

# **Illustrious Official Association of Geologists (ICOG)**

GEOLOGY AT THE SERVICE OF CITIZENS

Contributions of geologists to the General Administration of the State

30 Proposals of the Illustrious Official Association of Geologists (ICOG) for the electoral programmes of the next legislature, 2008-2012

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## **Objectives**

### THE GEOLOGY OF THE CITIZENS

Geology is the science that studies the Earth, describes it, interprets it, and unmasks its structure and composition. In its beginnings, geology acquired meaning from man's interest in leveraging the resources stored by the planet; in the present day, this and other reasons make geology an important factor for people's economic social and cultural development.

When referring to geological resources, from the most traditional conception, one thinks of minerals; subsequently, rocks (ornamental, industrial, arid), fossil fuels, underground waters, geothermal energy, the coast and the landscape, among others, were also included. In the 21st century, however, society requires new contributions from geology: in planning and execution of public works and buildings, its application in the struggle against climatic change and, mainly, in the study of active geological processes such as landslides, subsidence, floods, erosion, seismicity, and volcanism, which are hazards and causes of natural catastrophes that can affect many lives, assets and infrastructures.

All these aspects, related to the application of Geologic Sciences, mean that the more a nation knows its geology, the greater and the better will be its social and economic benefits. One of the greatest riches and privileges of a country is its natural resources, which constitute a unique and untransferable heritage that the government has the right and the duty to know and to manage to the benefit of the present population and of the coming generations.

In June 2007 the International Consultation Forum was held in Santo Domingo, in the Dominican Republic, sponsored by the Spanish Geologic and Mining Institute (IGME) and with European Union financing; it brought together 18 Directors of the Geologic Services of Europe and Latin America to talk about the characteristics and functions of Geologic Services on the threshold of the 21st century. The Forum highlighted how important it is for countries to be aware of and to administrate their geologic heritage and to be knowledgeable of and inform society about geologic hazards, identifying the zones of greatest vulnerability.

Management of this right and this obligation corresponds to government administrators, the Geologic Service being the organization responsible, by nature, for administering this information and placing it at the service of society: "In the 21<sup>st</sup> century, it is not possible to continue using nature as an excuse, or to accuse it of disasters in order to exempt technicians, planners, decision-makers and administrators from responsibility; because the great majority of possible disasters are known and identified." Declaration of Santo Domingo 2007.

It must be pointed out that Spain is a country with one of the better geological knowledge infrastructures; the totality of the Spanish territory is covered by cartography on the scale 1/50,000, which, moreover, is stored in a Geo-information System (GIS) and is thus available to all citizens on the IGME website.

In addition, Spain has a prominent group of expert geologists, which through the normal development of their professional activity, provide citizens with necessary information and develop relevant geologic projects that contribute to the improvement

of the quality of life of citizens, to the optimization of constructive costs and to enhancing security with regard to unexpected terrestrial behaviour.

It may be said that Spain has sufficient knowledge of its territory in order to apply it for the benefit of the economic, social and environmental development of its citizens; the utility of this knowledge is evident in all civil projects, in the management of underground water resources, town and country planning, the operation and management of mining resources and hydrocarbons, energy exploitation, soil protection, in addition to other developments in Earth science knowledge, such as seismic phenomena and the study of climate change, among others. The knowledge that provides this information on active geologic processes and on geologic hazards, in terms of preventing natural disasters owing to landslides, desertification, floods, seismicity, volcanism, and other causes deserves special attention.

Our life is rooted in planet Earth and when the way it behaves is known, we are in a position to take advantage of its resources and also to protect ourselves from its processes, so that we do not blame nature for accidents or natural disasters, when we possess knowledge of the majority of the processes that generate these threats.

This knowledge is highly profitable for the economic development of Spanish citizens and this is why Spanish geologists, who are members of **the Official Association of Geologists, have prepared the present document, which gives a structure to geologists' contributions for the next legislature, 2008 - 2012 for the benefit of citizens.** The document is intended to be analysed, studied and assessed by the political parties spanning the parliamentary spectrum, and, if appropriate, be potentially included in their respective election programmes.

## **Content**

The proposals contained in this document are grouped in the following sections:

- I. Reinforce the Unity of the Professional Market
- II. Public Administrations
- III. Infrastructures
- IV. Housing
- V. Education and Culture
- VI. Natural resources and Energy Policy
- VII. Sustainable Development
- VIII. Prevention of natural risks

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## **I. REINFORCE THE UNITY OF THE PROFESSIONAL MARKET**

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### **1. - Basic law on the Exercise of Regulated Professions and Professional Associations and their General Councils of state scope**

By implementing article 36 of the Spanish Constitution, with the promulgation of the Basic Law on the Exercise of Regulated Professions and Professional Associations and their General Councils of state scope. What this law would achieve is that the professional attributions of the different regulated professions would be accredited at State level, assigning shared attributions to the different professionals, which would boost the constitutional principles of equality of opportunity and market unity in the exercise of professions.

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## **II. PUBLIC ADMINISTRATION (PA)**

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### **Ministry of Public Administration**

#### **2. - Greater presence of the new constitutional professions in the PA Lists of Posts (LP)**

Currently, there continues to be a minority presence of the new constitutional professions (geologists, physicists, biologists, lawyers in environmental sciences...) in PA industrial and bureaucratic posts. The collaboration of these professionals is decisive in order to correctly apply all the legislation, regulations, planning and execution of projects related to nature sciences. Therefore it is necessary substantially to increase vacancies for the new constitutional professions in PA Job Postings (JP), in order to address citizens' demands for sustainable development.

#### **3. - Participation of professionals in General State Administration (GSA) advisory bodies**

The regulated participation of Councils and Professional Associations in the advisory bodies instituted, or those created in the different Agencies of the Competent Administrations such as the Environment, Industry, Development, Housing and Education, ought to be articulated.

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## **III. INFRASTRUCTURES**

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### **Ministry of Development**

#### **4. - Greater investment and effectiveness in geotechnical studies for projects and public infrastructure works**

The infrastructure construction sector is a basic pillar of the Spanish economy. Nevertheless, unfortunately, in recent legislatures, problems have frequently been seen, some serious ones, in several infrastructure projects, due to scant or zero budgetary resources being assigned to geotechnical studies for prior studies, preliminary plans and plans for public infrastructure work. The security, efficiency and effectiveness of the resources invested require greater investment in a proper knowledge of the terrain.

## **Ministry of Education and Science**

### **5. - Upgrade and improvement of national geological mapping**

The national geologic maps (Magna Plan, developed by the Geologic and Mining Institute of Spain) have demonstrated their great utility and economy in land investigation for geotechnical, hydrogeologic, mining or town and country planning purposes. The passing of the Royal Decree Regulating Cartographic System, which recognizes the "official" character of Geologic Cartography, as well as the obligation, for all the official cartographies, to update them and to maintain them, requires a greater investment effort on the part of the IGME to achieve the updating of the different scales demanded by the market.

### **6. - Boost to Research Plans**

Is essential to increase the funds earmarked for R+D+i plans to reduce the current gap with the countries around us. The objective is to promote scientific production in high-priority areas such as research into hydrogeologic resources, protection of the latter and the impact of climate change on natural resources.

## **Ministry of the Environment**

### **7. - Hydrographic confederations**

At present, the structure of technical experts and directors of all the Hydrographic Confederations is totally unbalanced in favour of specialists in the construction of superficial water infrastructures or other specialties unrelated to underground waters. It is necessary to provide confederations with underground water specialists incorporating the study and monitoring of the latter as a basic resource of hydrological planning.

### **8. - Production of the Environmental Cartography Plan**

In view of the increasing land occupation, in many cases in a disordered way and the obligation to develop maps of natural risks stipulated in Art. 15 of the Land Occupation Law, it is necessary to devise an Environmental Thematic Cartography Plan, at state level, as a working document for town and country planning within the framework of the sustainable development that is advocated on a global scale.

### **9. - Study of the ocean floors**

It is also fundamental that the ESPACE Plan (Studies of the Spanish Continental Platform) project is promoted and properly implemented; this project contains very substantial geologic and geomorphologic data on the ocean floors.

### **10. - Water Framework Directive (Directive 2000/60/CE)**

It is necessary to increase the economic and human resources devoted to guaranteeing water protection, which is a high-priority objective in European environmental policy, establishing Community action to guarantee the protection of its waters (superficial, underground, transitional and coastal). In order to implement protection it is necessary to develop and to implement suitable and effective methodologies to enable characterization of water masses, the pressures and impacts which water masses are put under and the correction measures required to ensure the good state of these waters by 2015, according to the deadline established by the European Commission.

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## **IV. HOUSING**

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### **Ministry of Housing**

#### **11. - Presence of specialists in geotechnical studies**

The implementation of the Construction Technical Code and the Land Law makes it necessary for the Ministry of Housing to recruit an appropriate number of specialists in geotechnical studies for the purpose of drawing up technical regulations for the Board of Building Quality, Innovation and Sustainability, controlling the quality of geotechnical studies, incorporating the last technologies, etc.

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## **V. EDUCATION AND CULTURE**

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### **Ministry of Education and Science**

#### **12. - Geology secondary level syllabus**

The necessity to increase citizens' scientific culture, currently rated below the European average (Pisa Report), represents a positive action in terms of boosting its presence at secondary level. Geology has been alarmingly downgraded in the secondary syllabus and this situation ought to be reviewed.

### **Ministry of the Environment**

#### **13. - Geological heritage and Natural Spaces**

Once the new Natural Heritage and National Parks laws have been approved, the study, conservation and management of the numerous geologic and biological elements that exist in natural spaces ought to be more closely examined. It would be important to duly develop these laws and their geologic and biological contents. The presence of specialists in natural sciences in management positions in the Natural Space protection agencies, whatever the Geologic protection level, in Geological Parks and Science Museums is very necessary, for the purpose of ensuring that the law is correctly applied and implemented.

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## **VI. NATURAL RESOURCES AND ENERGY POLICY**

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## **Ministry of Industry, Tourism and Trade**

### **14. - Mining Law**

The present Mining Law is pre-constitutional, dating from 1973, and has become obsolete. It is necessary, 30 years after ratification of the Spanish Constitution, to formulate a new Mining Law in order to address and study the new mining challenges (ornamentals rocks, quarry products, gravel and sand and cement, CO2 capture and storage, etc.). The on Mining and Energy Law, established by article 149 as the exclusive competence of the State, ought to be promulgated.

### **15. - Consultative Mining Council**

To achieve desirable homogeneity in the legal requirements of mining and therefore greater market unity in the mining activity (competencies are held by the Autonomous Regions) a Consultative Mining Council ought to be created, comprising the Central Government, Autonomous Governments and trade union, business and professional organizations.

### **16. - Basic Mining Security Regulations and the National Mining Security Commission**

It is necessary to promulgate a new Basic Law of Security Regulations in the Extractive and Drilling Industry. Currently, the Law of Prevention of Labour Risks is in force, at a general level, but in the matter of mining security there is a multitude of orders, ITC, etc., that need a common framework to regulate the Basic Mining Security Regulations and the redefinition of the National Mining Security Commission, which has been operating under a Royal Decree, which is also pre-constitutional.

### **17. - Energy policy**

We propose to maintain a diversified "Energy Mix" similar to the present one (28% nuclear energy, 30% thermal energy with coal, 15% combined gas cycles, 15% hydraulic energy and 12% renewable energies). It is fundamental not to have energy dependency on other countries, not only because of the increase in price of fossil fuels but due to the political instability of some supplier countries. We propose a strong boosting of geothermal energy heat interchange with the ground, as it is both a renewable and inexhaustible energy source.

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## **VII. SUSTAINABLE DEVELOPMENT**

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### **Ministry of Industry, Tourism and Trade**

### **18. - Research into and development of CO2 capture and storage technologies**

We propose developing CO2 capture and storage technologies as a high-priority objective, for energy reasons, since it would allow gas or coal thermal energy stations to be installed, with their own CO2 capture and storage mechanisms; these are known as Zero Emission Energy stations. This would guarantee the increasing demand for electricity, with fuels like coal, which is abundant and cheap, and without CO2 emissions escaping to the atmosphere. Fossil fuels will continue for several more decades to play an important role in energy supply for Europe and Spain. Geologic research for this type of underground CO2 storage facility is laborious owing to Spain's geological peculiarity. It is necessary to develop and to finance from the General State Budgets a Geological Research programme in all of Spain in order to select zones which would be suitable for these storage facilities.

### **19. - Geological research into natural gas storage facilities**

The absence of deep, strategic, geological **storage facilities** for natural gas is a top priority in the future Spanish energy panorama. It is necessary to continue and even to extend current geological research in order to locate these.

## **Ministry of the Environment**

### **20. - Law of Coasts**

The present Law of Coasts and the way it is applied is vague in many geological aspects such as, for example, the correct boundary of the Public State Maritime-Terrestrial Domain. That lack of specificity generates continual legal conflicts in Spanish coast planning, one of the worst planned in Europe. Modification is necessary and urgent, with the presence of geomorphologic specialists in coasts. Applied geology can help to develop the law, where coastal assets are properly defined as geomorphologic units (beaches, dunes, marshes, cliffs, stream-river limits, etc.). With this, concrete and precise criteria for the suitable management and recovery of coastal resources and natural assets would be established.

### **21. - Climate change**

In coordination with the Ministry of Industry, one of the future areas of work to develop is, as has been discussed above, CO2 capture and storage technologies, which should extend not only to the energy stations created in the future, but also to those already installed, enabling controlled CO2 capture and safe storage sometimes in areas remote from where the energy stations are currently located. This would necessitate the creation of a network of "ceoducts" in order to transfer the CO2 at an affordable cost to the secure underground storage facilities.

### **22. - Deposits of industrial waste**

A national policy for the reutilisation of abandoned mines and wells as deposits or storage facilities for industrial waste should be promoted; the IGME should be commissioned to devise a National Plan to study the viability

of these abandoned mine workings serving as secure deposits for industrial waste.

### **23. - Water Law and regulations that develop it**

A priority issue is to address a reform of the current Water Law and its stipulations in order to characterise and provide comprehensive protection for hydric resources, in compliance with the requirements of the European environmental Policy; the repercussions of land use would also be studied and cooperation fostered between different administrations, involving City councils and Autonomous governments, in the protection and sustainable use of water.

## **Ministry of Agriculture**

### **24. - Geology at the service of agriculture**

The Spanish agrarian sector is immersed in accelerated restructuring. Geology must be a basic tool with regard to developing a future agrarian policy that is sustainable. The systematic incorporation of geologic studies, the impact of irrigation on the sustainability of aquifers and the influence of these on housing and public works are aspects to be taken into account.

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## **VIII.PREVENTION OF NATURAL RISKS**

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## **Ministry of Education and Science**

### **25. - Investigation of natural hazards**

It is necessary to promote and to boost basic research into natural hazards, by strengthening the coordination between teams and institutions and improving the application of research findings to activities designed to reduce natural hazards, such town and country planning, thus fostering the diffusion of knowledge in society.

### **26. - Benchmark Centre on Natural Hazards**

The creation of a benchmark centre for the tracking, analysis and dissemination of information and the diffusion of economic, social, environmental data, etc., on natural hazards, should be promoted. The implementation of natural hazard thematic networks, enabling the efforts of the different interests and territorial research groups to be grouped and coordinated, should also be fostered. This centre, which would undertake coordination of the different competent technical institutions in each of the natural risks, could be associated with the Spanish Geologic and Mining Institute, the latter being the body that currently performs the functions of a national benchmark centre for natural hazards within the framework of the European Environmental Agency.

## **Ministry of Housing**

### **27. - Development of natural hazard maps regulated by the land law**

Law 8/2007, of 28 May, of Land, has established that city-planning developments must submit to prior environmental evaluation and to a sustainability report in which, among other content, a natural hazard map of the scope which is the subject of the development must be included.

We consider that the creation of this kind of mapping will suppose a fundamental qualitative advance in the protection of citizens exposed to natural dangers, and this is the reason why we offer our collaboration in the drafting of the methodological guidelines that must inform natural hazard maps, as well as in the implementation of the mapping projects associated with the corresponding town and country development plans.

## **Ministry of the Environment**

### **28. - Application of the European directive on evaluation and management of flood risks**

The new EU norm to prevent floods (Directive 2007/60/CE), will force Spain to draw up danger and hazard maps by 2013, in coordination with the environmental objectives of the Framework Water Directive. The application of this directive will entail the implementation of new practices in flood management models, supporting more sustainable territorial and urban development; this is the reason why it is considered advisable to promote closer cooperation between hydraulic public domain protection policies, town and country planning and civil defence plans.

### **29. - Development of the national cartography system of areas susceptible to floods**

With regard to the development of the national system of mapping areas susceptible to floods, currently at the development phase in the Ministry of the Environment, as a first response to the application of the European flood prevention directive, it will be necessary to consider the geologic and geomorphologic criteria in the process of identification of the areas susceptible to floods.

## **Ministry of the Interior**

### **30. - Thematic cartography of hazards and emergencies**

Royal Decree 1545/2007, of 23 November, by which the National Cartographic System is regulated, gives official character to cartography denominated "of hazards and emergencies", and defines it as mapping which "identifies the geographic areas susceptible to suffering catastrophic damage in the event of natural and technological hazards or hazards of another nature occurring and impacting on people or their assets". We recognize the importance of regulating this type of to the public safety linked cartography in our planning and we offer our knowledge on geologic materials and processes likely to generate hazards and emergencies in all those projects developed to prevent catastrophic damage and to protect people's lives and assets.