardized some 400 000 vehicles have been fitted with the system.

The ISO secretariat conducted a study using the PERINORM database (produced by AFNOR, DIN and BSI) on the significance of normative work in certain technical areas.<sup>2</sup> This study compares the number of standards produced between 1965 and 1994 in a given economic sector and the import and export volume in US dollars. The results, as presented in the following examples, suggest that in some sectors the normative effort is limited, in particular in the construction industry.

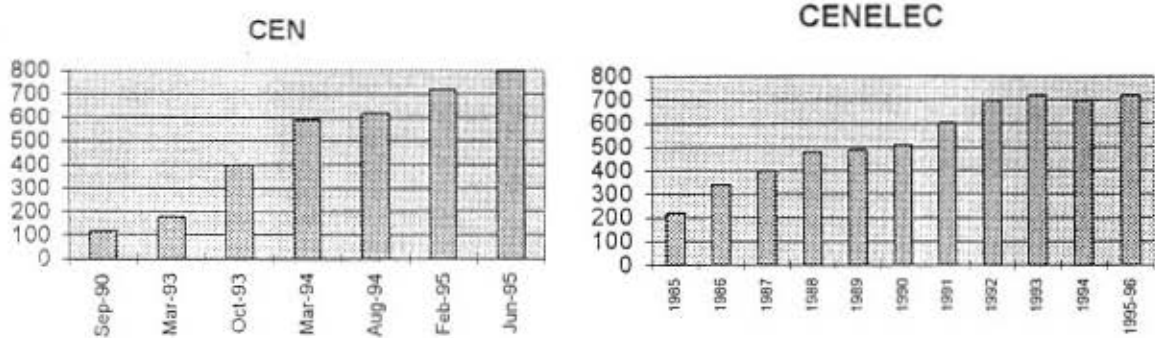
<sup>1</sup> Report on the progress of European standardization (SEC (95) 2104).

<sup>2</sup> R. Weissinger: ISO standards and international markets; a preliminary analysis of their correlative development. May 1995, ISO, Geneva.

In contrast, in the services sector such as health and medicine where significant normative work would not normally be expected the effort is proportional to or greater than the increase in trade.



In Europe the 25 000 standards (adopted or in preparation - i.e. five new standards per working day) from the CEN, CENELEC and ETSI are a clear sign of harmonization and economic integration. This effort also has an effect on harmonization at world level, given the agreements concluded by the European standards bodies with the ISO. The final two graphs show the degree of transposition between ISO/CEN and ISO/CENELEC.



In conclusion, it can be said that the European strategy consists of combating protectionist standards and promoting the adoption of international rules and standards, thereby providing European manufacturers with access to the world market without barriers. The production of new, specific standards requires prior research which the Community must support.



### 3. SITUATION OF PRENORMATIVE RESEARCH IN THE COMMISSION'S SPECIFIC PROGRAMMES

One of the principal objectives of these specific programmes is to strengthen the scientific and technological bases of European industry, as enshrined in the Treaty on European Union.

The first area of activity of the 4th Research and Development Framework Programme (1994-98) comprises 15 specific programmes. All the specific programmes refer to prenormative research. That said, the way in which this research is carried out and the importance actually attached to it vary considerably from one programme to another.

#### 3.1 Information technologies and communications

This specific programme fully integrates prenormative research in its strategy, thus making for complete interoperability of products and services. A series of consultation and exchange mechanisms with the European standards bodies (CEN, CENELEC, ETSI) have been set up.

#### **INFORMATION TECHNOLOGIES AND COMMUNICATIONS**

##### ***Advanced Informatics in Medicine (AIM)***

*By setting up technical committees and working parties with the CEN and EWOS, AIM has prepared a work programme and initiated the development of specifications for a broad field of activities relating to the establishment, protection and exchange of patents.*

##### ***Technology Initiative for the Disabled and Elderly (TIDE)***

*Preliminary studies have been undertaken to develop TIDE and these have led to mandates for the ETSI, CEN and CENELEC and concerted action projects as part of the COST organization.*

##### ***Advanced Transport Telematics (ATT/DRIVE II)***

*Ten working parties have been set up to identify the subjects relating to this programme and these working parties have prepared the requisite documents for the technical committees of CEN and CENELEC.*

#### **ESPRIT**

*The scientific managers responsible for this specific programme are asked to identify the possible links between existing projects and standards in order to improve the utilization of results or the development of new technologies. Studies are therefore undertaken under the "Accompanying measures" section which could lead to the definition of new priorities for research, changes in activities for the standards organizations or, via the technological coordination groups consisting of representatives from the Member States, the issue of new standardization remits. In the STEP (Standard for the Exchange and Representation of Product Model Data) and CNMA (Communications Network for Manufacturing Applications) programmes these activities apply to both research and demonstration projects.*

### 3.2 Industrial materials and technologies

The specific BRITE-EURAM III programme covers broad technological and industrial sectors. It does not specifically finance prenormative projects, but it includes prenormative aspects in the criteria for evaluating projects for selection (optimization and dissemination). During the research phase the Commission's scientific follow-up calls for a check of the possible impact of the work in progress, either on the creation of new standards or on the use and development of existing ones. All in all, some 26% of the projects financed are of great to very great benefit to the standards needed by industry, a quarter of them accounting for the specific programme's success stories.

#### **BRITE-EURAM III : Technical inspection of aircraft**

*In 1992 the cost of servicing the undercarriages of the European fleet exceeded ECU 15 000m. This figure will probably be over ECU 24 000m in the year 2000.*

*The standardized inspection procedures (for big as well as small aircraft) recently developed under the BRITE programme will minimize human error and maximize reliability. At the same time they will make for more efficient use of resources and, consequently, more profitable operating of the air fleet. As inspection is a key part of the cost of servicing aircraft and thus an important aspect on purchase, the fact of having a standardized and more competitive system for European aircraft should lead airlines to purchase entirely European fleets.*

#### **BRITE-EURAM III : Manufacture of car seats**

The aim of the project initially was to reduce the design and development time of seats using a concurrent engineering method. The specifications for seats developed in this project now form the basis for standards used for the comfort and safety of passengers. The success of this new process is such that it is already being used by Lear Corporation to the benefit of several car manufacturers.

### 3.3 Standards, Measurements and Testing

The specific "Standards, Measurements and Testing" (SMT) programme is the only one designed to develop tools to support the Commission's quality promotion policy. Being horizontal in nature, it is involved in all physical, chemical and biological sectors where measurement and test methods need to be developed. It promotes activities linked to prenormative research and has also helped to improve standards in various important areas and, as such, the smooth operating of the internal market, e.g. in the control of raw materials (break resistance of metals), the characterization of manufactured products (sound insulation of windows) and better quality of services (control of the microbiological quality of bathing water). This programme is also responsible for research into and production of Certified Reference Materials (CRMs). The aim of developing numerous CRMs is to guarantee the implementation of standards and directives (see box).

**SMT: Certified Reference Materials (CRMs)**

*The Standards, Measurements and Testing programme, in conjunction with the JRC, has developed close to 400 CRMs in the sectors of the environment, health and safety at work, agri-foodstuffs, microbiology, biomedicine, properties of materials, etc. More than 90 other CRMs are currently being prepared.*

*These CRMs, along with those produced by the JRC in the nuclear sector, are sold/distributed by the JRC-IRMM as key elements for:*

*the comparability of the results of laboratory measurements;*

*the application of numerous standards;*

*the implementation of Community law on health and environmental protection;*

*the mutual recognition of results and the application of quality assurance and laboratory accreditation systems.*

**SMT: Quality of bathing water**

The microbiological quality of water is the most important parameter taken into account by the EC Directive on Bathing Water to determine the quality of bathing zones throughout Europe. A project launched by the specific SMT programme in 1992 has improved the methods of measuring the microbiological quality of water and made recommendations in conjunction with DG XI to improve the comparability of measurements. The results of the project will be used to develop a European standard on the performance of methods of measuring the microbiological quality of water.

**SMT: Fire safety of upholstered seats**

Fires in homes involving upholstered seats such as settees are particularly dangerous and cause numerous deaths every year. At the request of DG III (industry) the specific SMT programme began a project in 1993 designed to develop test methods for measuring the fire performance of upholstered seats. The project was successfully terminated at the end of 1995, and DG III believes that the results will help to develop European standards on the fire performance of upholstered seats, thereby helping to improve the safety of consumers in Europe.

The specific SMT programme accepts prenormative research projects in its annual calls for proposals. For the 4th FWP it has also developed a system of dedicated calls for proposals. This will help to meet the R&D needs required to implement European regulations and directives as well as to develop standards. The subjects to aid standardization are selected in conjunction with the standards bodies (CEN, CENELEC and ETSI). To this end, the CEN has set up a consultation structure of its technical committees (CEN-STAR) which will enable it to make an inventory and draw up a list of priority RTD subjects.

## **CEN-STAR**

*The CEN/BT WG 70 "STANDARDIZATION and RESEARCH (STAR)" was set up in 1992 in order to:*

- *prepare guidelines to develop a more efficient link between cooperative R&D and European standardization, the ultimate aim being to improve the speed and quality of the standardization process;*
- *promote these guidelines by participating in the preliminary consultations of R&D programmes.*

*The CEN-STAR committee is made up of the chairman of the sectoral committees of the CEN and of the planning committees, assisted by the secretariats of EFTA, EUREKA, EUROLAB and Commission representatives (DGs III and XII, JRC) and any other parties involved in standardization.*

***Dedicated call: Sample of subjects proposed by the CEN and the General Directorates of the Commission for the dedicated call of 27.11.1997:***

*Test method to determine the action of disinfectants on organic materials in contact with drinking water.*

*Bite test for children's products, in particular toys.*

*Fatigue crack growth rate qualifying criteria of rails for railways : test conditions to be optimised.*

*Assessment of exotic quarantine pest risk to the European Union plant health : analytical methods*

### **3.4 Agriculture and fisheries**

A certain number of prenormative activities can be found in the specific "Agriculture and Fisheries" programme. These cover in particular the areas of foodstuffs, use of agricultural products for non-food purposes, and determination of acceptable levels of impurities in food.

The increase in the number of standards for analytical methods clearly illustrates a need and can be taken as a sign of progress. Alternative solutions are nonetheless necessary to establish performance criteria in place of reference methods.

#### **AIR: Biodiesel - alternative renewable fuel without risk**

*Biodiesel is made up of vegetable oils and products derived therefrom, extracts of non-food agricultural products. It may be used as such or mixed with conventional diesel to provide a cleaner renewable source of energy. Despite the fact that in 1994 only 65 000 tonnes were produced the AIR demonstration project aims at establishing platforms for the future exploration of the market. It is in this context that it also sets out to define physico-chemical parameters for mixtures of fuels as a contribution to future European standards, to run field tests for a range of cars, to study the impact on the environment and to define a European strategy for large-scale production installations.*

### 3.5 Biotechnology

The specific "Biotechnology" programme includes a sector on prenormative research in bio-safety to assist the regulation of biotechnology at European level (managed by the Directorates-General for Industry, Agriculture and the Environment). The regulation of biotechnology is generally considered to be one of the most important factors for the competitiveness of the biotechnology industry in Europe in the spirit of the precautionary principle.

#### Biotechnology

*Prenormative research also involves the development of new in vitro approaches in pharmacotoxicology which avoid animal experiments. This research is carried out in conjunction with the European centres for the validation of new methods (ECVAM: European Centres for the Validation of Alternative Methods) of the JRC in Ispra and the in vitro testing industrial platform (IVTIP) with about 20 companies in the toxicology sector.*

### 3.6 Environment and climate

The specific "Environment and climate" (E&C) programme sets out to foster the development of environmentally friendly products, technologies and services and to promote the definition of environmental quality criteria. Its research activities fall within the spirit of the Commission's 5th programme of action for the environment and sustainable development and also in a more general framework in connection with certain activities of the OECD (tests on chemical products). Several fields of activity are concerned, in particular the protection and improvement of the quality of water and air and the risk management of industrial activities. Prenormative research in the E&C programme is closely coordinated with the activities of the JRC and the specific SMT programme.

#### Incineration of hazardous waste:

*The European directive on the incineration of hazardous waste (94/67/EC) sets maximum emission limits for several toxic substances and, among other things, obliges the Member States to control the rate of emission of dioxins from incinerators. Three standards prepared by CEN lay down the procedures for sampling and measuring dioxins and a set of nine certified reference materials is in the process of being produced in conjunction with the specific SMT programme.*

#### E&C: air quality

*The results of the APHEA and PEACE projects concerning limit values for SO<sub>2</sub>, NO<sub>x</sub> and suspended particulates in air indicate a correlation between the level of these pollutants in the atmosphere of towns and cities and respiratory and cardio-vascular diseases. These limits could be used to revise the values adopted by the Commission (Directives 80/779/EEC and 85/203/EEC) and the WHO.*

### **3.7 Prenormative activities of the JRC**

The Commission undertakes direct R&D activities by way of its Joint Research Centre. The latter contributes to the activities of normative research in several fields, including advanced materials (in conjunction with the specific Industrial Materials and Technologies programme), structure stability and the environment. The JRC has opened a dialogue with the CEN-STAR to improve the utilization of the results of its research through standardization.

#### **JRC: Seismic protection**

Collapsing buildings, bridges and other structures due to earthquakes result in economic and human loss. The JRC's test laboratory ELSA is working together with 18 European laboratories, as part of the networks established by the specific mobility and training of researchers programme, to test buildings (mock-ups or full-scale models) or other constructions. The aim is to develop and validate improvements concerning "Eurocodes" (Directive on construction products). This installation is unique in Europe.

## **4. INCREASING THE EFFECTIVENESS OF COMMUNITY PRENORMATIVE RESEARCH**

### **4.1 Coordination between the specific programmes of the 4th FWP**

The various specific programmes of the FWP do not have a coordinated policy where standards bodies are concerned. If all the normative needs required to develop a European quality promotion policy for products and services are to be taken into account, all the specific programmes and JRC should have some form of communication structure with the standard bodies and the users of standards. This would guarantee the harmonious and effective inclusion of the normative dimension in research projects.

## **RECOMMENDATION**

*A mechanism to improve communication and coordination between the specific research and innovation programmes, the JRC and the economic operators involved in standardization.*

### **4.2 Research specifically geared to standards**

Many prenormative research projects in Europe are never submitted for the various programmes of the 4th FWP. This is because the parties in question do not know that these projects are eligible since there is not sufficient information about the various programmes. Only the specific SMT programme is very active in the prenormative sector. However, it does not cover all needs since it is limited to measurements and testing. This situation will only get worse if Community research does not give wholehearted support to a quality policy where standards are an essential tool. The areas of prenormative research eligible in the various programmes should therefore be stressed.

## **RECOMMENDATIONS**

*Make programme participants not or barely active in the field of standardization aware of the potential of standards where utilization of results is concerned.*

*Make proposers aware, at the preliminary evaluation stages, of the importance of the normative dimension (especially in projects with quality objectives) for utilization of results.*

### **4.3 Prenormative research and the environment**

According to the objectives of the 5th programme of action for the environment "For a sustainable development", prenormative research should be promoted in the field of environmental protection. This applies in particular to research projects on industrial materials and technologies. Concern for the environment involves both the scientific and technical aspects and the socio-economic impact of projects.

## **RECOMMENDATION**

*The parties and participants involved in specific programmes need to be made aware of the need to take account of the environmental dimension of the results of research projects.*

### **4.4 Prenormative research and intellectual property rights**

For the normative dimension to be integrated in specific R&D programmes the fact has to be taken on board that prenormative research is not by definition an obstacle to the protection of intellectual property rights. Early dialogue and cooperation between researchers and standards bodies can remove any problems of intellectual property. The implication of this research on the property of results and their dissemination needs to be spelt out during the negotiation of research contracts and agreements between partners. Conflicts rarely arise for performance standards or standards providing a basis for the interoperability of new technologies.

This aspect of relations between research and standardization was covered by a memorandum published by CEN/CENELEC in 1992 (CEN/CENELEC Memorandum No 8, 1992/03). A major conclusion of this memorandum was that potential conflicts are rare, given the areas and objectives of standards. A procedure guaranteeing copyright was drawn up.

## **RECOMMENDATIONS**

*Improve communication between researchers and standards bodies to facilitate the protection of intellectual property rights when the results of research are transferred to standards bodies<sup>1</sup>.*

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<sup>1</sup> The First Action Plan for Innovation in Europe (COM(96)589 final, 20/11/1996).

#### **4.5 Prenormative research and innovation<sup>1</sup>**

Rather than acting as a brake, creating an environment which is conducive to innovation will promote performance standards and voluntary agreements, improve the juxtaposition between the establishment of standards and scientific and technical development and increase the awareness of the authors and users of standards, especially SMEs.

#### **RECOMMENDATION**

*Member States are asked to encourage the adoption of voluntary standards between manufacturers and suppliers and to opt, wherever possible, for performance standards.*

#### **4.6 Transfer of results to standards bodies**

The results of Community research projects (direct action by the JRC or indirect) can be optimized through standardization. This will depend both on the transfer of the results to the standards bodies (authors and users) and on the phasing of research with the various preparatory stages.

Presentation of results and the method of transfer must be set out at the project design stage. Experience with the specific SMT programme has shown that researchers rarely make this presentation effort, either as regards the content, the form of information, the identification of CEN, CENELEC or ETSI committees, the inclusion of these committees in identification or the utilization of research results.

To remedy these shortcomings, proponents have been asked to include, at the proposal stage (evaluation criterion), all the requisite information and all the means to be used. A clause has also been added to contracts to guarantee communication between researchers and standards bodies.

#### **RECOMMENDATIONS**

*Guarantee that when projects are evaluated relations with the standards bodies and an expression of their needs are recognized.*

*Guarantee that the conditions are included in RTD project contracts for the transfer of results to standards bodies.*

*Guarantee that as projects unfold purely normative activities are carried out in parallel with the research.*

*The JRC must guarantee transfer of the results of its research to the standards bodies.*

#### **4.7 International dimension of prenormative research**

Being a tool to improve the quality of products and services, standardization, as mentioned above, comes within the framework of world trade rather than the Community. This is especially so of emerging and enabling technologies. In this case it is essential for prenormative research to be part of a supra-Community context. There should thus be collaboration with participants from third countries in order to guarantee the acceptability of standards to emerge from this research. In this way, standardization, while taking account of the economic and socio-cultural needs of the partners, can make for a European approach at world level.

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<sup>1</sup> The First Action Plan for Innovation in Europe (COM(96)589 final, 20/11/1996).



## **RECOMMENDATION**

*Examine the possibility, in conjunction with the economic operators (IRDAC, CEN, CENELEC, ETSI, etc.), of opening up prenormative projects to non-European partners to guarantee their adaptation and acceptance, as well as the transfer of results, at international level.*

### **4.8 Dedicated calls for proposals of the specific SMT programme**

Promoters and producers are rarely enthusiastic about normative research. Furthermore, in the Commission's conventional mechanism for calls for proposals the rate of success is poor, and thus researchers are not encouraged to build projects along these lines. The pilot project for dedicated calls in the specific SMT programme, on the other hand, meets the specific needs of prenormative research. The introduction of this system of calls has required standards bodies to set up a selection process for their topics and priorities with every guarantee of fairness and transparency. The criteria and mechanisms for selecting topics are specific to each body, depending on their structures and rules of operation. The Commission, for its part, organizes an evaluation independent of the topic submitted and the technical documents that accompany them. In addition to the specific nature of the topics, this system could apply to the "urgency" of problems to be tackled, with a shortening of the time span between the selection of the topic and the commencement of research work.

Being entirely horizontal in function, the specific SMT programme could assist the other research programmes and provide a coordinating function for prenormative activities.

## **RECOMMENDATIONS**

*Identify prenormative research needs in the specific programmes which have been identified during the implementation of the 4th FWP and at JRC, indicating the urgency of the problems.*

*Adapt selection procedures for the topics and projects of the dedicated calls, especially in urgent cases.*

### **4.9 Key actions<sup>1</sup> of the 5th Research and Development Framework Programme**

Since standardization is of strategic interest at the European level, prenormative research has obvious added value. Consequently, the results of a prenormative research project in one of the thematic programmes of the 5th FWP could be of interest to other projects or other programmes or structures. Similarly, other quality tools developed in the thematic programmes or at the JRC (e.g. new measuring instruments, new methods of measurement and control of production, results of impact studies on processes or products, etc.) should, together with prenormative research projects, form part of a coherent whole which should be coordinated.

Optimisation of approaches and investments needs global coordination of resources and research projects in support of standardisation. Given the wide subject matter of standards, this coordination must transcend the structures of RTD programmes and integrate them in projects geared to regulations (directives, etc.).

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<sup>1</sup> Commission working paper "Towards the Fifth Framework programme: scientific and technological objectives", COM(97) 47 final, 12/02/97.

A strategy of this kind should, for example, be put in place in each thematic programme of the 5th FWP, backed up if needed at the level of “key actions”, so as to take account of the needs of prenormative research.

## **RECOMMENDATIONS**

*A capability should be provided for in each thematic programme of the 5th FWP, backed up if needed at the level of “key actions”, which ensures the monitoring of prenormative projects and other projects developing tools in support of quality such as : measurements, tests, management and quality assurance techniques...;*

*Member States should be prompted to step up their information activities to make the economic operators involved in standardisation, including SMEs, aware of the role played by standards in optimising and disseminating results.*

## **5. CONCLUSIONS**

The approach to and investment in community RTD need to be optimized and coordinated in order to promote the normative impact. The measures proposed above should be seen as priorities for improving prenormative research and the quality of structures and standards. Some of these recommendations require fairly significant changes whereas others could be put into effect quite quickly.

In order of priority, these are as follows:

- To set up a mechanism to improve communication and coordination between research and innovation programmes, the JRC, and the economic operators involved in standardization;
- A capability should be provided for in each thematic programme of the 5th FWP, backed up if needed at the level of “key actions”, which ensures the monitoring of prenormative projects and other projects developing tools in support of quality such as: measurements, tests, management and quality assurance techniques...;
- Member States should be prompted to step up their information activities to make the economic operators involved in standardisation, including SMEs, aware of the role played by standards in optimising and disseminating results.

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