



The Association of Geological Surveys of the European Union  
(EuroGeoSurveys)  
in their position as  
custodians to their national natural resources  
and  
guardians of their terrestrial environment

present their evaluation of and contribution to the  
improvement of the existing Council Directives on the  
Assessment of the effects of certain public and  
private projects on the environment

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This paper describes the observations by the Association of the Geological Surveys of the European Union (EuroGeoSurveys) on the functioning of the European Council Directives on the assessment of the effects of certain public and private projects on the environment: Council Directive 85/337/Eec of 27 June 1985

amended by:

Council Directive 97/11/EC of 3 March 1997

## **About EuroGeoSurveys**

EuroGeoSurveys is a European non-profit association, which works solely in the public interest. It is constituted by the Directors of the national Geological Survey Organisations (GSO's) of all fifteen-member states of the European Union plus Iceland, Norway, Switzerland, Bulgaria, Czech Republic, Hungary and Poland, and can draw on the expertise of over 7000 professionals. Its main aim is to provide the entire range of European Union institutions with expert, balanced and practical pan-European advice and information as an aid to problem-solving and policy formulation in areas such as the use of natural resources (minerals, water, energy, soils and land), and the sustainable management of environmental issues and natural hazards.

EuroGeoSurveys functions as:

- *A Virtual Geological Survey*, to assist the European Union to obtain joint technical advice from the Geological Surveys of the Member States and the Accession Countries;
- *A Virtual Data Centre*, to provide the policy makers, the industry and the public with easy accessible, uniform quality controlled geoscience data;
- *A Virtual Centre of Excellence*, to combine the best of geo-expertise to further develop technology and know-how in the field of natural resources and terrestrial environment;
- *A Virtual Geoscience Permanent Education Network*, to improve the awareness of the public, industry and authorities of the opportunities offered by geoscience.

Each member Survey reports to its government on the state of the country's landmass and Earth resources and maintains large geosciences information banks. EuroGeoSurveys is thus a network of national topic centres, each of which provides government and industry with comprehensive, objective baseline information to support decision-making on natural resource (minerals, energy, water, soils), environmental issues, such as the holistic monitoring and preservation of the environment and natural and man induced hazards, e.g. earthquakes, volcano eruptions, flooding, sea level changes. EuroGeoSurveys promotes Survey work to the EU institutions as relevant to European problem solving in these issues and has contributed opinions on minerals research, groundwater resource policy, the urban environment and the content of new RTD Framework Programmes.

EuroGeoSurveys formulates forward strategy in a number of technology areas which reflect priorities on the EU agenda: information and knowledge transfer; sustainable land use planning; CO2 disposal; natural resource demands; natural geohazards (including earthquakes); clean water, urbanisation, pollution and waste management; quality of the coastal and marine environment; land instability; impacts of climate change; and effective international cooperation in the Developing World, PHARE and TACIS programmes.

EuroGeoSurveys is part of the Forum of Directors of European Geological Surveys (FOREGS), a platform for discussion of European resource and environmental issues by the Council of Europe countries.

## **Introduction**

For two decades now, European Geological Surveys have been involved in the assessment of effects of public and private projects on the environment either actively on behalf of their government organisations and institutions, or as quality controllers, evaluating the Environmental Impact Assessment produced by or on behalf of public organisations.

Over these last 20 years, Geological Surveys have been confronted with numerous EIA studies demonstrating ignorance, lack of understanding and even complete discarding of geological data and evidence.

Having performed an inventory amongst its member organisations, EuroGeoSurveys has drawn the conclusion that in many, if not most cases, Environmental Impact Assessments, do not take into account geological aspects related to the development, operation and abandonment of projects. In the experience of the Geological Surveys most EIA's evaluate the standard day to day operational impact on the environment. At their best, EIA's will give an engineering appreciation of accident risks and control.

EIA's hardly ever give a long term (beyond 20 years – the life time of a project) or long distance (impact beyond the project's boundaries) evaluation of risks and impacts to the environment, the habitat, the landscape, the human health and safety.

All in all, EuroGeoSurveys concludes that the EIA's do not satisfactorily address geological aspects related to project development, operation and abandonment.

This could be directly related to the existing legislation (85/337/EEC and 97/11/EC) describing under Article 3 that the EIA shall identify, describe and assess in an appropriate manner, in the light of each individual case and in accordance with following articles, the direct and indirect effects of a project on the following factors:

- Human beings, fauna and flora
- Soil, water, air, climate and the landscape
- Material assets and the cultural heritage
- The interaction between the factors mentioned in the first, second and third elements

This article insufficiently describes the differences in short to medium term (project duration) and long term (several decades) impacts. At the same time, by referring to soil, water, landscape, the article refers only indirectly to the subsoil and deeper geology, and certainly does not refer to the geological process related to these factors.

The overall assessment by the European Geological Survey is that Environmental Impact Assessments in general:

- are more operations and accident oriented;
- do not address strategic questions on stability, deterioration or pollution of the subsurface;
- do not involve professional geologists;
- do not incorporate geological data, evidence or knowledge;
- do not stand the test of high quality standards in geological reporting.

EuroGeoSurveys therefore suggests that

1. Article 3 be amended to include the subsoil
2. Every EIA should include the investigation, interpretation and assessment of geological data by a competent geologist
3. National institutions with recognised authority for the quality assessment of the EIA studies be installed
4. To amend the present Council directives 85/337/EEC and 97/11/EE, to bring them in line with the Water Framework Directive, as well as directives presently under development (Soil Protection, Groundwater, Civil Safety, Environmental Liability)

### **Background:**

The European Geological Surveys, members of EuroGeoSurveys, have acquired as far as geological data and processes are concerned, ample experience with

- a) The development of Environmental Impact Assessment Studies (EIA's)
- b) The evaluation of EIA's
- c) The remediation of environmental problems, or disasters as a result of
  - Omissions
  - Misinterpretations
  - Lack of expertise

An inventory amongst its members has learnt that:

1. Geological Surveys are not routinely involved in drafting EIA studies, except in these cases where national authorities are owners/executors of major projects.
2. EIA studies are, if at all, based on regional geological maps. Geological Surveys are rarely, if at all, asked for extra (historical) data on expertise.
3. Geological Surveys are involved or consulted regularly in cases where investor's activities without appropriate geological assistance, have resulted in failures in planning and investment, and subsequently, in the increase of risk levels and damages to the environment.

EuroGeoSurveys has made an effort at estimating the amount of waste money involved in the development of projects based on insufficient or badly qualified EIA studies.

A reasonable and unbiased estimate of cost of failure is impossible due to the fact that attributing failure to lack of geological review is often a point of legal dispute.

However examples given by the EuroGeoSurveys members lead to an estimate of damage to the environment in Europe costing several tens of billions of euros for remediation.

Some of the more spectacular examples are:

- The tramway tunnel in the Hague where insufficient geological investigations resulted in damage to buildings and delays of several years
- The railway tunnel (Romeriksporten Tunnel) between Oslo and the new airport where water leakage in the tunnel led to the near complete emptying of a surface lake
- Subsidence due to metro works in London and Paris

These are just a few examples totalling to an estimated over 140 million euro in damage.

### **Legal Framework**

In most of the member states of the European Union, the legal framework does not foresee in the involvement of geologists in Environmental Impact Assessments.

This has brought about environmental problems as a result of the mismatch between the abrupt impact of human activity versus the slow, but long term process of the earth.

Indeed, the physical and chemical processes active upon within the earth are slow processes that can be active over a very long period of time. The result is all too often that the earth is considered to provide a stable substratum.

The vastness of the earth also too often creates the impression that environmental impacts are a mere speck on the earth's surface.

Experience has learned that this interference can have a long lasting and far reaching impact in terms of soil pollution, mobility of chemicals through groundwater, geotechnical instability (subsidence), changes in river flow patterns, coastal corrosion.

Geologists have been trained to integrate present day development plans into a historical geological background allowing for the right assessment of the abrupt impact of human activity on the Earth's processes.

In order to make sound judgement of the impact projects have on the Earth's system, it is essential that the data, interpretations and advice provided by the geologists be of a high professional standard. All too often unqualified and inexperienced personnel or consultants using incomplete sets of data have come to the wrong conclusions when forecasting hazard, risk and impact on the environment.

EuroGeoSurveys therefore stresses the need for the participation of trained geoscientists in any environmental impact assessment and/or environmental liability assessment.

This is already the case in some regions of Europe (Flanders, German states). In other areas, the government has volunteered to have geological assessments included in each environmental impact assessment related to projects executed on behalf of the government and/or major societal benefit (infrastructure, housing development projects). Examples are Luxembourg, the German States, Belgium, and Ireland.

Integration of geologists in any sizeable Environmental Impact Assessment would be very much in parallel with the latest developments in terms of Assessing the Safety of Civilians where the present development tends towards the involvement of geologists for assessments of safety and security of ever smaller projects (in Greece, for every building of over 4000 m<sup>3</sup>)

## **The Council Directive:**

In the directives 85/337/EEC and 97/11/EC, lists of types of projects subject to an Environmental Impact Assessment have been included. Geology is significant for most of these project types. Therefore, a full report on the existing environment, the likely significant impacts and the mitigation should be included.

Under the present directives, geology is not explicitly mentioned, but could be understood to form an integral part of the assessment for soil, water and landscape.

For clarity, EuroGeoSurveys suggests that “soil” would be changed into “soil and subsoil”, “water” to “water (including groundwater)”, “landscape” into “landscape (including stability)”.

Based on geological experience, and referring to Annex I of 97/11/EC, we suggest to add under Type

- 7C: “construction of a new road... of road would be 10 km or more in a continuous length or where such new road, realigned and/or widened section of road is constructed in a pristine area, in an area of groundwater production or recharge, in mountains areas, or in areas with known unstable subsurface, no matter the length of the road section.”
- 11: “Groundwater abstraction or artificial recharge schemes where the annual volume of water abstracted a recharged is equivalent to or exceeds 100,000m<sup>3</sup>”

## **Annex II**

- 1.d: deep drillings, in particular
- geothermal drillings
  - drillings for the storage of waste material (including waste gases and nuclear waste)
- 3.e: surface and subsurface storage of fossil fuels
- 10.b: Housing development projects, including the construction of shopping centres and car parks.
- 12.d: Urban development projects, including the construction of shopping centres, car parks and tourist facilities in the coastal area.

## **Annex III**

Selection criteria referred to in Article 4(3)

1. Characteristics of projects
  - The use of natural resources, including land use and space.
2. Location of projects
  - (i) areas of natural groundwater recharge
  - (j) areas with known visibility of the subsurface

3. Characteristics of the potential impact
  - The risk of time delay impacts

#### **Annex IV**

Information referred to in Article 5 (I)

3. A description of the aspects of the environment likely to be significantly affected by the proposed project, including, in particular:  
..., soil and subsoil,...