

Interaction and cooperative effort among scientific societies. Twelve years of COSCE

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Summary. The evolution of knowledge and technology in recent decades has brought profound changes in science policy, not only in the countries but also in the supranational organizations. It has been necessary, therefore, to adapt the scientific institutions to new models in order to achieve a greater and better communication between them and the political counterparts responsible for defining the general framework of relations between science and society. The Federation of Scientific Societies of Spain (COSCE, Confederación de Sociedades Científicas de España) was founded in October 2003 to respond to the urgent need to interact with the political institutions and foster a better orientation in the process of making decisions about the science policy. Currently COSCE consists of over 70 Spanish scientific societies and more than 40,000 scientists. During its twelve years of active life, COSCE has developed an intense work of awareness of the real situation of science in Spain by launching several initiatives (some of which have joined other organizations) or by joining initiatives proposed from other groups related to science both at the Spanish level and at the European and non-European scenarios. [*Int Microbiol* 18(4): 245-251 (2015)]

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Introduction

The profound transformation undergone by Spanish society as a result of its incorporation into new structures and international organizations, has led to a new conception of the relationship between science and society in Spain. And the same has happened for the constant and, sometimes quick, advancing technology.

In that new scientific-political-social environment, the scientific community, grouped in different scientific societies related to different disciplines, has understood the need to join efforts and knowledge to become a key element in making policy decisions which, inevitably, affect society as a whole. This was the conceptual origin of the Federation of Scientific Societies of Spain (COSCE, Confederación de Sociedades Científicas de España) (Fig. 1), whose founding statements clearly reflects its primary objectives [4]:

- To contribute to scientific and technological development of the country.
- To act as a qualified and unified interlocutor both for the civil society and the representatives of the public institutions in matters affecting science.

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Fig. 1. The COSCE logo.

- To promote the role of science and contribute to its dissemination as a necessary and indispensable ingredient of culture.

Currently, COSCE consists of over 70 societies (some of them with more than a century of history) (Table 1) [5], covering almost all fields of human knowledge, both the humanities and sciences, to which it have been added some other adhered societies or associations whose fields of activity include that of the scientific communication to the society.

The huge range of areas of interest represented by the societies forming COSCE, as well as the different interests of each of them has led to define five major areas or sections, each one of which has an independent representative on the management structure of the confederation:

- Section of Arts, Humanities and Social Sciences.
- Section of Mathematics, Physics and Physical Technologies, and Chemistry and Chemical Technology.
- Section of Life Sciences and Health.
- Section of Earth Sciences, Agriculture and Environment.
- Section of Science and Technology of Materials and Information and Communication.

COSCE and Spanish society

The founding statutes of COSCE [4] determine the need to establish a fluid relationship between the confederation and the civil society. To meet this objective COSCE unified efforts

that were previously scattered among different scientific societies with—because of their lower representation, both in science and in society and politics—poor or even no results. With this objective, COSCE, jointly with the Consejo Superior de Investigaciones Científicas (CSIC) and the Conferencia de Rectores de las Universidades Españolas (CRUE), presented the National Declaration on Scientific Integrity (Declaración Nacional sobre Integridad Científica) [6], a document subsequently revised and approved by the Ethics in Science Group of the Debates on Science and the Economic and Social Development Project (Proyecto DECIDES; Debates sobre la CIENCIA y el Desarrollo Económico y Social). The document establishes the ethical basis for a sustainable relationship both among members of the scientific community and the community as a whole, and society. These ethical bases are: honesty, objectivity, fairness and trust.

The appearance of COSCE in the field of relations between the scientific community and civil society has changed the previous poor situation. The conjunction of forces and interests of the various scientific and humanistic fields has provided the confederation of a remarkable ability to influence that has been reflected in its growing role as a consultant and partner of different governments that have occurred in the country since its founding in 2003.

An outstanding field of the COSCE role as a critical and controlling element of the scientific policies pursued by various governments has been the publication of different “COSCE Reports” on the General State Budget (PGE; Presupuestos Generales del Estado) (Table 2).

To know the content of programs of the Expenditure Policy 46 (formerly Function 46) is important for the Spanish scientific and technological community. By initiative of COSCE, and since 2005, a group of experts is working in producing annual reports from the data published in the General State Budget (PGE) These reports offer a critical view on both the state of science in Spain and the resources to strengthen science, currently considered—due in part to its own work—as one of the main engines of progress of the country.

In addition to the annual reports on the PGE, COSCE has also issued reports on other matters of relevance to the scientific community and its relationship with society as a whole, reports that have had a significant impact on the decisions taken by the political institutions in relation to science, culture and education in Spain (Table 3) and has enacted various initiatives and projects on specific aspects of science in Spain, some of which have been echoed by other Spanish scientific organizations such as the CSIC or the CRUE.

Also, from its prevalent position as a reference of science in

Table 1. Societies and associations in COSCE

FEDERATED

Asociación Española de Andrología	Sociedad Española de Diabetes
Asociación Española de Ciencia Política y de la Administración	Sociedad Española de Entomología Aplicada
Asociación Española de Científicos	Sociedad Española de Epidemiología
Asociación Española de Ecología Terrestre	Sociedad Española de Farmacología
Asociación Española de Economía	Sociedad Española de Fertilidad
Asociación Española de Genética Humana	Sociedad Española de Fijación de Nitrógeno
Asociación Española de Leguminosas	Sociedad Española de Física Médica
Asociación Española de Reproducción Animal	Sociedad Española de Fisiología Vegetal
Asociación Española de Teoría de la Literatura	Sociedad Española de Fitopatología
Asociación Española para la Inteligencia Artificial	Sociedad Española de Genética
Asociación para el Desarrollo de la Informática Educativa	Sociedad Española de Geobotánica
Asociación para el Estudio de la Biología de la Reproducción	Sociedad Española de Geomorfología
Asociación Interacción Persona-Ordenador	Sociedad Española de Histología e Ingeniería Tisular
Asociación Nacional de Investigadores Hospitalarios	Sociedad Española de Inmunología
Asociación de Telemática	Sociedad Española de Investigación sobre Cannabinoides
Federación Española de Sociología	Sociedad Española de Malherbología
Real Sociedad Española de Física	Sociedad Española de Matemática Aplicada
Real Sociedad Española de Química	Sociedad Española de Materiales
Real Sociedad Matemática Española	Sociedad Española de Medicina Tropical y Salud internacional
Sociedad Anatómica Española	Sociedad Española de Microbiología
Sociedad de Arquitectura y Tecnología de Computadores	Sociedad Española de Mineralogía
Sociedad de Biofísica de España	Sociedad Española de Neurociencia
Sociedad de Economía Mundial	Sociedad Española de Neurología
Sociedad de Espectroscopia Aplicada	Sociedad Española de Óptica
Sociedad de Estadística e Investigación Operativa	Sociedad Española de Paleontología
Soc. de Ingeniería del Software y Tecnología de Desarrollo de Software	Sociedad Española de Paraplejía
Sociedad Española de Antropología Física	Sociedad Española de Parasitología
Sociedad Española de Arcillas	Sociedad Española de Proteómica
Sociedad Española de Astronomía	Soc. Española de Psicofisiología y Neurociencia Cognitiva y Afectiva
Sociedad Española de Biología Celular	Sociedad Española de Psicología Experimental
Sociedad Española de Biología Evolutiva	Sociedad Española de Psiquiatría Biológica
Sociedad Española de Biometría	Sociedad Española de Terapia Génica y Celular
Sociedad Española de Bioquímica y Biología Molecular	Sociedad Española de Virología
Sociedad Española de Biotecnología	Sociedad Española para el Procesamiento del Lenguaje Natural
Sociedad Española de Cerámica y Vidrio	Sociedad Española para las Ciencias del Animal de Laboratorio
Sociedad Española de Ciencias Fisiológicas	Sociedad Ibérica de Citometría
Sociedad Española de Ciencias Forestales	
Sociedad Española de Cultivo In Vitro de Tejidos Vegetales	

ASSOCIATED

Associació Catalana de Comunicació Científica	Sociedad Española de Gravitación y Relatividad
Asociación para el Desarrollo y el Estudio de la Biología en La Rioja	Spanish Researchers in the United Kingdom
Sociedad de la Energía Foto Currently COSCE consists of over 70 societies voltaica Inorgánica y Nanomolecular	

Spain [7,8], COSCE has established collaboration agreements with international organizations and projects such as the Responsible Research and Innovation (RRI) project in order to participate in the realization of a greater understanding and consideration of the importance of science to the social, political and cultural development in the international arena.

The “Commissions on Thinking and Study of Science in Spain” action (Acción CRECE; Comisiones de Reflexión y Estudio de la Ciencia en España). The analysis of the situation of science in Spain led to the conclusion that it was necessary to reform it. In response to these conclusions, COSCE initiated

Table 2. The COSCE Reports from 2005 until present

Fecha	Informe
11/2016	Nota de alcance sobre la inversión en I+D+i en los Presupuestos Generales del Estado aprobados para 2016
08/2015	Informe de urgencia sobre la inversión en I+D+i en el Proyecto de Presupuestos Generales del Estado para 2016
01/2015	Nota de alcance sobre la inversión en I+D+i en los Presupuestos Generales del Estado aprobados para 2015
10/2014	Informe de urgencia sobre la inversión en I+D en el Proyecto de Presupuestos Generales del Estado para el año 2015
03/2014	Análisis de los recursos destinados a I+D+i (Política de Gasto 46) contenidos en los Presupuestos Generales del Estado para el año 2014
01/2014	La inversión en I+D+i en los Presupuestos Generales del Estado aprobados para 2014
10/2013	Informe de urgencia sobre el Proyecto de Presupuestos de la Administración General del Estado de la política de gasto 46 (I+D+i) correspondiente al ejercicio de 2014
03/2013	Análisis de los recursos destinados a I+D+i (Política de Gasto 46) contenidos en los Presupuestos Generales del Estado para el año 2013
10/2012	Análisis de los recursos destinados a I+D+i (Política de Gasto 46) contenidos en el Proyecto de los Presupuestos Generales del Estado para el año 2013
09/2012	Análisis de los recursos destinados a I+D+i (Política de Gasto 46) contenidos en los Presupuestos Generales del Estado para el año 2012. La inversión en I+D+i
04/2012	Análisis de los recursos destinados a I+D+i (Política de Gasto 46) contenidos en el Proyecto de los Presupuestos Generales del Estado para el año 2012
02/2011	Análisis de los recursos destinados a I+D+i (Política de Gasto 46) contenidos en los Presupuestos Generales del Estado para el año 2011
02/2010	Análisis de los recursos destinados a I+D+i (Política de Gasto 46) contenidos en los Presupuestos Generales del Estado para el año 2010
12/2009	Consideraciones sobre los recursos destinados a I+D+i en el proyecto de PGE 2010 desde la perspectiva de la comunidad científica
03/2009	Análisis de los recursos destinados a I+D+i (Política de Gasto 46) contenidos en los Presupuestos Generales del Estado para el año 2009
01/2008	Análisis de los recursos destinados a I+D+i (Política de Gasto 46) contenidos en los Presupuestos Generales del Estado para el año 2008
12/2006	Análisis de los recursos destinados a la I+D+i (Función 46) contenidos en el Anteproyecto de Presupuestos Generales del Estado para el año 2007
10/2005	Análisis comparado de los PGE 2005-2006

the creation of five independent large committees of experts to carry out “Committees to Consider and Study Science in Spain” (Acción CRECE; Comisiones de Reflexión y Estudio de la Ciencia en España) (Fig. 2). The CRECE Project is participated by scientists, professionals and experts in a wide range of fields whose leadership skills and ability to act have made Acción CRECE one of the strongest initiatives ever undertaken by the scientific community [1]. Conclusions and

**Fig. 2.** The CRECE Action logo.

proposals from these committees affect both fundamental aspects of the system and aspects related to its economic and social repercussions, and are a clear message to other participants of the system, in particular to business sector and educators, and to society in general. To create funding instruments and to create assessment methods to appropriately allocate the resources are two conclusions that CRECE has reported to the ministries involved in the Spanish R+D system, and these can imply to introduce structural changes to the Spanish scientific system. The way is hard, but the reward is enormous: to strength science as a cultural factor and an economic driving force.

The “Debates on Science and Economic and Social Development project” (DECIDES Project; Debates sobre CIENCIA y Desarrollo Económico y Social). Directly related to the CRECE Action, COSCE and the La Caixa Foundation, created the DECIDES Project through which it aims to discuss the role of science in the near future and to create the necessary

Table 3. Other studies by COSCE

02/2011	Informe COSCE sobre la Agencia Estatal de Investigación
02/2015	Informe sobre el Uso de Animales en Investigación Científica
03/2010	Informe sobre el Borrador de la Ley de la Ciencia, la Tecnología y la Innovación
04/2007	Informe: Acción CRECE, dos años después
11/2006	Análisis del sistema de evaluación de proyectos científicos y de incorporación de personal científico en España

elements for the development of a prosperous society based on knowledge [7]. The main objective of the project is to establish a science system from initiatives proposed by the scientific collective and become part of an ongoing debate in different forums of science, politics and society (Fig. 3).

The project structure is divided into five areas, each managed by a group or working committee consisting of experts proposed by the societies comprising COSCE, coming from both the scientific community and other social areas. The role of these groups is to address issues deemed relevant to the scientific system: the public resources for science; the private resources for science; the management of science, by science; the interweaving of science and society, and ethics in science.

COSCE and the educational community

In 2010 COSCE launched an ambitious Science Teaching in the School Project (ENCIENDE; ENseñanza de las CIENCIAS en la Didáctica Escolar) whose role is to act as connector between the educational and scientific communities and to allow the progress towards a more sensitized, educated and trained in science society [2]. Focusing on all stages of primary and secondary education from 3 to 14 years old, its main objectives are: to highlight the importance of science education in the earliest stages of the educational system, to perform analysis and initiate action in this direction and to promote scientific vocations, to make the Spanish society, at all levels and classes, better educated, prosperous and advanced in knowledge (Fig. 4).

To achieve its goals, ENCIENDE is focused on three main areas: social, through families and public spaces that give access to science; school, represented by schools and teachers, and scientific, composed of scientists and facilities where science is generated and developed.

One of the actions taken to give visibility to the project and strengthen its penetration in the educational community

**Fig. 3.** The DECIDES Project logo.

has been the creation of the ENCIENDE Awards, convened since 2012 to recognize the best initiatives or innovative educational activities of quality—that have been put in practice—in bringing science to school, especially among students from an early age.

Also, under the project ENCIENDE, in 2013 it was created the newsletter *Sparks of science (Chispas de la ciencia)* [3] of which have already been published 30 issues on a monthly basis during the school year (Fig. 5).

**Fig. 4.** The ENCIENDE Program logo.



Fig. 5. The Sparks of science logo.

COSCE and the mass-media

In today's society, mass-media, both the traditional (press, radio and television) and the new ones (based on social networks and the Internet), are the main tools for the transmission of scientific knowledge to society. Although access to scientific information is becoming simpler, it supposes a challenge for the scientific community whose message must be properly translated to society, fact that does not always happen. In order to avoid possible errors in the transmission of that knowledge, COSCE has launched a Network of Correspondents (Red de Corresponsales) whose mission is to provide scientific advice to the media across the country, especially the local media generally endowed with fewer resources and therefore more likely to make unintentional mistakes both in the understanding and interpretation of knowledge generated from scientific establishment and in the transmission of such knowledge to society through a nearby and accessible language.

The Network currently consists of experts presented by the different societies forming part of COSCE, which offer their services voluntarily. It is designed as an open and easily searchable database to the media for finding experts in different areas of knowledge and in different provinces.

International relationships

Because its goal to actively participate in the definition of scientific policies, not only Spanish but also international, COSCE currently collaborates with the Responsible Research and Innovation project (RRI Tools), whose Spanish hub (Fundació Bancària "la Caixa", Barcelona) is the program coordinator at the European level. The aim is that the scientific societies of other European countries involved in the project reach the same stage in the implementation of approaches of responsibility in science by developing instruments with which researchers can obtain greater social interweaving and acceptance for their job (Fig. 6).

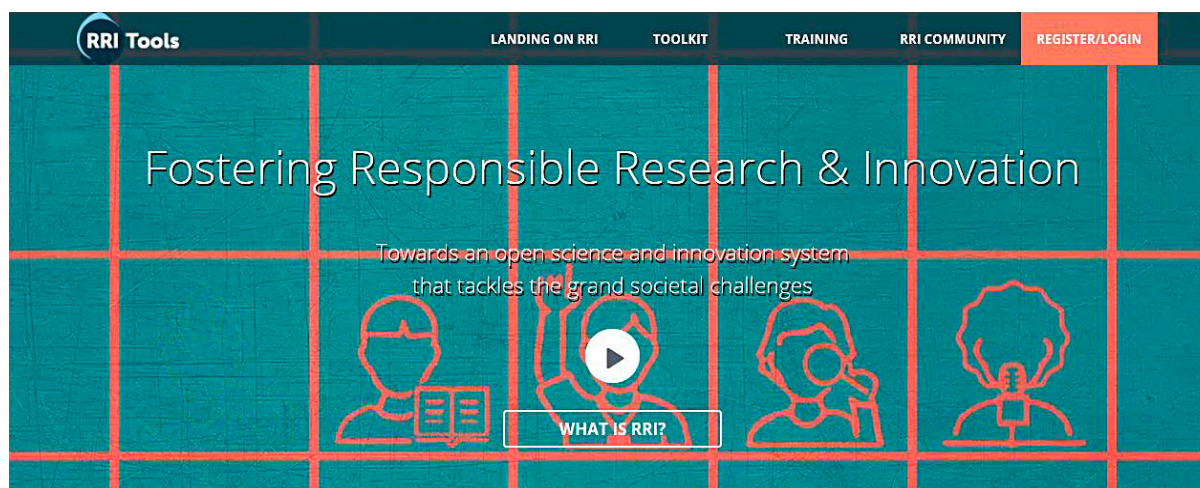


Fig. 6. The RRI Tools web frontpage.

By its own definition, Responsible Research and Innovation is: “A concept which has been adopted as a cross-cutting issue at Horizon 2020, the EU Framework Programme for Research and Innovation 2014–2020; doing science and innovation with society and for society, including the involvement of society ‘very upstream’ in the processes of research and innovation to align its outcomes with the values of society and, finally, a wide umbrella that brings together different aspects of the relationship between science and innovation and society: public engagement, open access, gender equality, science education, ethics and governance”.

Final remarks

As we have said, COSCE currently has more than 70 member societies, which involve more than 40,000 scientists. The Federation fully represents the Spanish scientific community and can therefore act as its interlocutor. It also aims to provide knowledge that may be of use to different economic, social, and political agents. COSCE approaches science from a global, practice-oriented perspective, rather than one that is merely academic or theoretical. It is capable of generating information that can be applied to actively promote, support, and contribute to developing initiatives—in both the public and private sectors—aimed at strengthening the role of science as a component of Spanish economic and social progress. In view of this, COSCE has become a corporate instrument capable of: encouraging research; improving

science education; disseminating the scientific spirit; and promoting social appreciation for scientific values.

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