

EUCEET WORKING GROUP H

NATIONAL REPORT FOR GREECE

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PL would do a shorter version if necessary as per e-mail of 8 April

INTRODUCTION

In this brief report on the theme of developing synergies between the academic and professional worlds in Greece, with specific reference to civil engineering, an attempt is being made to address all critical factors that affect this crucial issue for the country's economic development. To this end an integrated approach is employed in order to identify the impacts of various agents from both the educational and labour market systems, as well as to highlight the most significant relationships between them. Within this framework, the rest of the report is structured in five distinct sections, plus a Bibliography one. The five main sections deal with: a) the demand and supply status in formal and continuing education of civil engineers, b) a review of past and present employment practices, including recent trends in career decisions of young professionals, c) the particularities and especially the mismatches between higher education and the labour market, d) the changes and developments needed in restructuring university curricula, and e) a preliminary examination of the related impacts on the profession of the current worldwide economic crisis.

The views and information presented in this report are mainly based on findings and relevant discussions obtained from various texts, such as newspaper, magazine and journal articles, institutional reports and meetings summaries, the most important of which are cited in the "Bibliography" section. A significant part of this written evidence draws conclusions from surveys that have been recently conducted using samples from different, yet related populations, among which engineering professionals, graduates and prospective students consist the dominant groups of respondents.

FORMAL (HIGHER) EDUCATION AND CONTINUING PROFESSIONAL DEVELOPMENT

Entrance to higher education in Greece is attainable for students who have attended lyceums, i.e. those who have already received 12 years of formal education. This continuation of studies requires the successful participation in general nation-wide examinations, a system based entirely and exclusively on the high school curriculum. Students declare their preferences for institutions and further on for specific schools/departments after an initial selection of the major fields of study, each of which comprises a specified set of institutions. Civil engineering studies are offered by five universities (with courses running for ten semesters) and a few technological institutions (with courses running for seven to eight semesters).

Under the described system of examinations, access to higher education in Greece is highly competitive, at least for some disciplines (e.g. medicine, law, engineering etc.), of which the number of available university places is not sufficient to meet the extremely high demand. This condition is driven by the conception of Greek students and their parents that university education offers increased opportunities for a good job, and thus for greater economic benefits, a steady career development and, last but not least, an upward social mobility. This is why, of those who are not successful in entering a national university, a large number of them opts for enrollment in university studies abroad, instead of continuing their studies in technological or vocational training institutions at home.

Civil engineering stands among the first preferences of candidate students in the general group of major fields that comprises all branches of engineering, the natural sciences, information and computer technologies and so forth. During recent years, more than 60% of successful entrants in the country's civil engineering departments have declared this discipline as their first-choice one, while more than 90% of them have included it in their 1-3 most preferable disciplines. Given the relatively high number of places offered in all civil engineering departments, the annual total output of domestic graduates fluctuates around 1,000, to who another 200-250 are added from those immigrating after completion of similar studies abroad. Before entering the labour market, about 40% of all these graduates continue for postgraduate studies, either at home (55%) or abroad (45%).

Although quite respected and fairly-high demanded by young professionals, continuing professional development is not widespread in Greece. Unfortunately, universities have not yet been involved in this kind of activities, leaving thus space mainly to the Technical Chamber of Greece, which represents all registered professional engineers in the country and acts as an advisory body to the government. In fact the Technical

Chamber operates quite successfully a relevant service, by offering short courses and seminars on a wide range of subjects to its members.

EMPLOYMENT STATUS AND CAREER DECISIONS

Civil engineers used to be among the most active and prosperous professionals in the country, first of all during the three decades following the second world war, when they undertook a major role in the nation's big reconstruction enterprise. Most of the profession's long-lasting nationwide popularity owes a lot to that particular "golden age" of the construction industry. In the following period (i.e. from late 1970's to late 1980's) the construction rate of public infrastructure declined. Yet, practicing civil engineers continued to be quite busy working either as self-employed individuals or engaged in numerous small-to-medium size engineering firms, mainly supported by private sector funds invested in housing, real estate enterprises and other projects (e.g. for the development of many tourist regions).

The principal characteristic of the period up to the 1980's is that the number of civil engineers working in Greece was at maximum only half of the totally employed ones during the 1990's and almost a quarter of today's workforce. Thus, the apparent prosperity of those professionals was due also to their high personal share in the construction business. This share became much lower during the next years, as a result of a rapidly increasing rate in the number of young civil engineers entering the profession, the main driving forces for this being: (a) the quite attractive, still fictitious, picture of an occupation that seemed to secure economic benefits, and (b) the beginning of the massification in higher education, which quite shortly doubled the output of graduating engineers.

The current workforce of civil engineers in Greece amounts about 24,000 university graduates, a significant percentage in regard to the country's population and substantially above the EU average. Overall unemployment averages 2-3%, but a steep upward trend at almost two-digit figures holds exclusively for the new generation of civil engineers. In addition, there is notable evidence that, mainly in the private sector, unemployment rates of engineers may vary depending on the institutions from which they graduated. Still, these figures are relatively low when compared to those concerning lots of university-degree holders from other disciplines. Misemployment rests also at non-alarming levels, far below the national average for educated professionals.

What, indeed has changed today, as compared to the recent past, is the type of employment. A second period of blooming of the construction industry, that initiated in mid 1990's and lasted up to 2004, when the Olympic Games took place in Athens, was marked by high investments, particularly by European Community Frameworks' and national funds, in the construction of several major public works, some of which reshaped in a very positive way the transport infrastructure and services, mainly in the area of the country's capital. The already expanding at that time big consulting and construction firms – to the detriment of many small-to-medium size ones, of which the net creation of new firms started to decrease constantly – profited more, by not only undertaking huge projects at home but also by extending their business in the neighboring Balkan countries. These big enterprises moved young engineers away from traditional self-employment to non-permanent job engagements in the big firms. Unfortunately, this very productive period did not last for long. To the worse, it was almost immediately followed by a rising recession that lasted up to our days when the global financial crisis multiplied the existing negative impacts.

As a consequence, in today's real world career planning of new civil engineers is mostly affected by sound insecurities as to the future prospects of a profession that does not seem any more to be a lucrative one. Thus, in relation with the first professional engagement a rather typical decision path is being followed. Data from recent surveys show that the majority of fresh graduates opt for a permanent employment in the public sector or, if this is not possible, for a part-time contracted one to it. As the number of relevant available places is not abundant, from those who do not succeed some try self-employment risking thus serious intermittent periods of professional inactivity, while the rest settle for various types of jobs offered by an unstable private sector, at the cost of low remuneration, sometimes even less than of the already low-paid public sector.

MISMATCHES BETWEEN HIGHER EDUCATION AND LABOUR MARKET

Although recent civil engineering graduates are in general not dissatisfied in making their way through the labour market, a more careful insight into their professional status and rewards provides some additional points for a further discussion. The present discussion is confined to existing mismatches between the education, which has already received any individual entrant to the labour market, and the qualifications associated with the particular occupation, for which he is applying. The most apparent occupational mismatches in relation to Greek university-degree holders, apart from their oversupply mentioned previously,

include excessive schooling duration (and, consequently, excessive acquired degrees), a redundant theoretical-academic background and a shortage of skills specifically required by the private sector.

First of all, the phenomenon of overeducation dominates all over Greece. As mentioned before, the number of those who proceed with a further upgrading of their formal qualifications (i.e. for postgraduate degrees) is significant. Such a trend is justifiable only in part, and more specifically by the tough competition among an increasing population of graduates who apply for employment in the, more or less decreasing in size, public sector. As a result, the hiring policies of the public sector favor the recruitment of university graduates. Still, it can be easily substantiated that the majority of public servants are overqualified for the service they provide, or, in other words, that all these workers' educational capacities and skills are underutilised. Monetary rewards are also low when associated with education, especially at the higher levels. On the other hand, the private sector in average does not appreciate much extra qualifications, like master's or higher degrees, with the exception of some specialisations, which, depending on the case, can be considered useful. Normally, an undergraduate degree is considered adequate for the employment of young graduates in small engineering firms, as their leading preference for them is to have enough working experience in order to be immediately productive.

As far as the knowledge and skills acquired during their rather long period of university studies is concerned, young Greek employees of the public sector and, even more, of the private one admit that they substantially oriented towards a solid traditional model of civil engineering education. Such schooling, albeit it provides students with a probably more than adequate theoretical knowledge and sufficient technical skills, it lacks some specific elements that are of high value within various job environments. And, above all, this mono-disciplinary education shapes a classic engineer profile, which is, more or less, out-of-date, considering the complexities and uncertainties of modern techno-economic systems. Of course, discrepancies between contents of studies and employment vary, depending not on the type of occupation alone but on the diversities of academic curricula offered by different institutions. Still, practically all Greek university syllabi are to some degree inadequate, concerning the provision of certain specific knowledge topics and skills, and they therefore need to change, somehow as presented in the following section.

REQUIRED CHANGES AND DEVELOPMENTS IN EDUCATION

Education and the professional practice of engineers are linked to economy and the labour market at a degree that depends on both the structure and dynamic development of the economy and the timely adaptation of university curricula. However, this arduous relationship should be as tight as possible at any time. To this aim, civil engineering studies should provide: (a) a sound scientific-theoretical background, (b) a related to the discipline at hand technical knowledge, (c) knowledge and practice on ICT applications, (d) a basic inter-disciplinary background on topics useful in the current professional activities, and (e) the training for the development of specific skills, especially non-technical ones, also dictated by the labour market needs.

Surveys administered to new employees and their employers show that the last three items of the above list need, at varying degrees, a proper enhancement. Most respondents suggest the introduction of new or the improvement of existing courses and training modules in the topics of law, economics and management. Such a curriculum development could benefit not only the graduates who will choose to be employees but also those who would select self-employment. As already mentioned, the great many self-employed civil engineers in Greece, who used to be quite useful to the country's economy, are lately declining in number, particularly because of the reluctance of younger professionals to initiate such an occupation under the current difficult and unsafe conditions. To a certain degree, the hesitation to establish their own small firms is attributed to the lack of sufficient entrepreneurial capabilities. Therefore, the provision of additional education and training in the three specific topics above would much probably result to more self-confident and self-efficient prospective young entrepreneurs.

Additional suggestions, declared both in surveys and expert meetings, for further educational changes and curriculum development include: (a) an interdisciplinary learning about a wide spectrum of environment and energy issues and (b) general training modules in information and computer technologies plus a selection of specialised computer applications (for all sub-disciplines of civil engineering), which are used by the practicing professional world.

IMPACT OF CURRENT ECONOMIC CRISIS

It is beyond any reasonable doubt that the current world economic downturn will seriously affect the industry, but, to some degree, the academe as well. Early signs of its harmful impacts relate to numerous Greek enterprises, among which quite many from to the construction sector. Not only the public sector has reduced existing and planned funding in infrastructure projects but also the private sector seems quite helpless in

risking new investments, as they already massively report declining turnovers. As civil engineering professionals are predominantly involved in traditional construction and building activities, yet much less in RD ones, it is probable that the crisis might generate a positive opportunity for a shift in other new developments and technologies, which, after all, would benefit the country's development.

However, up to the time that the whole system will be reorganised and conformed to the new reality, the difficulties of young engineers in finding the employment of their choice are not likely to improve at all. Apart from this immediate consequence to the current workforce, such an ominous prospect could adversely affect the above described traditional high demand for civil engineering studies, at least from among the most qualified graduates of lyceums.

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