ECCE Survey Knowledge & Technology SC

State of the Civil Engineering Profession Knowledge & Technology / A 5 year perspective

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Survey Strategy

Survey Phase 1 /	Pilot Study
Survey Phase 2 /	Europe Wide Detailed Survey Identify Indicators for Analysis
Survey Phase 3 /	Set the ground work for Regular (Annual) Survey Updates

Background

- The Construction Industry is a major driver in the economy which evolves at a fast pace with new emerging technologies and innovate materials.

- The Civil Engineer as a key player in the industry has a critical role in supporting this advancement. The Civil Engineer must not only adapt to a changing industry, but also has a responsibility to help lead this change.

Background

- The challenge for the Civil Engineer is to lead the construction industry to excellence, by understanding current and future needs as well as expectations in a dynamic world of change.

- The Engineer must anticipate the new challenges with vision and leadership.

Aim of Survey

- The aim of this survey is to identify priority areas for the future development of Civil Engineering, in view of the advancement of the Profession for tomorrow's challenges.

- In the first stage the survey was circulated to ECCE members, and it will then be circulated to a larger number of engineers throughout Europe.

Aim of Survey

- The results of the survey will be published on the ECCE website, and aim to be useful to main stakeholders in the building industry including professional associations and educational institutions.

- The survey can be completed in approximately 5 minutes and can be accessed using the following link: http://www.surveymonkey.com/s/TDYNX8H

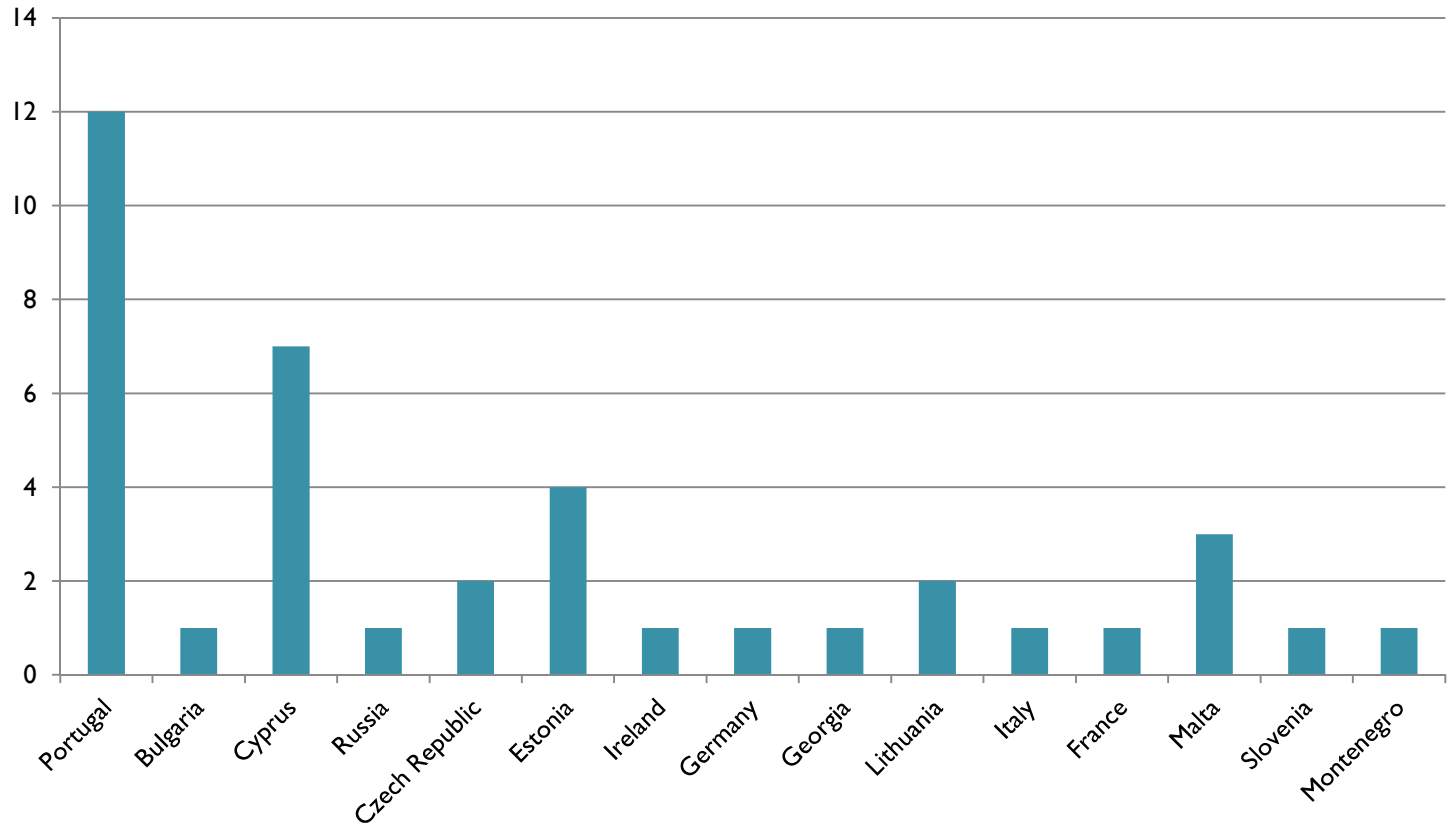
Phase I / Pilot Survey

- Asses Survey Relevance
- Prepare survey Questions
- Assess areas for improvement / limitations.
- Assess merits of the Survey
- Assess general response rate

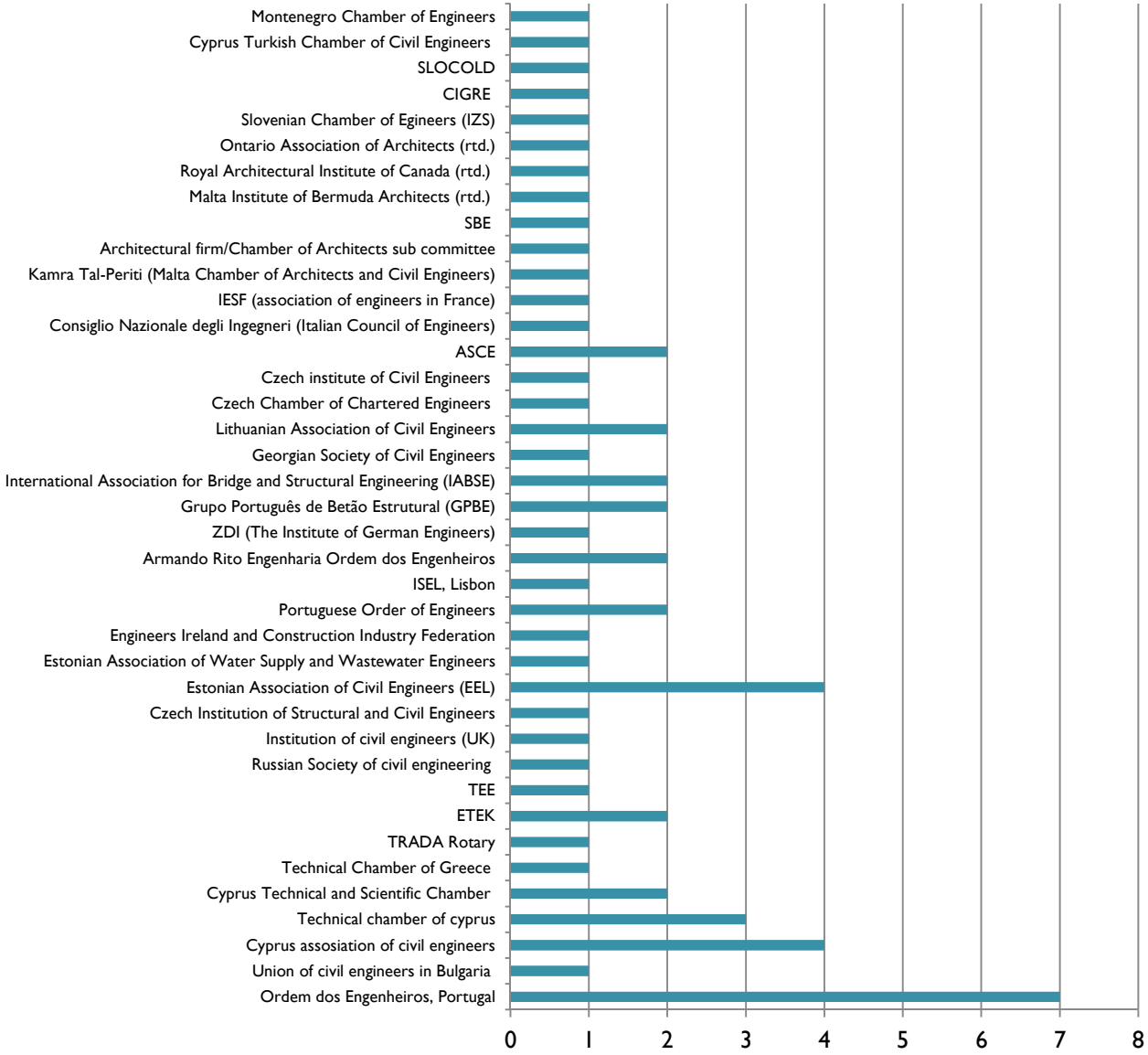
Survey Questions

- Country / Region of Origin
- Organisation / Membership
- Age Group
- Gender
- Education Background
- Research / professional Activity
- Main priority areas / present & future
- Main research areas
- Remarks

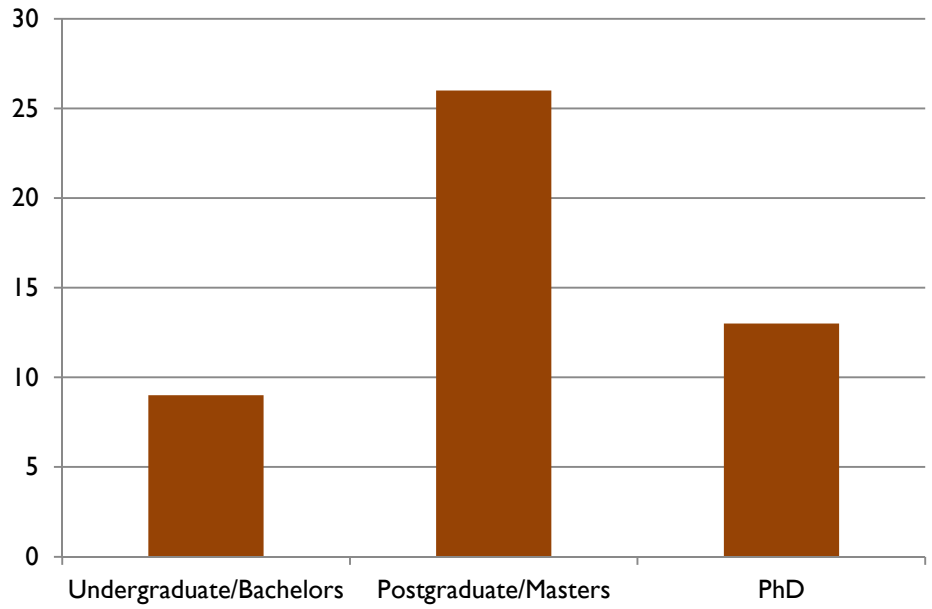
1) What is your country of origin?



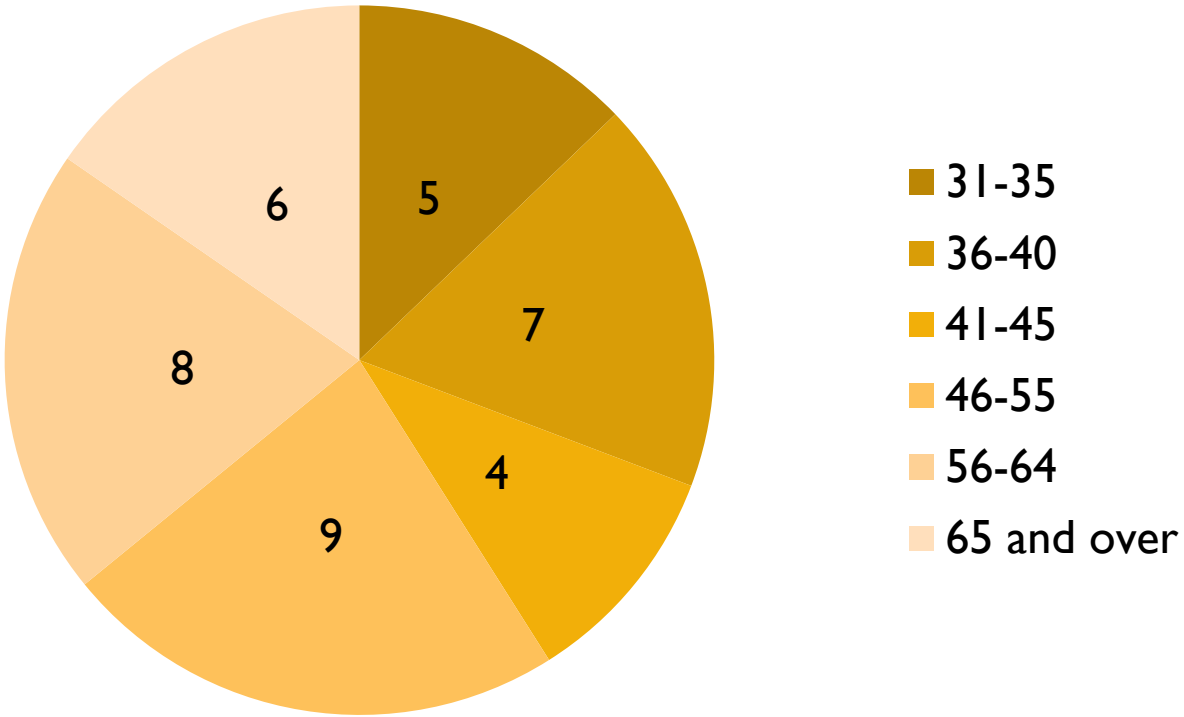
2) Of what organisation(s) are you a member?



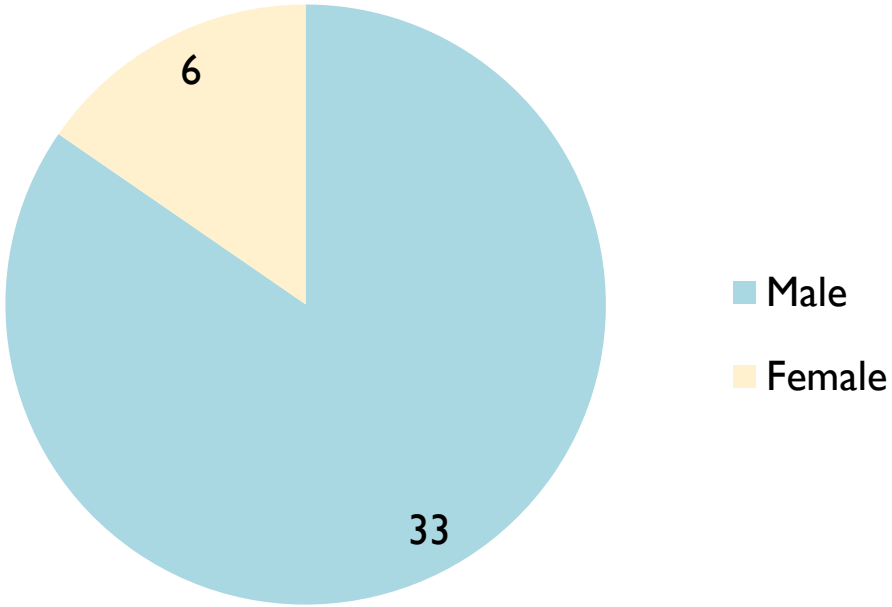
3) **Please detail degrees you have obtained/level of study you have completed as well as any professional qualifications.**



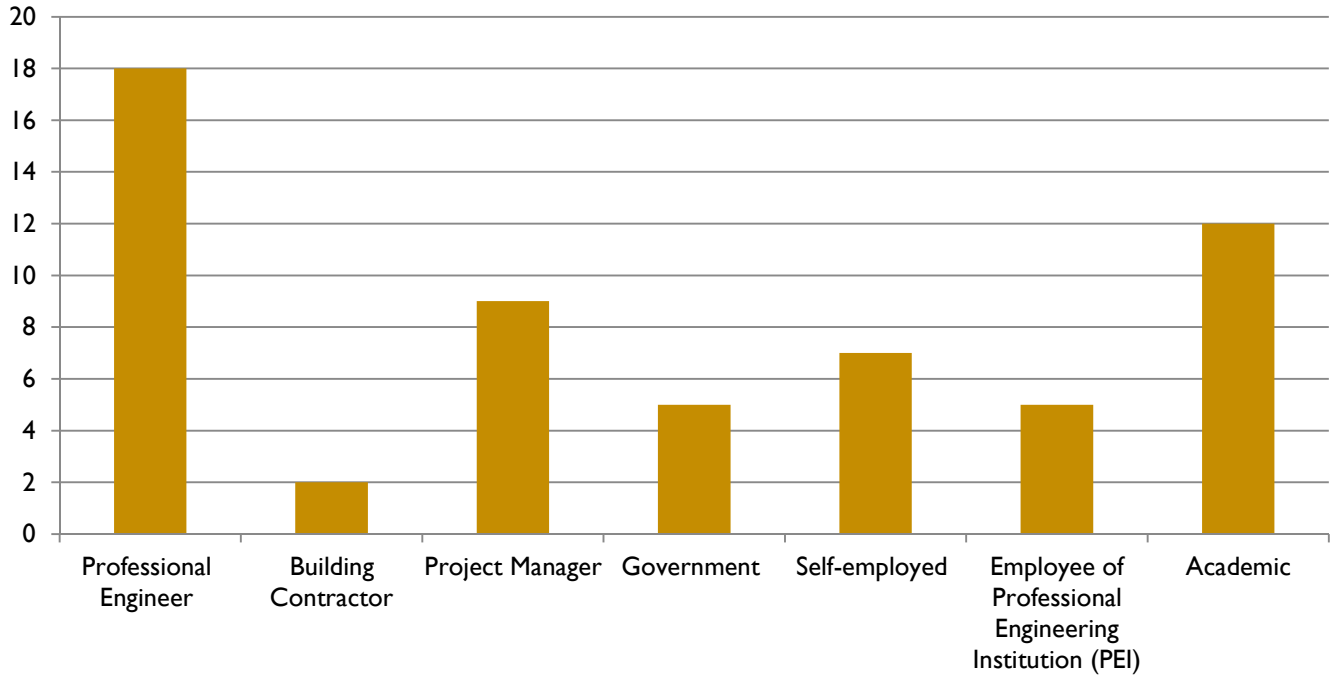
4) **Please select the appropriate age group.**



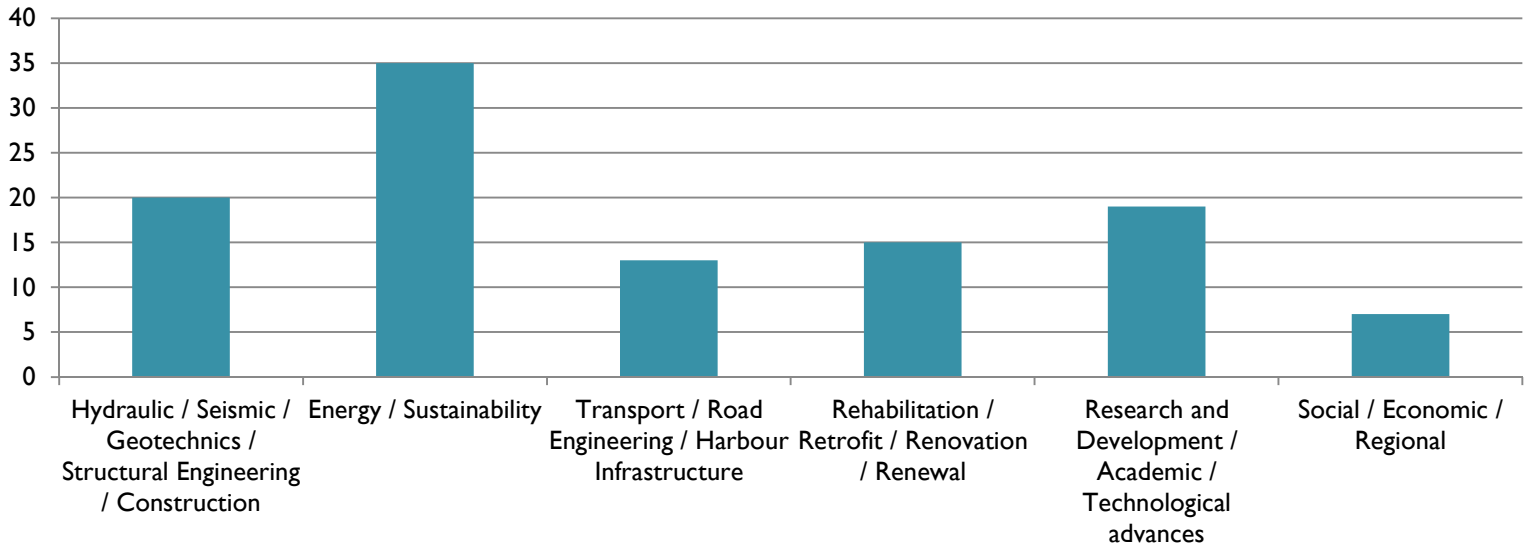
5) **What is your gender?**



6) **What is your current job/professional activity?**



7) Please identify those fields you consider as most important in civil engineering at the present time as well as those that you believe will be most important/critical in 5 years' time.



7) Please identify those fields you consider as most important in civil engineering at the present time as well as those that you believe will be most important/critical in 5 years' time.

	Hydraulic / Seismic / Geotechnics / Structural Engineering / Construction	Energy / Sustainability	Transport / Road Engineering / Harbour Infrastructure	Rehabilitation / Retrofit / Renovation / Renewal	Research and Development / Academic / Technological advances	Social / Economic / Regional
Innovation as a key factor for the development of sustainable solutions in the construction sector. Build innovation capacity in the sector - how to develop new practices to ensure the successful implementation of innovative solutions. Cost issues to be overcome. Standardisation can be an effective tool in favour of innovation. This issue is already important at the present time as well it will be in 5 years' time. Tackling the challenges faced by the society. The education/training of civil engineers for social responsibility					3	3
Hydraulics	1					
Hydraulics	1					
Structural design Retrofit of existing structures Transportation engineering Oil and Gas Offshore engineering	1	1	1	1		
Transport, water & energy infrastructure, Environmental protection, Urban renewal		2	1	1		
high buildings, ecological buildings, renovation of buildings		1		1		1
Oil gas infrastructure in 5 years time and now and companies investing in cyprus with commercial buildings		1				1
Road and infrustructure construction			1			
management research new solution					2	
Green Building; Environmental technologies; Road design.		2	1			
Infrastructure ie road,rail,harbour,marine in general, broad band,energy ie wind wave alternatives. Reducing carbon footprint.Can discuss more.		1	1			
Rehabilitation of built heritage. Buildings, bridges and roads.	1		1	1		
Rehabilitation of built heritage. Buildings, bridges and roads.	1		1	1		
For younger civil engineers more to bring together computer skills and engineer knowledge (basics). To enlarge abilities to analyse the results that you get using different computer programs (are they trustful or is there anything wrong e.t.c)					2	

7) Please identify those fields you consider as most important in civil engineering at the present time as well as those that you believe will be most important/critical in 5 years' time.

REHABILITATION MAINTENANCE ENVIRONMENT		1		2		
Energy-saving buildings. Smart buildings Smart infrastructures.		3				
Rehabilitation of existing structures				1		
Rehabilitation of existing structures				1		
General design and design management					1	
BIM - Building Information Modelling Energy efficiency		1				
Environment and Sustainability Energy Efficiency Education and Knowledge		1				
Flexibility Responsibility Self Motivation Structure understanding	1				3	
Flexibility Responsibility Self Motivation Structure understanding	1				3	
Rehabilitation in developed countries, Construction in undeveloped countries, Hydraulic works, Rail works, Port Management and Academic studies	2		2	1	1	
Seismic resistance construction	1					
Structural design Construction Geotechnics Road and Railway design construction	3		1			
Structural design Construction Geotechnics Road and Railway design construction	3		1			
structural statics and dynamics building information modelling - BIM consumption of energy material engineering	1	2				
Earthquake engineering, redevelopment of existing buildings and historic monuments	1			2		
Present time : Environmental issues in civil engineering (recycling, life cycle, etc.) Technological Innovation Innovation in materials In 5 years Maintenance / rehabilitation of infrastructures Taking into account Health in civil engineering The place of information and communication technology in the design, construction and operation of infrastructures (for example : information modelling for infrastructures, life cycle management)		1		2	1	1

7) Please identify those fields you consider as most important in civil engineering at the present time as well as those that you believe will be most important/critical in 5 years' time.

Sustainable Construction - Lifetime Engineering. Intelligent Materials / Smart Technologies. Innovative Materials - Low Embodied Energy. Energy Efficiency in Buildings - Zero energy buildings. Buildings Information Management / transport information Management Systems. Retrofit of existing building / housing stock. Design for Deconstruction - end of life of structures.		5	1	1	1	
Rainwater management. Structural engineering/software development for civil engineering/transport planning	1	1	1		1	
Sustainable building Materials science Recycling of building materials		3				
development of facilities for energy production, transformation and transportation (gas, electricity). Practical implementation of green building idea.		3				
Affordable and sustainable housing design solutions Low-energy and/or nearly zero energy consumption buildings Implementation of non-conventional materials in construction BIM (building information modeling) to increase efficiency and quality in both design and construction sector Non-fossil fuel energy production methods		3			1	1
Research in new CE materials		1				
Construction technology, sustainability, durability	1	2				
TOTALS	**20**	**35**	**13**	**15**	**19**	**7**

7) Please identify those fields you consider as most important in civil engineering at the present time as well as those that you believe will be most important/critical in 5 years' time.

Structural / Infrastructural / Road Engineering

Hydraulics / Hydraulic works

Structural design / understanding

Seismic resistance construction

Transportation / road engineering / design

Oil and Gas Offshore engineering

Transport, water & energy infrastructure

Oil gas infrastructure

Rail works / Road and Railway design and construction

Port Management

Construction / Geotechnics

Structural engineering/software development for civil engineering/transport planning

Development of facilities for energy production, transformation and transportation (gas, electricity)

7) Please identify those fields you consider as most important in civil engineering at the present time as well as those that you believe will be most important/critical in 5 years' time....cont

Regional

High buildings

Companies investing in Cyprus with commercial buildings

General Practice / Social / Economic Aspects

Cost issues to be overcome

Tackling the challenges faced by the society

The education/training of civil engineers for social responsibility

Affordable and sustainable housing design solutions

Responsibility / Self Motivation

7) Please identify those fields you consider as most important in civil engineering at the present time as well as those that you believe will be most important/critical in 5 years' time....cont

Research and Development / Academic

Innovation as a key factor for the development of sustainable solutions in the construction sector.

Build innovation capacity in the sector - how to develop new practices to ensure the successful implementation of innovative solutions.

Standardisation can be an effective tool in favour of innovation.

Management research new solution / Academic Study

For younger civil engineers more to bring together computer skills and engineer knowledge (basics)

To enlarge abilities to analyse the results that you get using different computer programs (are they trustful or is there anything wrong ? etc)

The place of information and communication technology in the design, construction and operation of infrastructures (for example : information modelling for infrastructures, life cycle management)

Buildings Information Management / Transport information Management Systems

Implementation of non-conventional materials in construction

BIM (building information modelling) to increase efficiency and quality in both design and construction sector

Research in new CE materials

7) Please identify those fields you consider as most important in civil engineering at the present time as well as those that you believe will be most important/critical in 5 years' time....cont

Energy/Sustainability

Infrastructure ie road, rail, harbour, marine in general, broad band, energy ie wind wave alternatives. Reducing carbon footprint.

Green building / Ecological buildings / Environmental technologies / protection

Energy-saving buildings / Smart buildings / technologies / infrastructures

Innovative Materials - Low Embodied Energy / Smart materials

Consumption of energy material engineering

BIM - Building Information Modelling Energy efficiency

Structural statics and dynamics building information modelling - BIM

Environment and Sustainability Energy Efficiency Education and Knowledge

General design and design management / Flexibility

Environmental issues in civil engineering (recycling, life cycle, etc.)

Technological Innovation in materials

Sustainable Construction - Lifetime Engineering

Energy Efficiency in Buildings - Zero energy buildings

Design for Deconstruction - end of life of structures

Rainwater management

Sustainable building / Materials science / Recycling of building materials

Practical implementation of green building idea

Low-energy and/or nearly zero energy consumption buildings

Non-fossil fuel energy production methods

Construction technology / sustainability / durability

7) Please identify those fields you consider as most important in civil engineering at the present time as well as those that you believe will be most important/critical in 5 years' time....cont

Renovation / Rehabilitation / Retrofit

Retrofit of existing structures / Renovation of buildings / Rehabilitation of built heritage

Urban renewal

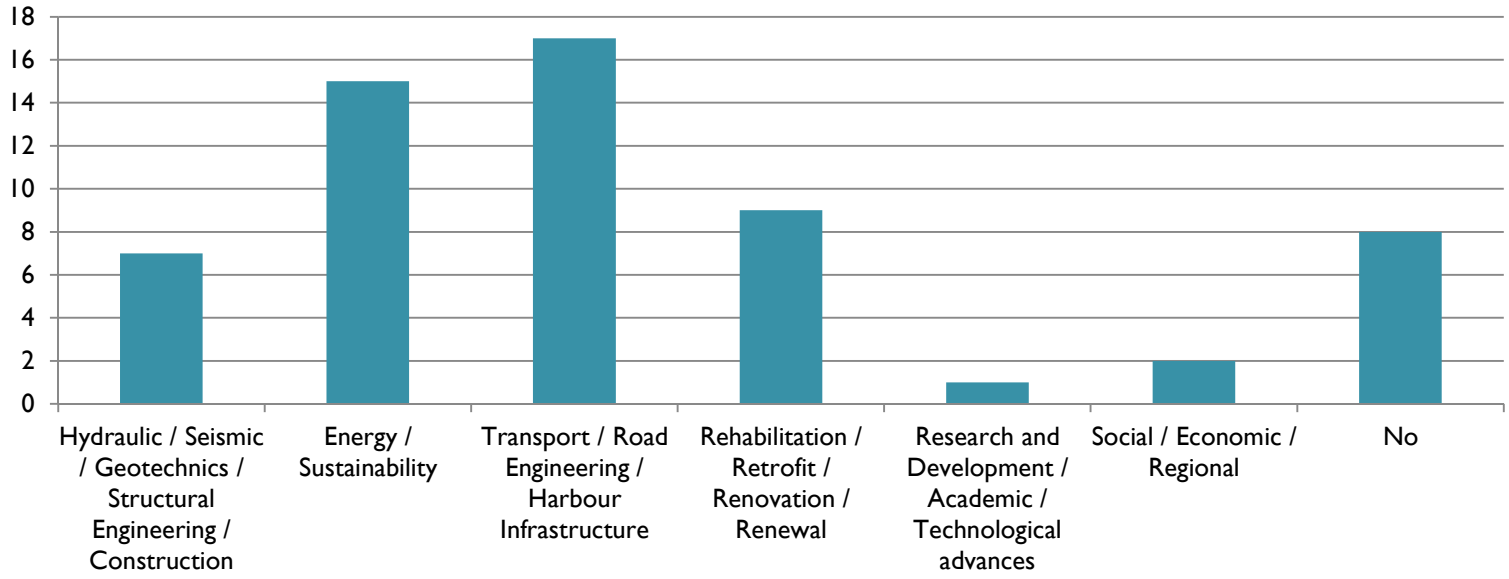
Rehabilitation in developed countries and construction in undeveloped countries

Redevelopment of existing buildings and historic monuments

Maintenance / rehabilitation of infrastructures taking into account Health in civil engineering

Retrofit of existing building / housing stock

8) **Are there any specific priorities within your region, country or local area?**



8) Are there any specific priorities within your region, country or local area?

	Hydraulic / Seismic / Geotechnics / Structural Engineering / Construction	Energy / Sustainability	Transport / Road Engineering / Harbour Infrastructure	Rehabilitation / Retrofit / Renovation / Renewal	Research and Development / Academic / Technological advances	Social / Economic / Regional	No
Priorities in Transportation Hydraulic infrastructure	1		1				
No							1
No							1
Transportation engineering Oil and Gas Offshore engineering		1	1				
solid waste management, urban renewal, energy upgrading of building stock		2		1			
Unemployment due to economical crisis						1	
Roads maintenance, infrastructure			2				
no							1
Environmental engineering; Road engineering		1	1				
Infrastructure as above and energy produced locally		1	1				
NO			1				1
Yes. Highspeed Railways.			1				
Yes. Highspeed Railways.							1
NO							1
No specific priorities.							1
On- and Off-shore Wind Energy Smart Grids and Electric Power Transportation Deep Sea Harbour		2	2				
Rehabilitation, Hydraulic works, Rail works, Port Management Academic studies			3	1	1		
Seismic resistance construction	1						

8) Are there any specific priorities within your region, country or local area?

All general fields of structural design and construction	2						
All general fields of structural design and construction	2						
reconstruction of buildings conversion of non-used industrial buildings consumption of energy green energy buildings energetics		3		2			
securing and land restoration, Earthquake engineering, redevelopment of existing buildings historic monuments	1			3			
Preservation of material resources				1			
Waste Management and Resource Conservation. Offshore Structures and Wind Turbine Technology. Retrofit of existing building stock - structural and energy. Transport infrastructure		2	1	1			
Rainwater management Local transport system is often gridlocked.		1	1				
Development of low-carbon footprint buildings		1					
no							1
Northern part of Cyprus is still under-developed in terms of infrastructure and EU is currently funding infrastructure projects to upgrade the existing obsolete system. Public transportation and energy efficient building design are also going to be crucial topics in very near future		1	1			1	
Infrastructure projects			1				
Rehabilitation, internationalization				1		1	
TOTALS	**7**	**15**	**17**	**9**	**1**	**2**	**8**

8) **Are there any specific priorities within your region, country or local area?**

Structural / Infrastructural / Road Engineering

High-speed Railways

Local transport system is often gridlocked.

Northern part of Cyprus is still under-developed in terms of infrastructure and EU is currently funding infrastructure projects to upgrade the existing obsolete system.

Public transportation

Transportation and Hydraulic infrastructure

Transportation engineering Oil and Gas Offshore engineering

Roads maintenance, infrastructure

Environmental engineering, Road engineering

Infrastructure and energy produced locally

Hydraulic works, Rail works

Seismic resistance construction

All general fields of structural design and construction

Earthquake engineering

Transport infrastructure / infrastructure projects

8) **Are there any specific priorities within your region, country or local area?**

Energy/Sustainability

Solid waste management, urban renewal, energy upgrading of building stock

On- and Off-shore Wind Energy Smart Grids and Electric Power Transportation Deep Sea Harbour

Conversion of non-used industrial buildings consumption of energy green energy buildings energetics

Preservation of material resources

Waste Management and Resource Conservation. Offshore Structures and Wind Turbine Technology.

Rainwater management

Development of low-carbon footprint buildings

Energy efficient building design

8) **Are there any specific priorities within your region, country or local area?**

Renovation / Rehabilitation

Rehabilitation

Reconstruction of buildings

Securing and land restoration / Redevelopment of existing buildings and historic monuments

Retrofit of existing building stock - structural and energy.

Rehabilitation

Research and Development / Academic

Port Management and Academic studies

Internationalization

9) Are you currently involved in any research? If so, in what fields?

Structural / Infrastructural / Road Engineering / Management

Strategic City Management

Bridges for Highspeed Railways

Was involved in research in Geotechnical Engineering field. At the meantime I am involved in preparation/also translation of Standards in Geotechnical Engineering.

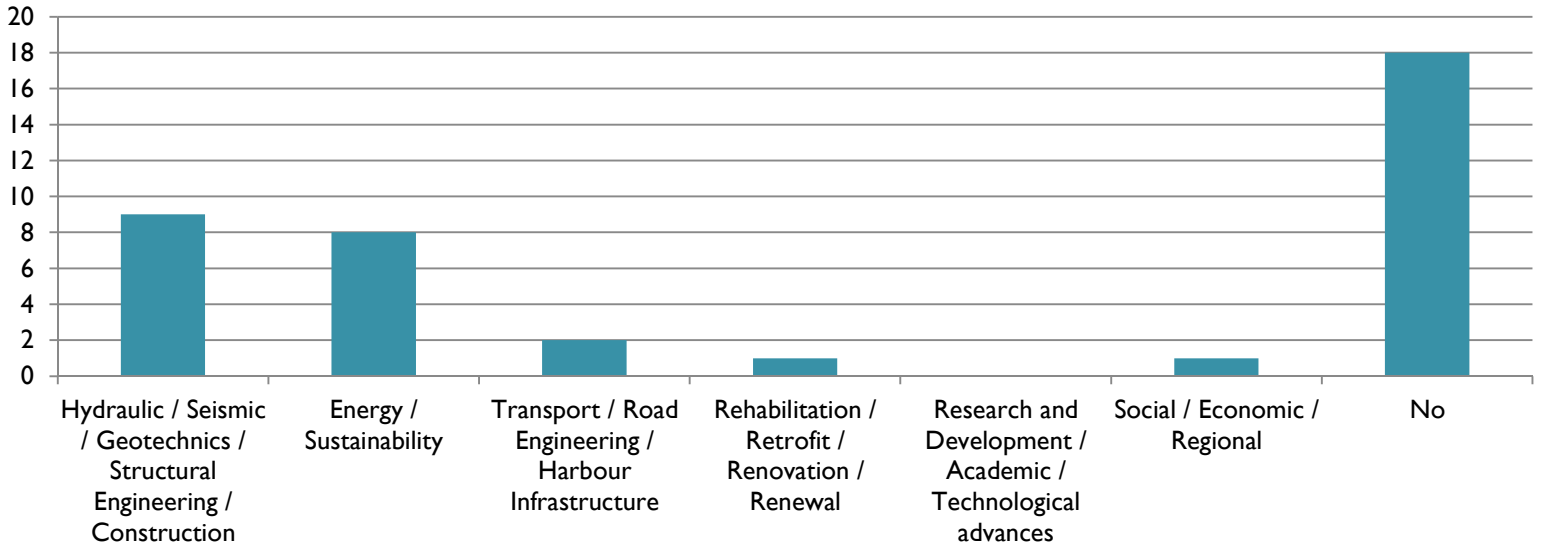
Structural analysis, facility management, material engineering, BIM, implementation of Eurocodes

Studies and projects in the consolidation and restoration of historic buildings, monuments damaged by the earthquakes.

Implementation and upgrading of earthquake resistant design codes and design of steel structures.

Concrete structures

9) Are you currently involved in any research? If so, in what fields?



9) Are you currently involved in any research? If so, in what fields?

	Hydraulic / Seismic / Geotechnics / Structural Engineering / Construction	Energy / Sustainability	Transport / Road Engineering / Harbour Infrastructure	Rehabilitation / Retrofit / Renovation / Renewal	Research and Development / Academic / Technological advances	Social / Economic / Regional	No
Standards for sustainable construction							1
No							1
No							1
No							1
No							1
No							1
No							1
Brownfields		1					
No							1
No, the business is heavy civil engineering							1
No							1
No							1
Yes. Strategic City Management						1	
Yes! Bridges for Highspeed Railways.			1				
Yes! Bridges for Highspeed Railways.			1				
No							1
No							1
Photo Voltaic (Brochure for WFEO) Off-shore Wind Power Installments, generation and distribution		1					
No							1
No							1
No							1
Was involved in research in Geotechnical Engineering field. At the meantime I am involved in preparation/also translation of Standards in Geotechnical Engineering	1						

9) Are you currently involved in any research? If so, in what fields?

Was involved in research in Geotechnical Engineering field. At the meantime I am involved in preparation/also translation of Standards in Geotechnical Engineering	1						
Yes. Structural analysis, facility management, material engineering, BIM, implementation of Eurocodes	1	1					
studies and projects in the consolidation and restoration of historic buildings, monuments damaged by the earthquakes.	1			1			
Concrete Recycling Asphalt materials recycling Cracking in concrete structures construction and control of rigid inclusion ground improvements Wave Energy recuperation for installations and shore structures	2	2					
Waste and Resource Management - Recycling. Durability of materials. Earthquake Engineering and Building Vulnerability	1	2					
No							1
No							1
Upgrading the overhead lines from 220 kV on 400 kV.		1					
I am currently member of two committees (under chamber's responsibility) working on implementation and upgrading of earthquake resistant design codes and design of steel structures.	2						
Concrete structures	1						
Rehabilitation, new materials				1	1		
TOTALS	**9**	**8**	**2**	**1**	**0**	**1**	**18**

9) Are you currently involved in any research? If so, in what fields? ...cont

Energy / Sustainability / Rehabilitation

Standards for sustainable construction

Brownfields

Photo Voltaic (Brochure for WFEO) Off-shore Wind Power Instalments, generation and distribution

Concrete Recycling , Asphalt materials recycling , Cracking in concrete structures construction and control of rigid inclusion ground improvements , Wave Energy recuperation for installations and shore structures

Waste and Resource Management - Recycling. Durability of materials. Earthquake Engineering and Building Vulnerability.

Upgrading the overhead lines from 220 kV on 400 kV.

Rehabilitation, new materials

10) **Do you have any additional comments and/or remarks?**

There is a need for more, European wide, solid qualifications for professional engineers and solid rules for the contents of structural design (application rules based on the Eurocodes).

I wonder about the significance of this investigation within the small ECCE group.

In difficult economic times in Europe, it is essential to spend all our energy and capital to preserve the land and the existing buildings from the natural deterioration and the earthquake damages. The existent civil housing is abundant compared to the real needs and, we need to wait for better times to improve the road and rail network.

Priority areas - 1. Environment and energy, 2. Transport infrastructure.

No further comments

Survey Strategy

Survey Phase 1 /	Pilot Study
Survey Phase 2 /	Europe Wide Detailed Survey Identify Indicators for Analysis
Survey Phase 3 /	Set the ground work for Regular (Annual) Survey Updates

Thank you for your help in answering the survey and in disseminating in your organisations.