The roles and responsibilities of the professional geologists

Nieves Sánchez, Vicepresident EFG

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Items to develop

- Introduction to EFG: aims and mission.
- Communication of geological expertise.
- Geoethics.

Aims and mission of EFG

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EFG representing the geological profession and safeguarding its interests

- Helping geologists to contribute their skills and experience to construction, mining, environmental, oil and gas, and other projects in a manner that **adds value in the interests of Society** (public safety, on time and on budget, reducing environmental impacts, meeting the challenges of natural hazards, etc)**.**

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EFG representing the geological profession and safeguarding its interests

- **<u>Benefits:</u>** today's earth related problems are multi-dimensional and require inter-disciplinary teams.
- **<u>Obstacles:</u>** in many jurisdictions, the setting up of effective inter-disciplinary teams is frustrated by regulation and legislation that confine professionals into rigid roles and responsibilities.

EFG representing the geological profession and safeguarding its interests

- **<u>EFG's roles in realising the benefits:</u>**
  - Promoting a common understanding of the roles and responsibilities of geologists in the profession itself – **Outreach activities, networking amongst members, Recognized Overseas Professional Organizations (ROPOs), and mutual recognition of qualifications.**
  - Demonstrating through the way members of our member associations conduct ourselves professionally in Earth related projects that our role is important and often essential – **Code of ethics binding on all members, <u>not just EurGeols.</u>**

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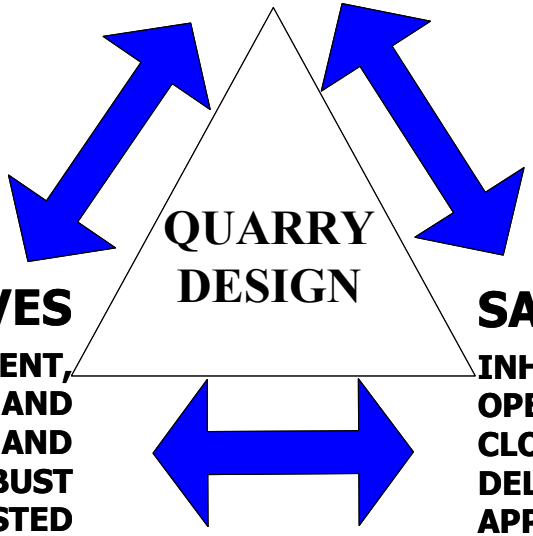
Example – co-operation between professionals in quarry and mine design

ENVIRONMENTAL IMPACT

ENVIRONMENTAL ASSESSMENT, MITIGATION AND ENHANCEMENT AT DESIGN STAGE, MANAGEMENT AND COMPLIANCE AT OPERATIONAL STAGE, AND ENVIRONMENTALLY SUSTAINABLE FINAL RESTORATION AND AFTER-USE SCHEMES



COMMERCIAL OBJECTIVES

BUSINESS PLANNING AND MANAGEMENT, FINANCIAL RISK ASSESSMENT, AND OPTIMISATION OF RESERVE QUALITY AND ASSET VALUES BASED ON ROBUST DESIGNS THAT CAN BE COSTED

SAFETY

INHERENTLY SAFE AND SECURE OPERATIONS (INCLUDING AFTER CLOSURE) THROUGH DESIGN THAT DELIVERS COMPLIANCE WITH APPROPRIATE REGULATIONS AND BEST PRACTICE

Who's involved and why?

- **Geologists** – resource/reserve evaluation
- **Mining engineers** – mine design to maximise mineral recovery at economic cost
- **Environmental specialists** – environmental assessment and proposals for adjustment to limit environmental impact:
  - Hydrogeologists
  - Noise, dust and vibration experts
  - Ecologists and rehabilitation experts
  - Landscape and visual impact specialists
  - Traffic and transport specialists
- **Planners** – apply for operating permits

Who's involved and why?

- **Lawyers** – can the deposit be legally exploited?
- **Investors** – need to see that iterative changes in design still stack up financially and that the operating permit will be possible to implement
- **Quarry management/employees** – safe and efficient methods of working,
- **Regulators** – need to understand the proposals and be persuaded that they are lawful, environmentally suitable and in the public interest
- **Public** – need honest and accurate information – consultation/mediation skills

Promotion of best practice

- Examples of the activity of EFG panels of experts
  - PE on Environmental Impact
    - Leaflet for the Green Week June 2007 "Geology and Environmental Change”:
      - The role of geology in Environmental Impact Assessments (EIAs)
      - The role of geology in predicting future climate change
    - Advice Document to the European Commission on Environmental Impact Assessment Implementation and Practice, May 2003.
  - PE on Geothermal Energy & CO2
    - **Inaugural meeting of PE on Carbon Capture and Storage (CCS) May 2010**
    - **EFG is Co-ordinator for GEOTRAINET project from September 2008, ongoing**
    - Press release on Directive on the promotion of the use of renewable energy sources, January 2008
    - EFG Position Paper on Carbon Capture and Geological Storage, January 2008
    - Geoscientific recommendations regarding Geothermal Energy to be considered in the Seventh Framework Programme 2007 – 2013, April 2006.

Promotion of best practice

- Examples of the activity of EFG panels of experts
  - PE on Hydrogeology
    - Participation in the European Commission, DG Environment, Working Group on groundwater (WG C) on the preparation of Common Implementation Strategy (CIS). Last November 2013 there was a workshop in Brussels.

http://eurogeologists.eu/images/content/Workshops/Hydrogeology/EFG_GW_final%2

  - PE on Natural Hazards & Climate Change
    - Participation on the expert meeting for the Commission Communication COM(2008)130 on reinforcing the Union's disaster response capacity and the outline of the upcoming Communication towards an integrated European strategy on the prevention of disasters.
    - Participation in the European Commission working group EXCIMAP on flood risk mapping.
- **Offers of participation in any of these expert panels are most welcome. Details on the EFG website**

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- **<u>The Qualified Person Concept</u>**:

International practice increasingly requires that technical reports must be signed by individuals which:

- Have appropriate qualifications
- Are qualified by a relevant Institution (ROPO)
- Have relevant experience to the service provided
- Are professionally up-to-date

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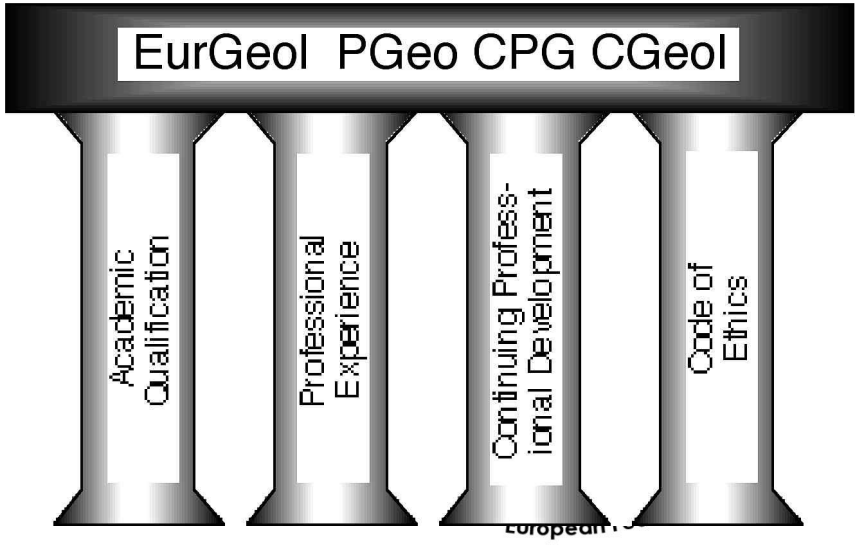
EurGeol Pillars

- Academic qualification
- Professional Experience
- Code of Ethics
- Maintain through a structured CPD: Life-long Learning



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Why do you need a professional title?

- Professional titles have become important in demonstrating the suitability of a professional to provide geological services.
- They complement local legally required arrangements in that they provide a rapid way of recognizing the professional geologist who has made a personal commitment to the ethical framework underpinning the qualification.
- They provide a convenient ‘shorthand’ to describe, to other professionals and the public the skill set and professionalism of the holder.

Why do you need a professional title?

- The professional title provides a **quality mark** to demonstrate to clients, regulators and the general public that the individual is competent to provide geological advice, and allows employers to offer competitive commercial services.
- To adapt to the current and future challenges within the geo-political framework of the European Union, it is necessary that geologists achieve, and can demonstrate, a high degree of professional experience to be able to respond to the demands of Society in practising their profession.

Why do you need a professional title?

- Where the profession is regulated, the existence of an internationally recognized professional qualification in geology may assist in efforts to secure the status of geologists in national statutes.

Where is the title recognized?

- The title is recognized in all EFG countries as a passport to professional practice (Legal Statute – Spain, Italy, Administrative Procedure – Ireland, in certain specific legislation and registration schemes in UK).
- Reciprocity - USA (AIPG); Canada (CCPG)
- Corporate Acceptance: European Geologists are recognized by the mineral reporting authorities in Australia, Canada, South Africa, London and Peru as professionals accredited to sign reports on mineral reserves and resources within their area of expertise and in the valuation of mining companies quoted on the Stock Exchanges.

Belgium-Luxembourg
Croatia
Cyprus
Czech Republic
Finland
France
Germany
Greece
Hungary
Ireland

Italy
Netherlands
Portugal
Russia
Serbia
Slovenia
Spain
Sweden
Switzerland
United Kingdom

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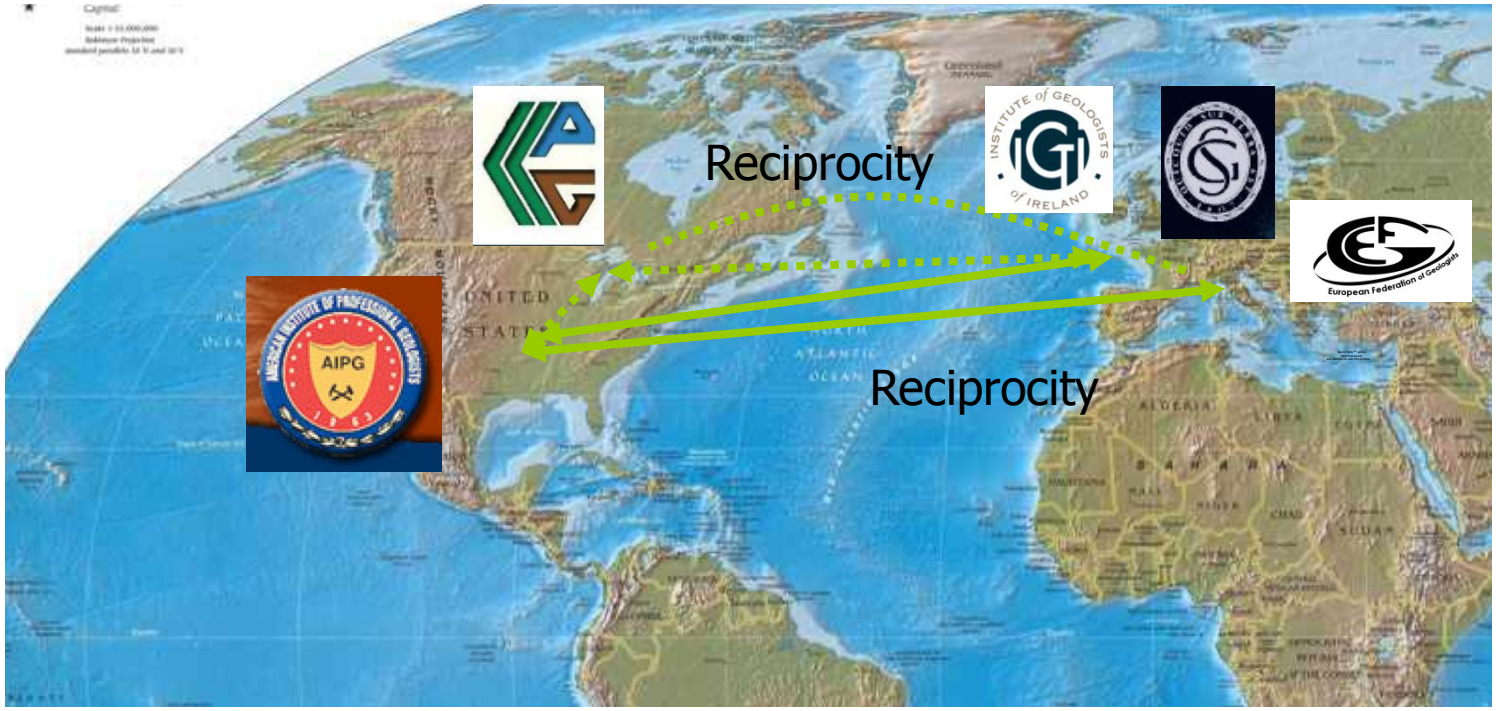
FÉDÉRATION EUROPÉENNE DES GÉOLOGUES
EUROPEAN FEDERATION OF GEOLOGISTS
FEDERACIÓN EUROPEA DE GEÓLOGOS

PROFESSIONAL RELATIONS
N. AMERICA - EUROPE

1. Professional qualification
2. Recognition
3. Reciprocity
4. Global Acceptance



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EurGeol recognised as Competent Person in Europe

The mineral sector is one of the main employers for geologists and the recognition of the professional competence, integrity and ethics are very advanced in this area.

The recognition of EurGeol title holders as Competent Persons able to sign off reports has been extended.

PERC (Pan-European Reserves & Resources Reporting Committee) is the organization responsible for setting standards for public reporting of exploration results, mineral resources, and mineral reserves by companies listed on markets in Europe.

EFG is one of the founding members of PERC and thus its national associations are considered as Recognized Professional Organizations (RPO) qualifying European Geologists as Competent Persons.

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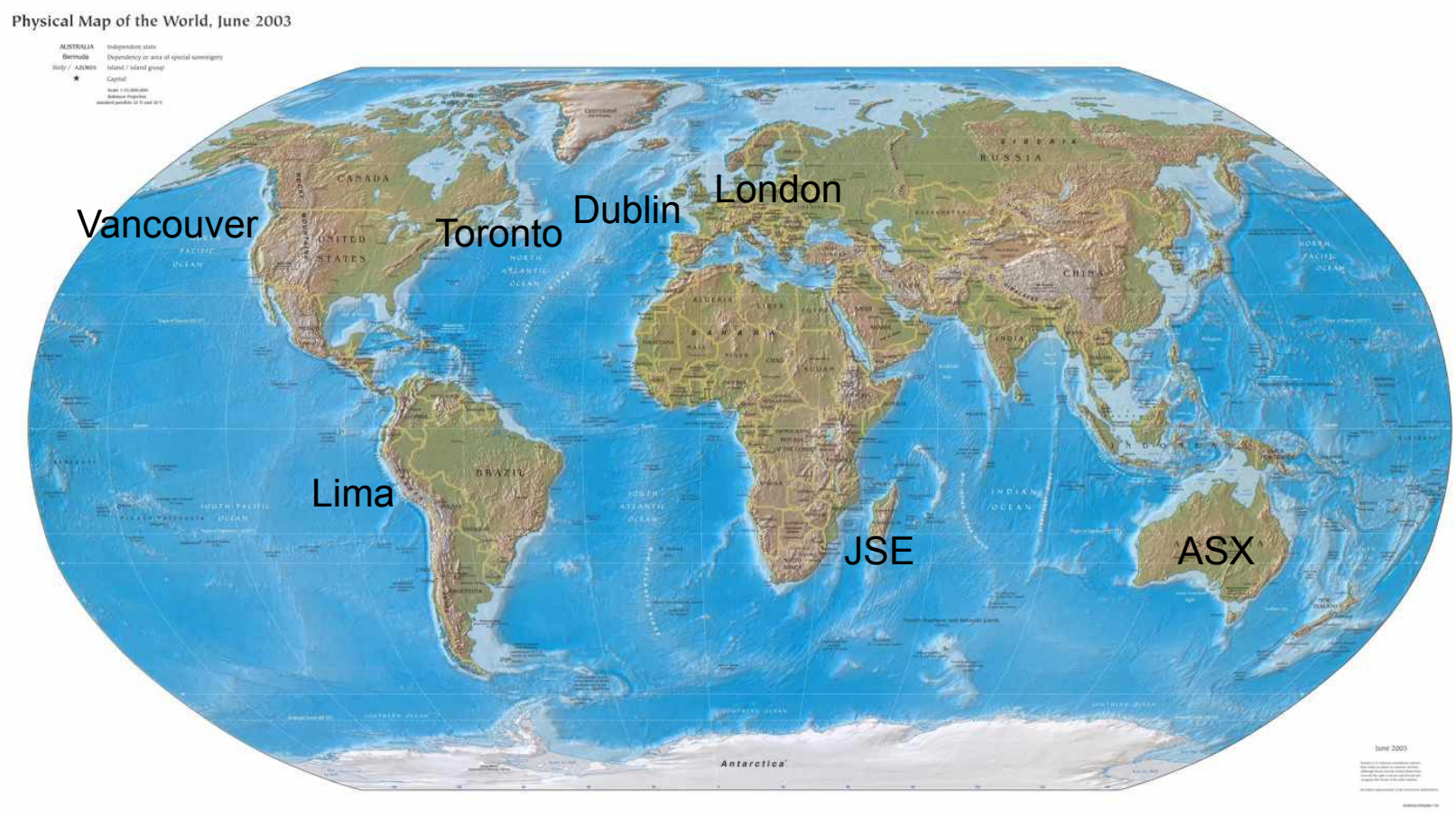
ROPO RECOGNITION FOR EurGeol PGeol CGeol



Stock Exchange Recognition

A Fast Growing Trend - Global requirement for professional qualifications

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To be recognized as an **RPO (Recognized Professional Organization) or ROPO (Recognized Overseas Professional Organization)**, an organization must satisfy the following criteria:

- be a self-regulatory organization covering professionals in the mining and/or exploration industry;
- admit members primarily on the basis of their academic qualifications and professional experience;
- require compliance with the professional standards of competence and ethics established by the organization anywhere in the World (not just within the home jurisdiction of the organization); and
- have disciplinary powers, including the power to suspend or expel a member for breaches of professional standards of competence or ethics anywhere in the World.

Some proposals for improving geological understanding in Society

1. Schools to enhance the importance of geology in environment and everyday life. (**Earth science has been part of the curriculum in American schools for more than 100 years**).
2. Geology to be given increased weight in the education of planners, architects, engineers, natural scientists, etc.
3. Geological information made available to the general public in a understandable way.
4. Development of geo-tourism and increasing the number of Geoparks in Europe.
5. Adequate geological competence applied in land use planning, in environmental management and in any new development.
6. More geologists should be employed in public administrations in Europe.
7. Preservation of geological heritage in Europe.

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EFG approaches to improving geological understanding in Society

- The quest for renewable energies (particularly low and high enthalpy geothermal) should become a EU priority.
- Major developments affecting the environment and the exploitation of natural resources must have a compulsory geological study and documentation.
- Preserving geological diversity, future generations will be able to explore Nature its origin and evolution before and after our time.
- Every individual geologist to take responsibility for representing the science and the profession to those they come into contact with – **we need to be passionate ambassadors!**

- **Ultimately, however, the future lies in the hands of students, parents, grandparents, teachers, school administrators, school board officials, and politicians and their advisors at all levels of government. The future of Earth science literacy — indeed, the future itself — lies in the hands of the geological community.**

Communicating geological expertise

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Communication of geological expertise

Geological expertise needs to be communicated in a wide range of contexts (in addition to the teaching and training of geologists) including:

- Public policy relating to land-use
- Public information
- Informing commercial decision making
- Resolving disputes

Outline of contribution

- For each of these contexts I will consider:
  - **Why** is it important to communicate geological expertise?
  - **What** are we seeking to communicate?
  - **Who** needs to communicate geological expertise and **Who** is the target audience?
  - **When and how** is the communication of geological expertise required?

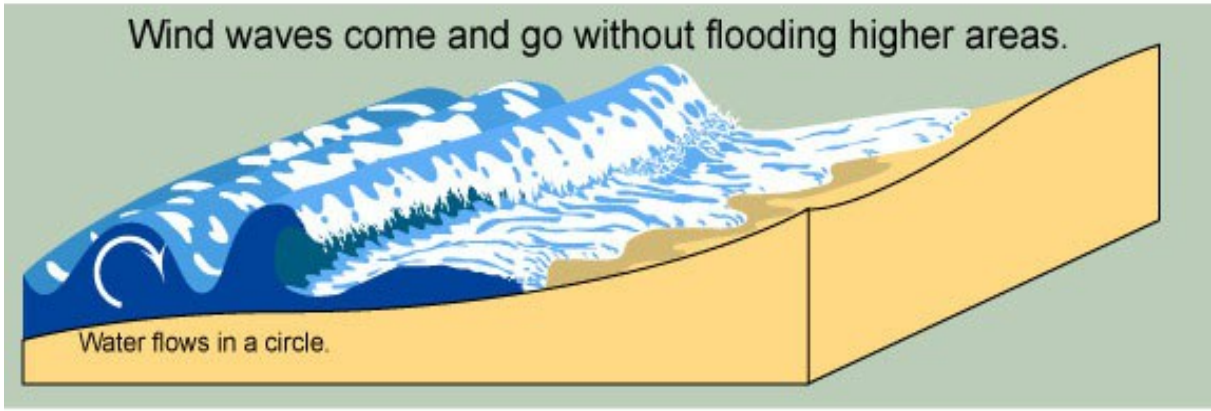
Public policy relating to land-use

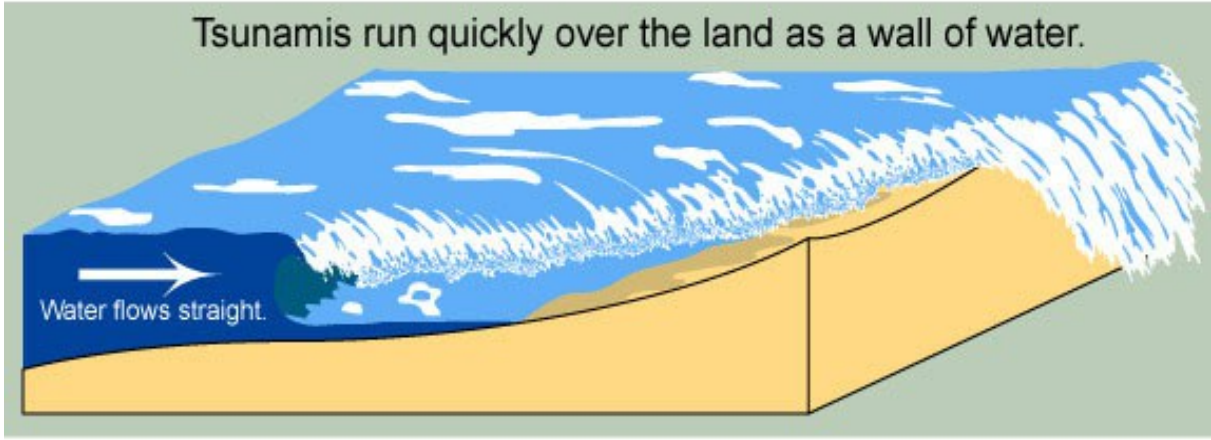
- Geological expertise may be required for:
  - Formulation of policy;
  - Planning and licensing of land-uses;
  - Regulation of land-uses (mineral exploitation, landfill, infrastructure development);
  - Health and safety of those involved in working with the ground.

Public information

- Geological and related inputs are needed for information directed to:
  - Ensuring public safety;
  - Environmental protection;
  - Explaining proposals (e.g. a new quarry or mine or the impact of a new road);
  - Commercial issues (e.g. effect of ground conditions on land and property values, restrictions on use of land, resources).

Tsunamis are often no taller than normal wind waves, but they are much more dangerous.

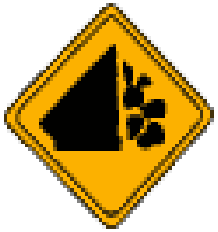




Even a tsunami that looks small can be dangerous!

Any time you feel a large earthquake, or see a disturbance in the ocean that might be a tsunami, head to high ground or inland.

Safety



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Puget Sound LANDSLIDES

- home
- about slides
- warning signs
- what to do
- prevention
- getting help
- site info
- FAQ

- slope maps
- slide show

Winter in the Northwest brings rain. Heavy rains bring landslides. Be prepared. More...

IF YOU HAVE A SLIDE

ABOUT SLIDES

LANDSLIDE HAZARD

SLIDE SIGNS

FAQ

PREVENTION

GETTING HELP

SLOPE MAPS

SLIDE SHOW

Landslides are common on Puget Sound. Reduce your risks.

Many slides occur after heavy rain. Check your drainage.

Buying property? Investigate slope stability.

home | about slides | warning signs | what to do | prevention | help | faq | maps | slide show | site info | sea program home | ecology home

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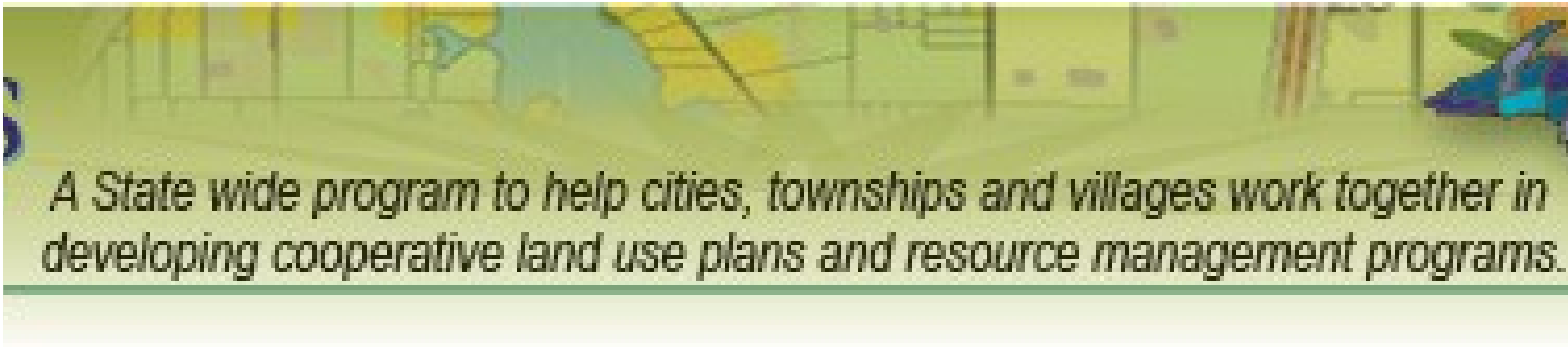
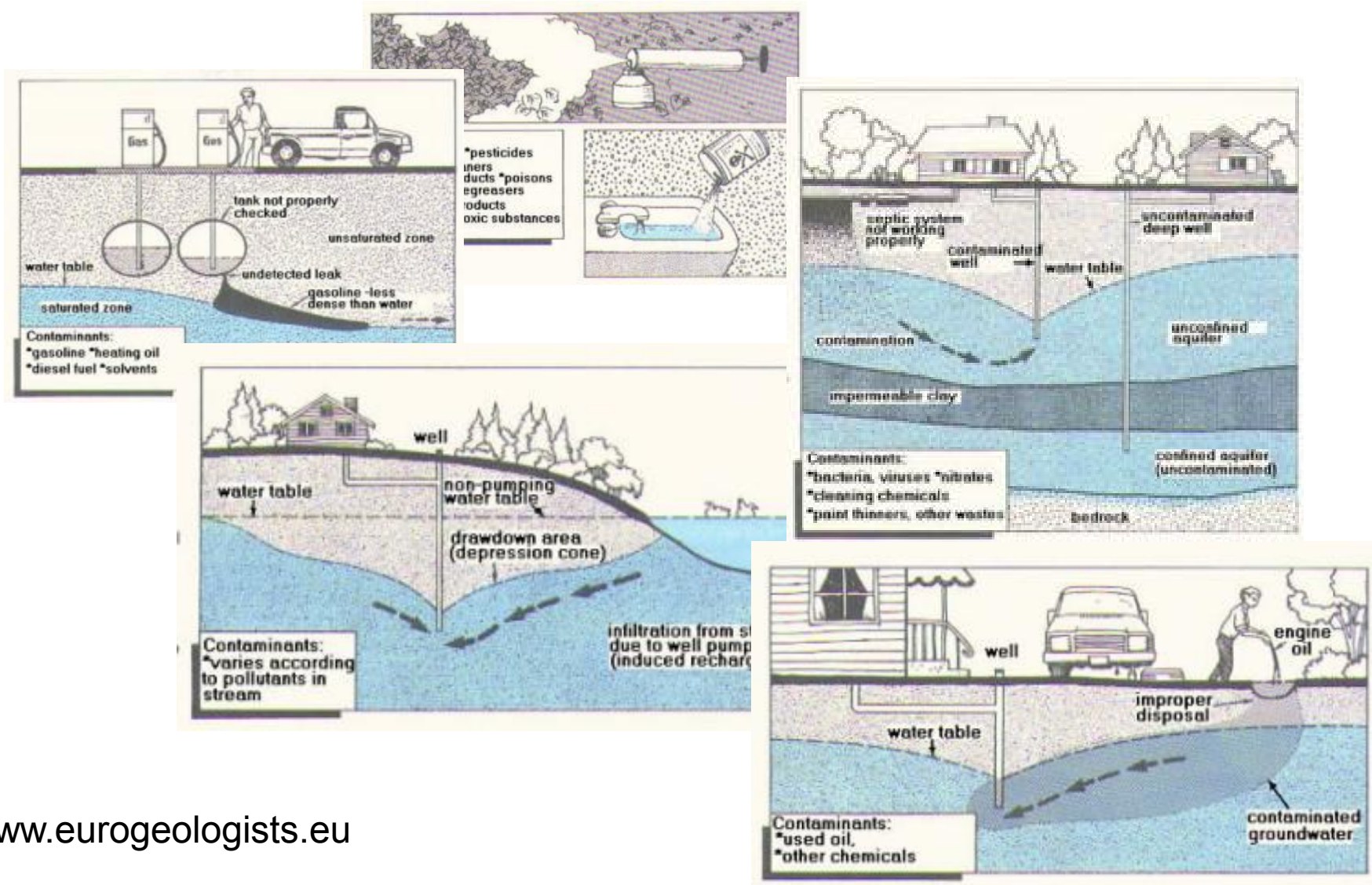
Environmental protection



Environmental protection



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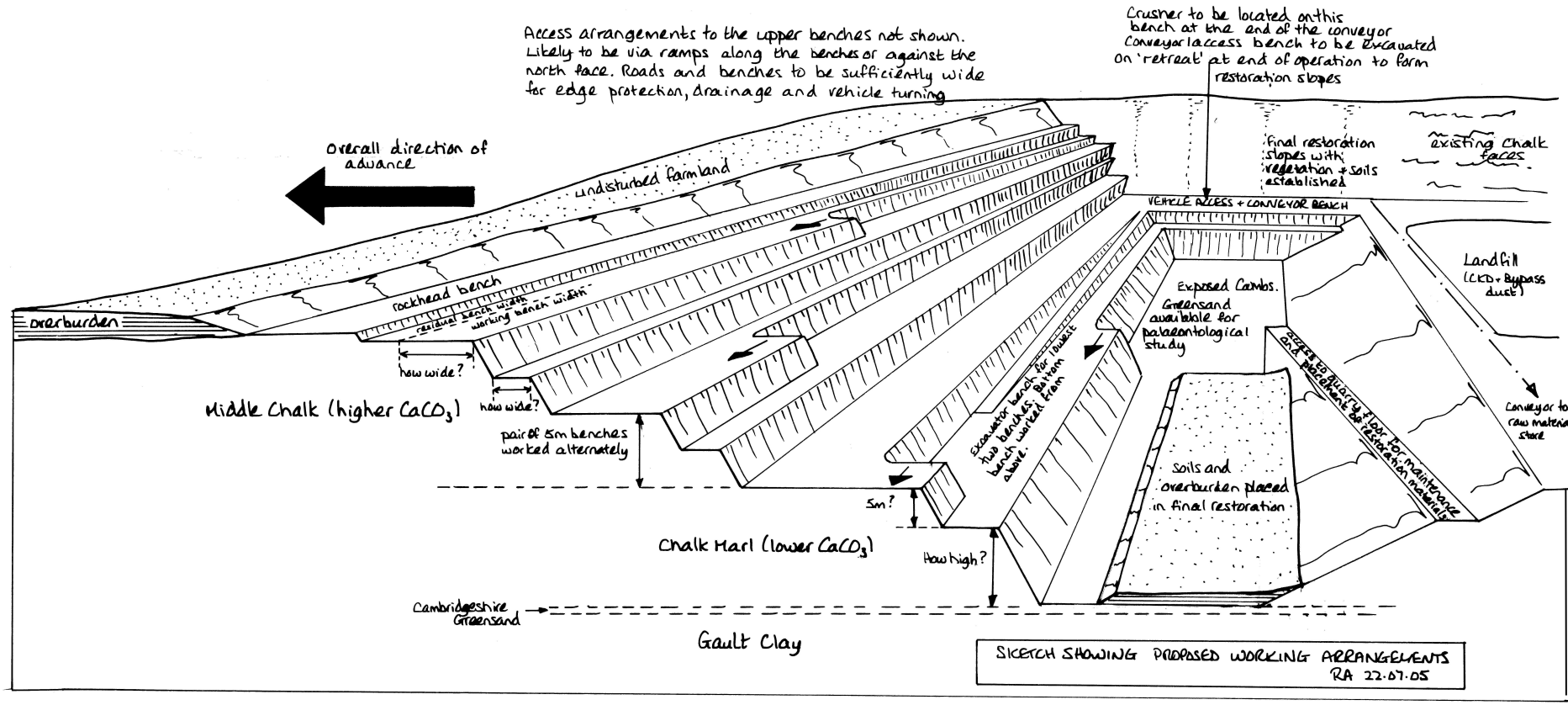
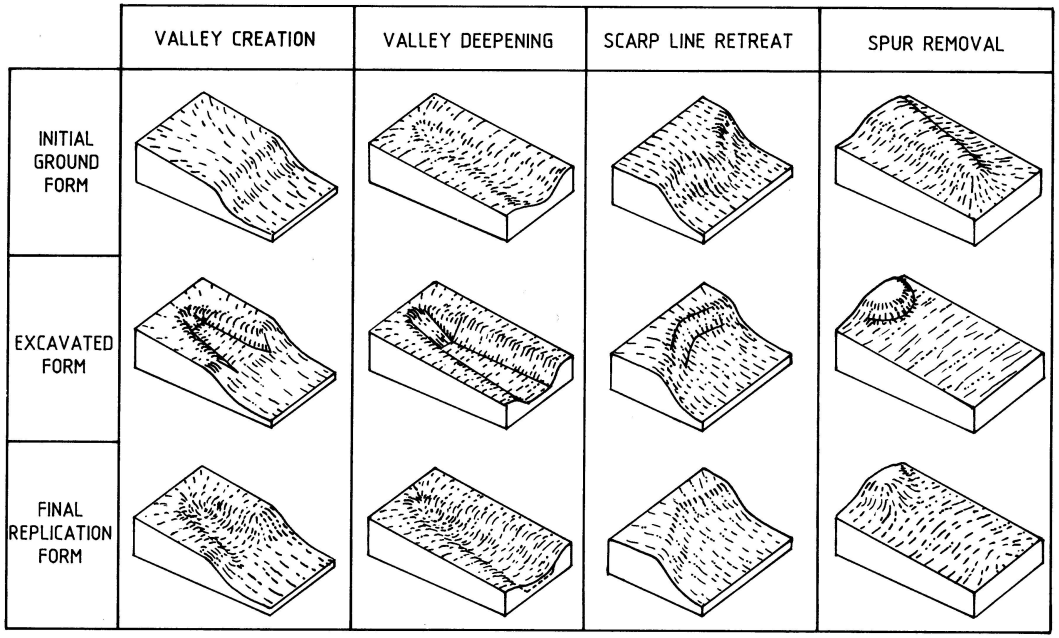
Explaining how a quarry will develop



Restoration

- Principles - ‘normal’ quarry slopes are no longer acceptable



Approaches to landform replication for large chalk quarries in AONBs

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Informing commercial decisions relating to land-use

- Other professionals often require geological input to inform strategic decision making:
  - Due diligence;
  - Feasibility studies and project evaluation;
  - Development of remedial strategies affecting property;
  - Impact of courses of action on land values.

How is the next step decided?

- Who's involved?
  - **Local population** (require reassurance)
  - **National or international environmental bodies** (effect on red list species, or environmental contamination)
  - **Investors** (have to be persuaded to part with their money)
  - **Contractors hired to implement the work** (they have to understand enough about what and why to do the job right)
- **A WEB OF EFFECTIVE COMMUNICATION AND COLLABORATION REQUIREMENTS**

Resolving disputes

- Geological expertise is frequently called upon in the context of dispute resolution:
  - Informing Courts, Arbitrators, legal representatives, juries
  - Providing expert determination
  - Negotiating on behalf of non-specialists

GEOETHICS

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Geoethics and Deontology: From fundamentals to applications

Geoethics was born in 1991 at the junction of Ethics and Geology, and it has unequivocally shown a spectacular advance in the last two decades linking different disciplines, applying different methodological procedures and technologies, and facing new scientific, social and cultural challenges. However, geoethics as a discipline is still not yet very well known.

Deontology is one of the main ethical decision-making approaches which are concerned with doing what is correct, in other words one of those kinds of normative theories regarding which choices are morally required, forbidden, or permitted.

- As a general overview, the difference between ethics and deontology are resumed then:
- ETHIC: Oriented to do good; there are no rules; proposes motivations not enforceable; dominates the individual conscience; it cares about the maximum.
- DEONTOLOGY: Oriented to duty; there are standards and codes; requires action; adopted by a collective; establish mandatory minimum.

Since its inception by UNESCO in 1998, the World Commission on the Ethics of Scientific Knowledge and Technology (COMEST) is the advisory body and forum of reflection composed which “is mandated to formulate ethical principles that could provide decision makers with criteria that extend beyond purely economic considerations”. We accept, following Didier (2008) that “with the progress of science and technology and with questions arising on globalization, ethical issues, in particular bioethics, concerns us all”.

ETHICAL PRINCIPLES

The geoethical bases are founded in some principles:

- **Precautionary principle** - Should be aware of the importance of scientific and technical progress for humanity.
- **Sustainability** – (1) Should try to maintain a comprehensive global vision in solving problems affecting the planet. (2) Must consider during their actions rational use of natural resources and the exigencies of the society in environmental matters, avoiding transfer of undesirable products to the environment.

- **Geoconservation** - In recognition activities and research of geological materials and processes, to ensure the preservation of rocks or outcrops which may represent a unique record of the processes occurred in nature.
- **Human security** – (1) Must contribute their knowledge and skills in mitigating natural hazards, giving priority to preventive strategies; (2) Should try to ensure the safety of persons and properties, and the environmental protection; (3) Must cooperate with responsibility and diligence with public authorities at risk, and assist in the provision of information to society, using with seriousness, objectivity and rigor of scientific data; (4) Must assess the role of geological factors in the fight against poverty and, where appropriate, contribute their knowledge to the sustainable improvement of living conditions of vulnerable societies.

- The incorporation of such **geoethical values** confers a new dimension to the activities of professional geologists in numerous fields of work, such as, among others:

  - the rational use of environment and natural resources, protection of geodiversity,
  - predictability, mitigation and management of natural hazards and disasters,
  - and the scientific, academic and professional cooperation for development.

- In October 2011, the traditional international section on GEOETHICS was organized in the framework of the 50th Jubilee Mining Příbram (Czech Republic) Symposium. They conclude:

1) To emphasize the significance of Geoethics in the context of facing extraordinary natural hazards and disasters in the course of recent years.

2) To incorporate a geoethical approach to needed new legal aspects (including insurance policy) and to an ethical way of thinking.

3) To strengthen the links of Geoethics with the new aspects of the geosciences education.

4) To recommend the inclusion of geoethical subjects into deontological codes.

5) To emphasize the liaison with the mining engineers activities.

6) To remark a need of searching new priorities for the 3rd Millenium fitting the World Millenium Goals.

7) To recommend links for incorporating Geoethics into any activity related with the abiotic world.

8) In order to avoid any misunderstanding and confusion about the character of the meeting hosted by the Mining Příbram Symposium, future meetings should use the term of the INTERNATIONAL CONFERENCE ON GEOETHICS.

UNIVERSAL DECLARATION OF GEOETHICS

- With these conclusions, the professional organizations should subscribe a UNIVERSAL DECLARATION OF GEOETHICS, or an adapted text, to make visible their position towards the society. The EFG could play a principal role in this initiative.

The answer to all those who strive for excellence in all matters affecting the geoscience, is characterized by the following:

A Critical Attitude

+

A rigorous and prudent approach

+

Communication

The result will be a positive contribution to the **SOCIETY**

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