

1st European Engineers' Day

"Civil Engineering Profession & Education in Europe"

*by Vassilis P. Economopoulos
ECCE Immediate Past President*



Brussels, 8th December 2011

ENGINEERS SERVING THE PUBLIC INTEREST AND THE HUMANITY NEEDS



Helsinki, October 2009

Definition of Engineer

Let's try...

- An **Engineer** is considered to be a person possessing the skills and the knowledge to combine analytical and synthetic approaches for detecting problems in order to find and to apply reliable, safe, economical and environmentally, socially acceptable solutions. From this point of view the **Engineer** is a producer, as well as a decision maker.
- The **Engineer** is the Designer, the Constructor; the Producer the Supervisor, the LEADER of the integrated projects those that build the QUALITY OF LIFE OF THE HUMANITY.
- The **Engineer** must act as a professional within a framework of high morale and ethical standards seeking the sustainable development and the protection of the natural environment, with compatible construction activities for a modern and a viable urban environment. ³

Eng Profession – Public Interest Character

We must reveal, explain and promote our Profession's Public Interest Character. We can analytically present this "public interest character" in a broad range of Civil Engineering Activities as following indicatively referred:

- Safety and quality of the building constructions
- Conservation and restoration of the world cultural heritage
- Anti-earthquake and natural disasters facing and protection
- Energy efficiency of buildings
- Sustainable Development of infrastructure
- Safety of the Dams
- Quality of the life with adequate water supply
- Quality of the life with sustainable transport
- Quality of life and environmental protection with upgraded and innovative sewage and waste water treatment plants
- Industrial Development
- Spatial planning for a sustainable urban environment

- Water Resources Management
- Renewable Resources of Energy
- Road Safety
- Transportation Plans, Public Transport Infrastructure for Sustainable Cities
- Developing of Railways and Highways Infrastructure, connecting people, enhance the sustainable development
- Facing the Greenhouse Phenomenon and the CO2 Emissions
- Energy efficiency improvement of buildings and public infrastructure
- Public Health with advanced sanitary and social infrastructure

The above indicative list of engineering activities and our contribution to the public interest must be enlarged and promoted by the European/International Engineering Organizations. All the arguments, the works and the activities proving that our Engineering Profession has a vital and critical role serving the public interest and the quality of life should be emerged and promoted by the Engineering Organizations in our Societies. That should be achieved in the National and International level.



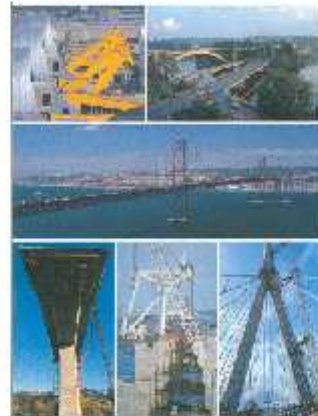
News & Views

Workshop on the use of the Eurocode 1 (EC1) and EC2 (EC2) in the design of concrete structures. The workshop is organized by the Institution of Civil Engineers (ICE).

The workshop will be held on 14th and 15th June 2006, at the ICE headquarters, 1, Whitehall Court, London, W1B 5AL. The workshop is open to all members of the Institution of Civil Engineers. Subject to the usual conditions of membership and subscription.

For more information, please contact the ICE Secretariat, 1, Whitehall Court, London, W1B 5AL. Telephone: 01753 463446 or 01753 476186. Fax: 01753 233322.

European Council of Civil Engineers



ECCE
European Council of Civil Engineers
1, Whitehall Court
London, W1B 5AL

Research
Education
Technology
Lobby
Advocacy

Providing a Civilised Life

European Council of Civil Engineers (ECCE)

ECCE was created in 2000 as the common body of the professional bodies for Civil Engineers in Europe. For the Civil Engineers working together across Europe to offer a solution to the challenges of the 21st century and to meet the needs of the future.

Objective

The European Union

- (i) Coordinate the business, technical and ethical standards.
- (ii) Provide a source of technical advice.
- (iii) Promote co-operation with other European organisations in the construction industry.

National Governments and Institutions

- (i) To advise and liaise with National Governments and international bodies.
- (ii) To coordinate standards and achieve a common body of standards and laws governing the profession.
- (iii) To form a common body for a European Code of Conduct of the Engineering Profession and establish a common code of ethics for the profession.

Providing a Civilised Life



The Profession and Industry

Construction and Industry

- (i) To increase the quality of construction and the standards of civil engineering education, training and professional competence.
- (ii) To develop technical, managerial, professional and regulatory standards for the construction industry.
- (iii) To encourage and promote the use of innovative technologies in the industry.



Areas of Activity

- Professional Training
- Continuing Professional Development
- Materials & Site Reviews
- Publication of Newsletters
- Legislation
- Ethics
- Liability
- Working with other Europe
- Exchange of New Technology

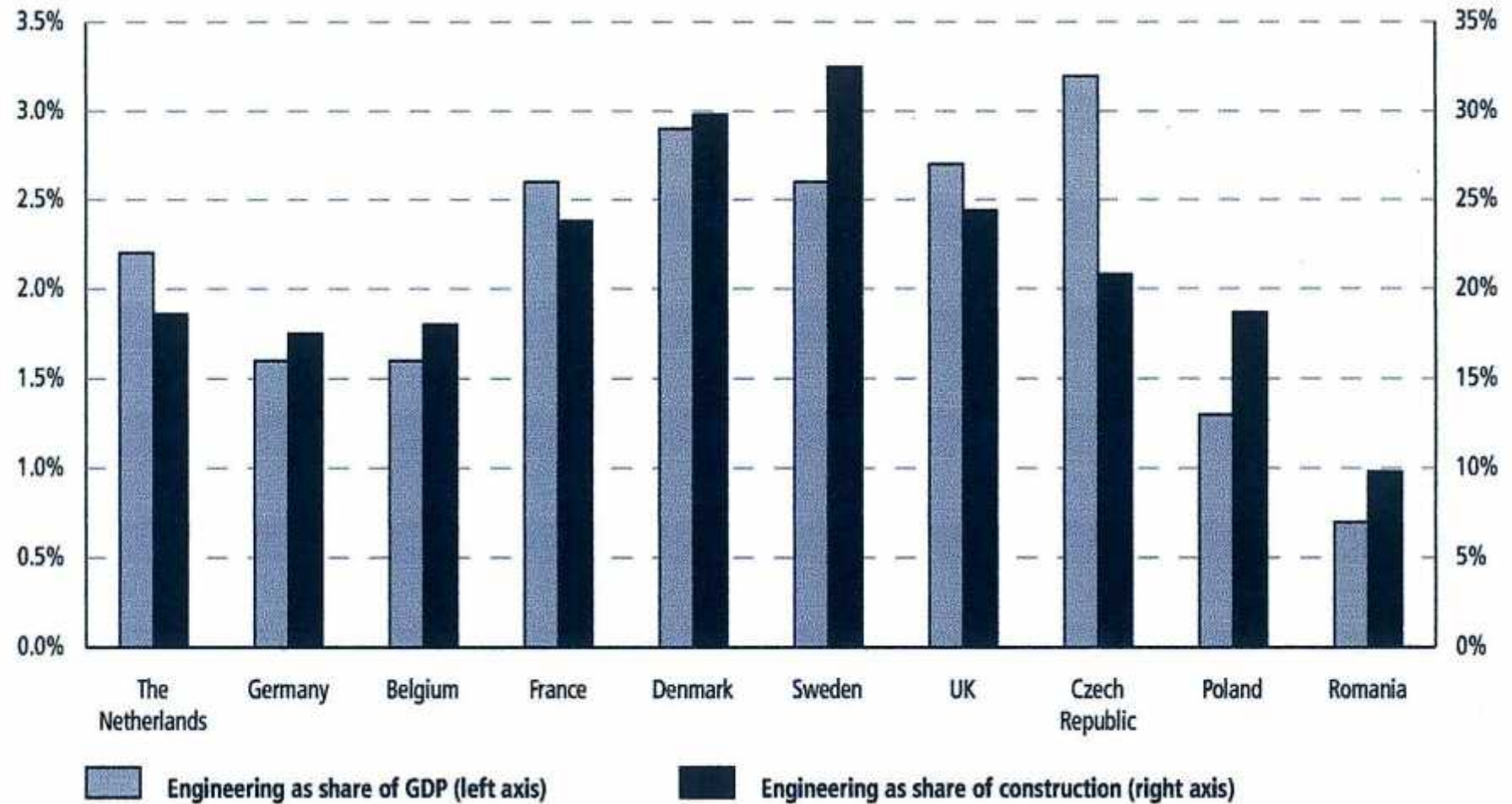
Providing a Civilised Life

The Construction Sector in Europe

The **construction sector** is strategically important for Europe. With 16.3 million people directly employed in the sector, it is Europe's largest industrial employer accounting for 7.6% of total employment and 30% of industrial employment in the EU-27 (2008).

About €1,305 billion was invested in construction in 2008, representing 10.4% of the GDP and 49.2% of the Gross Fixed Capital Formation of the EU-27 in 2008.

According to EFCA sources, there are estimated to be approximately 3.5 million engineers in Europe, of whom around 1 million are estimated to be active in the engineering and technical consulting sector. Furthermore, according to the ING review from 2008 the engineering consultancy sector is active on the export market and it is estimated that on average 25% of turnover is achieved on export markets with the UK leading the rest of Europe at 35% of turnover being exported. Under professional services, this study will also cover cost consultants and building controlling bodies. According to the same data, the SMEs in the engineering consulting sector dominate the European Market; the 96% of those companies have less than 20 employees.



The **construction industry** accounts for 10% of total European GDP, of which just under a third i.e. 3.5%, is attributable to construction materials and building products. Based on the total construction activity for EU-27 totalling €1,305 billion, the materials and products market represents more than €400 billion in 2008. Direct employment in this industry is estimated at 2.5 million people.

The **competitiveness agenda for the construction sector** described the function, prospects and importance of the sector. It subsequently identified four objectives for enhancing the competitiveness the sector:

1. To develop a coherent quality policy for the sector. Improving quality procedures and standards taking into account environmental, regulatory, employment and entrepreneurial considerations;
2. To improve the regulatory environment. Adapting the regulatory framework in particular for public procurement, unfair competition, registration and qualification systems, health & safety and payment delays.
3. To improve provision of education and training. To improve the education level, the qualifications of the workforce and the image of the sector, a key issue related to improving its attractiveness.
4. To reorient and reinforce research and development. To strengthen efforts in Research and Technological Development, Innovation and knowledge deployment.

Engineering meeting the global requirements

In a future world of 6,5+ billion people:

- 1,6 billion do not have safe drinking water
- 2,6 billion do not have basic sanitation
- 1,6 billion do not have adequate shelter
- 1,6 billion do not have reliable power
- 3,4 billion do not have adequate access to information or communication

In an increasingly demand and conflict competitive world we need:

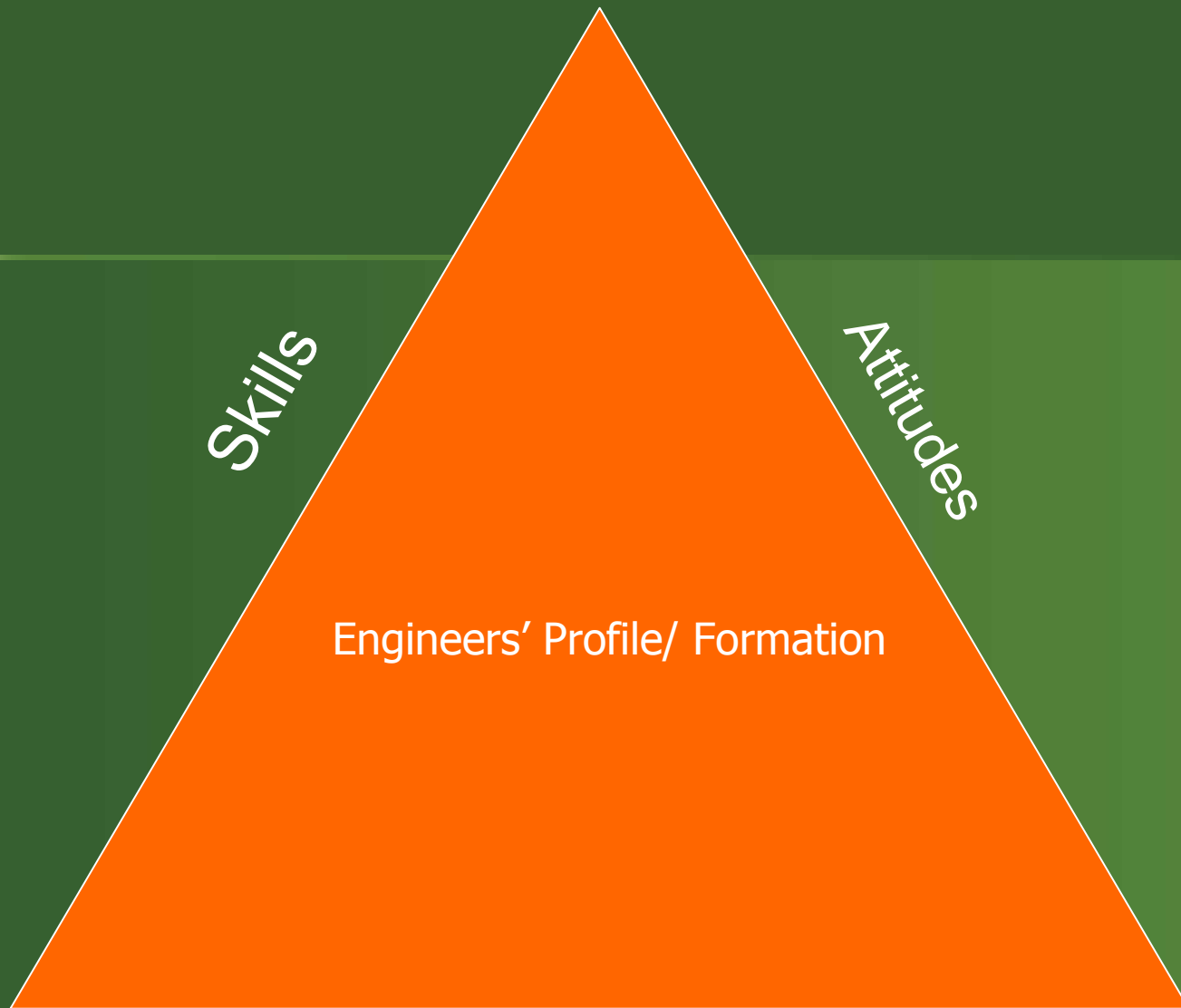
- Sustainability
- Research and Development Expected Benefits
- Managing Risk
- Innovation and Integration
- Reform in the preparation of Engineers

Engineers entrusted by the Society to create a sustainable world and enhance the global quality of life

Civil Engineers Serving the Public Interest facing Natural Disasters and the Climate Change

- The Earth has shown us its teeth during the year 2010. Earthquakes, heat waves, floods, volcanic eruptions, hurricanes, avalanches, landslides and droughts took the life of at least 250.000 people. It was the deadliest year – in terms of natural disasters – for an entire generation. In particular, the number of people that were killed in 2010 by the elements of nature is greater than the number of people that were killed by terrorist attacks over the course of the last 40 years.
- The horrific earthquake in January 2010 in Haiti that killed 220.000 people was the most terrible natural disaster in 2010. One month later an earthquake, 500 times more powerful than the one in Haiti, struck Chile but the victims were less by far (approximately 1.000) thanks to the better infrastructure of this country. The climate changes due to the global warming are responsible for the unprecedented heat wave in Russia in summer 2010 and for the devastating floods in Pakistan which spread over an area of 161.000 sq. km (equal to the size of Bangladesh). 17.000 people lost their life due to those two phenomena – it is the same number as the total number of victims of air crashes over the last 15 years. While the earthquake of Haiti, the Russian heat wave and the floods in Pakistan were the major causes of death of the ending year, the natural phenomenon that mainly characterized 2010 was the earthquakes.

- Until mid-December 2010 there had been 20 earthquakes larger than Richter magnitude 7 – while the annual average of earthquakes of this size is 16. In the extreme events of 2010 we must also include the unprecedented snowfall in the United States, Russia and China, the record high temperature (54 Celsius degrees) in Pakistan in May, the volcanic eruption in Iceland that scattered ashes in the northern hemisphere, as well as the whirlwind that passed over New York, which is extremely rare for this city.
- The last weeks and days of 2010 were also characterized by extreme events of snowfalls in USA and in Europe and high intensive floods in Australia.
- Consequently the critical role and our high responsibility as Professional Civil Engineers are clearly emerged to the whole society, serving the public interest and facing the natural disasters and contributing for facing the climate change impacts.



Engineers' Profile/ Formation

Skills

Attitudes

Knowledge

The Engineer should be Knowledgeable:

- Mathematics, physics, chemistry, biology, mechanics and materials
- Design
- Sustainability
- Public Policy and Administration
- Business Basics
- Social Sciences
- Ethic Behavior

The Engineer should be Skillful:

- Apply Basic Engineering Tools
- Learnt about, Assess and Master New Technology
- Communicate
- Collaborate
- Manage
- Lead

The Engineer should Embrace Attitudes:

- Creativity and Entrepreneurship
- Commitment
- Curiosity
- Honesty and Integrity
- Optimism
- Respect and Tolerance
- Thoroughness and Self-Discipline

THE LEADERSHIP IN ENGINEERING

- Leadership begins with our Engineers/Members
- Building Leaders
- Personal Qualities of a Leader (Driven by a vision, Able to inspire others, Committed to motivate the team, Recognizes opportunities to help make vision a reality)
- Leaders motivate others
- Engineers/Members sharing Expertise
- Informing the Public and Inspiring the Society
- Being Prominent
- Spreading the World
- Our Infrastructure Message
- Leading the Nation in Infrastructure Action
- Leading in Public Policy Advocacy
- Leading in Technical Expertise
- Finding Transportation and Development Solutions
- Building International Alliances
- Promoting Innovation
- Protecting Critical Infrastructure
- Reaching out to Kids
- Inspiring Achievement
- Engaging Students
- Recognizing Achievement and sharing excitement



Acropolis Athens Metro Station under construction

More Qualified Engineers for Europe

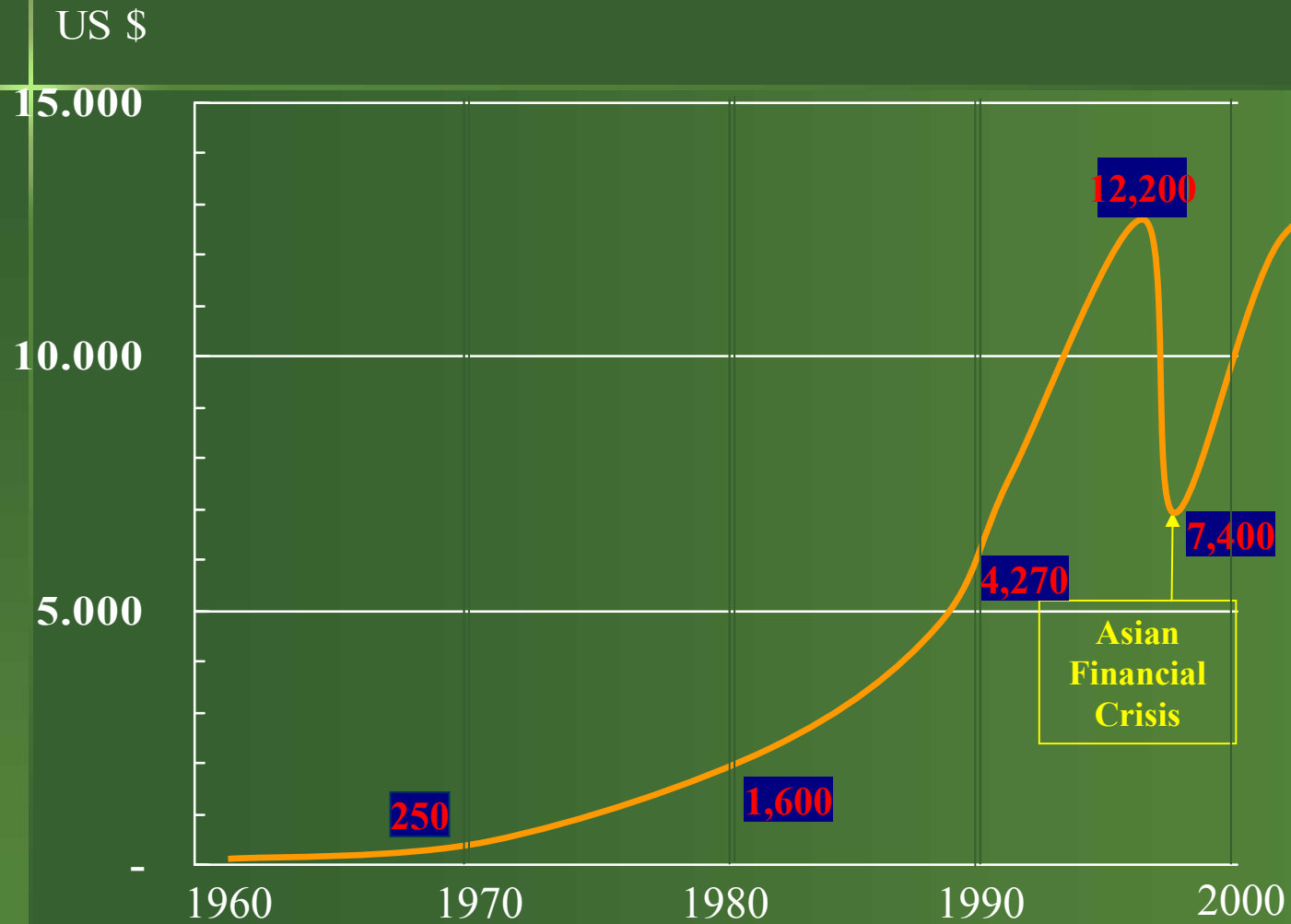
- EU Commission (2002):
“The crisis in the production of human resources for science and technology”
- European Round Table of Industrialists – ERT (2009):
“Mathematics, Science & Technology Education Report”
- Shell/ Microsoft/ INSEAD/ FEB (2009):
“Who cares? Who dares? – Providing the skills for innovative and sustainable Europe”
- Institut der Deutschen Wirtschaft Köln (2010):
“European Engineering Report”
- FEANI Initiative on “More Engineers for Europe” (2009-2010)
- EU 2020 Strategy
- CEDEFOP Projections: “16 Millions more people will be needed to fill high skilled jobs by 2020, which under current trends will lead to severe shortages of qualified professionals”

Invest in Engineering Education & Profession!

Engineering Science Graduates in Korea



Korea's Per Capita GNP Growth



Professional Recognition & Mobility

The trans- European mobility of individual professionals (Civil Engineers) and Civil Engineering consulting and contracting companies is based on the fundamental Treaties of the EU and one of the answers concerning the facing of the crisis conditions and especially for the construction sector.

Trans – European Mobility of Individual Professionals

Defined by the EC Professional Recognition Directive 2005/36

Trans – European Mobility of Engineering Companies

Defined by the EC Public Procurement Directives 2004/18 & 2004/17

Civil Engineering Profession in Europe



Evaluation and Reviewing of Professional Qualifications Directive

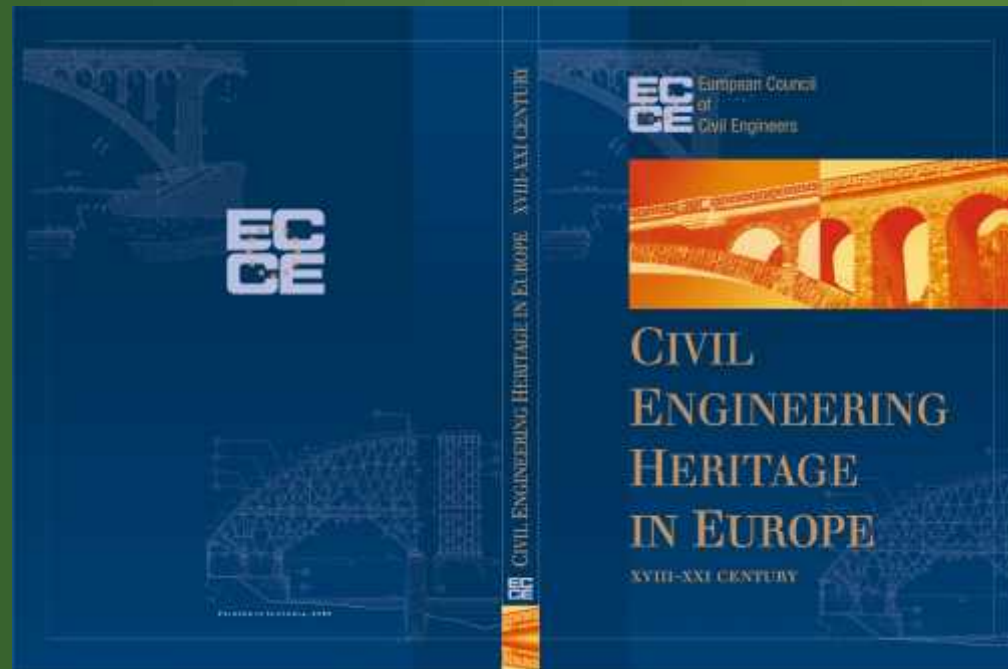
- Since the Consultation procedure for the evaluation and reviewing of the EC Directive 2006/36 has finished with a broad participation of all stakeholders and European & National Engineering Professional Organizations and the European Commission is going to present the revised draft, the EU Decision Makers have to take into account the SPECIAL IMPORTANCE and the VITAL ROLE of the ENGINEERING PROFESSION to the EUROPEAN SOCIETIES.
- THE MAIN PROVISION SHOULD BE THE SAFETY AND QUALITY OF THE CONSTRUCTIONS, THE SUSTAINABILITY OF THE URBAN ENVIRONMENT AND BY THE MOBILITY OF THE ENGINEERS ALL THESE TARGETS MUST BE MET.

Engineers play an important role in society and, in particular, in the protection of cultural heritage



Olympia Museum of Ancient Olympic Games

“Civil Engineers at the Heart of Society Building Life Quality and a Sustainable Environment”



THANK YOU FOR YOUR ATTENTION



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