

Research Cooperation and Networking between Austria and South Eastern Europe

South-Eastern Europe Network for Improving
Industry Research (SENIIR)

Report on the Current State and Development of Industry

General Construction of Buildings and Civil Engineering Works



KMU FORSCHUNG AUSTRIA
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45.21 – General Construction of Buildings and Civil Engineering Works

SUMMARY

Structure	2005	Change ¹
Companies	11,305	↗
Employees	46,868	↗
Average number of employees ²	4.1	↘
Turnover in mil. EUR ³	1,429.8	↗
Turnover per employee (1,000 EUR)	30.5	↗
Economic Performance		
<ul style="list-style-type: none"> Value of construction works on buildings increased significantly in comparison to 2004 		
Legal Framework		
<ul style="list-style-type: none"> Expected enforcement of Construction Licensing Regulation 		
Demand Side Developments		
<ul style="list-style-type: none"> House construction demand increased Increased standard expectations in construction of building (ICT infrastructure installments) 		
Competition		
<ul style="list-style-type: none"> Low barriers to entry in construction market Croatian companies moving away from European and entering African and Middle East markets 		
Markets for Inputs – Labor Market		
<ul style="list-style-type: none"> Seasonal shortage of qualified construction workers Educational programs in construction enroll fewer students 		
Technological Developments		
<ul style="list-style-type: none"> New technological solutions implemented in residential and business premises during construction 		
Future Challenges		
<ul style="list-style-type: none"> Regulatory actions on labor market Government Housing Stimulation Act needs to be aligned with EU standards Sustainable construction 		

1 – Change in comparison to the previous year

2 – Total number of employees divided by the total number of companies

STRUCTURE

General Construction of Buildings and Civil Engineering Works report refers to the companies registered in the Republic of Croatia according to NACE classification in General Construction of Buildings and Civil Engineering Works (45.21) industry.

In 2005, there were 11,305 business entities in Croatia involved predominantly in the field of construction of buildings and civil engineering works. Total number of employees has increased by 5%, to 46,868, and the average number of employees has decreased by 2.6% due to an increase in the number of business entities, and currently amounts to 4.1.

Total number of companies has increased by 7.7% in 2005, while income per company has increased by 8.3%.

Table 1 Number of companies, number of employees and total income in 2004 and 2005¹

	2004	2005	Change %
Companies ¹	10,492	11,305	7.7
Number of employees ²	44,656	46,868	5.0
Average number of employees ³	4.3	4.1	-2.6
Income in mil. EUR ⁴	1,225.7	1,429.8	16.7
Income per employee (1,000 EUR)	27.4	30.5	11.1
Income per company (1,000 EUR)	116.8	126.5	8.3

1, 2 – Construction of buildings and civil engineering works (according to NKD – 45.21)

3 – Total number of employees divided by total number of companies

4 – Data relates to legal persons registered in construction activities, with 5 or more employees

According to 2005 data, GDP of the Republic of Croatia has increased by approximately 13% in relation to 2004. Significant income increase from construction of buildings and civil engineering works of 16.7% has been recorded in 2005, while share of income from construction of buildings and civil engineering works in the GDP has increased by 3.2% in relation to 2004.

Table 2 Income from construction of buildings and civil engineering works in 2004 and 2005

	2004	2005	Change %
GDP (in mil. EUR)	27,379	30,950	13.0
Income from construction of buildings and civil engineering works (in mil. EUR)	1,225.7	1,429.8	16.7
Share of construction of buildings and civil engineering works in the GDP in %	4.5	4.6	0.1 ¹

1 – this figure represents the change in percentage points in comparison to 2004

¹ Central Bureau of Statistics, Statistical Yearbook 2006, Register of Business Entities. Taken from: http://www.dzs.hr/Hrv_Eng/ljetopis/2006/00-sadrzaj.htm (March 15, 2007)

ECONOMIC PERFORMANCE

Total completed construction works value increased in 2005 by 4.2% in comparison to 2004, and the value of completed construction works on buildings rose by 18.1% in the same period. The only decrease was recorded in civil engineering works value which dropped by 2.2% in comparison to 2004.

Table 3 Change in completed construction works value between 2004 and 2005²

	Change in % 2005/2004
Total ¹	4.2
On buildings	18.1
On civil engineering works	-2.2

¹ - Data relates to legal entities registered in construction activities, with 20 or more employees

LEGAL FRAMEWORK

Laws and regulations in force in the field of construction of buildings and civil engineering works:

- Construction Act
- Land Registration Act
- Physical Planning Act
- Environmental Protection Act
- Air Protection Act
- Nature Protection Act
- Public Utilities Management Act
- Civil Obligations Act
- Occupational Safety and Health Act
- Insurance Act
- Government Housing Stimulation Act

Some of the essential provisions of legislation in the field of construction and civil engineering are described below:

Construction Licensing Regulation

Construction Licensing Regulation determines conditions and criteria for granting and withdrawing permissions to contractors for starting construction work activities or for carrying out individual works on structures. The purpose of introducing the Regulation and the permissions is to improve providing construction services through increase of quality of construction works.

The Licensing Regulation prescribes two main criteria based on which permissions for construction activities will be granted: first is the number of full-time employees of certain education level employed for an indefinite period (professional training and number of workers condition), and the second is contractor's level of technical equipment.

Formally, Regulation came into force on October 1, 2006, but its implementation has been postponed due to many objections to certain provisions, as well as numerous illogicalities caused by incompatibility of individual requirements with the situation in the market. Prior to Regulation's entering into force, some provisions that equalized quality of contractor's services with the number of employees employed for an indefinite period will be changed, which, due to a large number of seasonal workers engaged in construction of buildings and civil engineering works, and also because of workers from abroad who are granted temporary work and residence licenses within annual quotas,

² Central Bureau of Statistics: Completed construction works, orders and residential building, fourth quarter of 2005, legal entities with 20 or more persons in employment. Taken from: http://www.dzs.hr/Eng/Publication/2005/3-1-3_1e2005.htm (25.3.2007.)

were among main objections by contractors who, if such provisions were enforced, would not be able to get the required permissions regardless of the quality of their work.

DEMAND SIDE DEVELOPMENTS

Croatian real estate market is marked with numerous paradoxes. Despite the small number of serious buyers, real estate prices are continuously increasing. This is especially true for better urban and seaside locations. Continuous price growth is also recorded for construction land with proper documentation. Supply of such real estate is much lower than the demand. Through systematic investigation of real estate markets in Continental Croatia and in the Adriatic, conclusion can be made that in all cities there is a shortage of small apartments and real estate affordable to the wide range of buyers. Low purchasing power, and modest and bureaucratic long-term mortgage housing credit financing further hinder the development of the real estate market.³

Price of a square meter of living space in urban environments has been increasing for years, and in some areas it exceeds the amount of 2,000 EUR per m². Demand for construction of new living and business space is on constant rise, despite such high prices, since real estate is perceived as the most profitable long-term investment.

On the other hand, a new trend in demand for living space is emerging, where growing number of people are deciding to build houses. With the mentioned price of 2,000 EUR per m², buyers can obtain just about 50 m² of living space for 100,000 EUR, which is followed by high costs of apartment furnishing. Having in mind that 95% of population with good credit rating is able to raise up to 100,000 EUR in credit, house building, as a more cost effective long-term alternative is in the strong increase in the Croatian market.⁴

Building a house requires a much larger investment of time and a large number of various licenses, but most contractors take it upon them to solve that problem. Beside the houses built in the traditional way, demand for prefabricated houses is also increasing, although buyers in Croatia still look at them with certain prejudices.

Demands of new generations of buyers who follow the latest technological advancements are reflected in the demand market for living and business space in new buildings.

Intensive development of telecommunication technologies and availability of broadband services in the several last years have been the preconditions for emergence of a new profile of users, who demand integrated telecommunication solutions at their workplaces and homes. Broadband telecommunication solutions, like control and monitoring from a distant location, demand before all creation of a quality telecommunication infrastructure, which will satisfy high demands with the regard to speed and quality of the data transfer. Since investments in this type of infrastructure show clear cost effectiveness, increase in demand for such services is recorded, especially since it is much cheaper to incorporate ICT infrastructure while object is being built. Business users, for whom this is one of the important elements of business operations, lead in such demands, and they have very quickly recognized the benefits of such solutions, both from the operative and the economic standpoint. However, according to the trends in housing construction, buyers of new apartments have also recognized emerging telecommunication possibilities and raise the expected standards every day.⁵

³ *How much is my real estate worth? Berlin immobilien* Taken from: http://www.berlin-immobilien.hr/default.asp?content_id=47 (March 21, 2007)

⁴ *Čogelja, Miljenka: Because of expensive apartments, more houses are being built, Nacional, no 595, "Construction" magazine supplement, page 5-6, (April 10, 2007)*

⁵ *Gelo, Robert: Intelligent construction – Buyers want square meters of new technologies, Privredni vjesnik. Taken from: <http://www.privredni-vjesnik.hr/index.cgi?A=I&SIF=00001&BR=003459&DA=20070409> (April 10, 2007)*

COMPETITION

Competition in residential construction is heavily dispersed throughout the Croatia with large number of investors and construction companies which are mostly focused on their local markets in their own and several other counties. In addition to this, this is a market niche with low barriers to entry so large number of new competitors are emerging every year.

Construction industry in total (the complete NACE code 45) has several large competitors in the market.

Small companies' share of this industry's total revenue in 2004 was 25.7%, medium-sized companies accounted for 22.3%, and large companies accounted for 52%. The leading 10 building companies (classified by total revenue in 2004) generated 24% of total revenue in the industry.⁶

Table 4 Ten Leading Building Companies by Annual Financial Statement in 2004⁷

Company name	Headquarters
Bechtel International inc.	Otok Oštarijski
Hrvatske ceste d.o.o.	Zagreb
Dalekovod d.d.	Zagreb
Konstruktor – inženjering d.d.	Split
Viadukt d.d.	Zagreb
Tehnika d.d.	Zagreb
Hidroelektra niskogradnja d.d.	Zagreb
Strabag d.o.o.	Zagreb
Bouygues TP	Zagreb
Industrogradnja d.d.	Zagreb

Croatian companies face certain problems with contracting new jobs abroad with their resources alone. Cooperation with local construction companies has to be established. Large construction companies like Ingra, Tehnika, IGH, Konstruktor, Viadukt and Hidroelektra possess the necessary know-how, however in international calls for proposals there is always an issue of subcontracting local workforce. As a result, there is an increase of Croatian construction workers working abroad. Exports of large construction works is the only way to go for Croatian construction companies.⁸

⁶ Croatian Construction Industry, Croatian Chamber of Economy, Construction and Utility Services Department. Taken from: www2.hgk.hr/en/depts/Construction/graditeljstvowww2006.pdf (12.4.2007.)

⁷ Croatian Construction Industry, Croatian Chamber of Economy, Construction and Utility Services Department. Taken from: www2.hgk.hr/en/depts/Construction/graditeljstvowww2006.pdf (12.4.2007.)

⁸ Grund, Damir: Construction companies are facing towards Albania, Algiers, Libia and Middle East, www.poslovnih.hr. Taken from: <https://www.poslovnih.hr/23782.aspx> (13.4.2007.)

MARKETS FOR INPUTS – LABOR MARKET

Education System in the RC

Construction Technicians

Construction technicians are trained in construction vocational schools according to a four-year education program. Such education programs are offered by secondary schools in Čakovec, Osijek, Rijeka, Split and Zagreb. Construction technicians participate in all phases of construction: from planning and preparation, creation of blueprints, to construction itself. Education programs for construction technicians for construction of buildings and construction technicians for civil engineering works are different.

Construction Engineers - Bachelor's Degree

Croatian higher education system is adjusting to the Bologna process. Former construction engineers can attend undergraduate construction engineering programs, which last three years (six semesters) at civil engineering faculties in Osijek, Rijeka, Split and Zagreb. Upon finishing undergraduate programs, students are awarded the bachelor in construction management or engineering title. After a one-year trainee period and passed state certification exam, bachelors can work as designers/planners, construction site managers and perform duties of construction supervisors.

Problem related to the future of the education system in Croatian construction sector is caused by the relatively low level of salaries in this sector of the economy, which discourages enrollment of youth for construction professions. Shortage of craftsmen and skilled workers is partly covered with legalized seasonal import of workforce from neighboring countries (within certain quotas), as well as with illegal workers⁹.

⁹ Živković, Drago: *Let us be Germany for our eastern neighbors*, *Privredni vjesnik*. Taken from: <http://www.privredni-vjesnik.hr/index.cgi?A=I&SIF=00006&BR=003445&DA=20070108> (April 05, 2007)

TECHNOLOGICAL DEVELOPMENTS

Accelerated development of technology is present in the construction sector. This primarily relates to the application of new construction materials and the required latest laboratory procedures for testing thereof, modern computer procedures for simulation of behavior of structures in realistic human environment, latest methods for dimensioning of building structures which must meet safety, usability and economic requirements, and to minimizing their adverse influences on the human environment.¹⁰

Construction sector in Croatia is slow in following technology trends, and this especially relates to the fast development of telecommunication technologies, which are closely connected with the construction of new business and living quarters. Technology companies, primarily those from the telecommunication sector have extensively started using a new distribution channel for sale of their services: the construction sector. Since construction is one of the most active sectors of Croatian economy, new buildings, primarily apartment houses and business structures (offices and production facilities) present the opportunity for distribution of new technologies.

“Intelligent construction” brings additional value both to contractors and telecom operators, and the price of a square meter of an “intelligent home” is legitimately higher than that of “ordinary” buildings, although installment of such infrastructure doesn't significantly increase the final price of the object. Installment of optical fiber cables is cheaper and simpler in new buildings because new network installations with much greater capacity are laid, while adaptation is often needed in older buildings, which increases the final price.¹¹

Inclusion of optical technology in construction projects, whether the case is of living or business quarters, will soon become standard in the construction sector.

Development of technology requires that all contractors involved in construction activities regularly monitor new knowledge and information, which are the precondition for development and survival on the market. One of the unavoidable ways of learning about the latest products, services and technologies offered in the industry are domestic and international trade fairs. Each year, international construction fair “Construction and Equipping” (www.zv.hr) is held in Zagreb, positioned as the construction industry's central regional business event, with numerous exhibitors and professional lectures.

From important international fairs, we should mention BUDMA (www.budma.pl), which is held every year in Poznan, Poland and BAU (www.bau-muenchen.com) – international construction fair held every two years in Munich, Germany, which is attended by best world experts from technology fields that are related to this sector.

¹⁰ Faculty of Civil Engineering Zagreb, Proposal of introductory and general determinants of undergraduate university study program in construction. Taken from: <http://info.grad.hr/gf/index.asp?pid=1653> (March 18, 2007)

¹¹ Gelo, Robert: Intelligent construction – Buyers want square meters of new technologies, Privredni vjesnik. Taken from: <http://www.privredni-vjesnik.hr/index.cgi?A=I&SIF=00001&BR=003459&DA=20070409> (April 4, 2007)

FUTURE CHALLENGES

Illegal work, i.e. employing illegal workers (mainly from abroad) at Croatian building sites, which contractors use in order to satisfy their needs for worker profiles that are often in short supply on the local market still represents a major problem for the construction sector. An approach that is not purely repressive could bring good long-term results for construction in Croatia. One of the proposals for solving this problem is to legalize work of imported workers through intergovernmental agreements with friendly neighboring countries.

If there is a need for a certain profile of workers in Croatia, they should be allowed entry and all their expenses should be legally paid. Import of workforce in situation when unemployment is at very high levels seems superfluous, but if a precisely defined profile of workers is in short supply, needs of the market have to be met. The model in which large numbers of Croatian construction workers went to work at construction sites in Germany should be copied. Croatia should become "Germany" for B&H, Serbia, Romania and other eastern neighbors.¹²

Once Croatia enters the European Union, the Act on Government Stimulated Housebuilding, which foresees providing housing care for certain socially endangered population groups, will become unsustainable because it does not meet principal European Union standards. The greatest problem of the Croatian stimulated housebuilding model lies in the fact that local self-government bodies sell their land at prices that are up to 40% lower, and apartments that are built there are later transferred to private ownership. It is necessary to carry out an expert evaluation of the past implementation of the stimulated housebuilding program and make the needed changes and adjustments with European Union standards in order for this program of social housebuilding to continue.¹³

Challenges related to ever increasing buyers' demands will mostly show in relation to introduction of new technologies and the contractors' readiness to answer those demands. Users' demands will have the greatest influence on more contractors to start offering modern infrastructure in new homes and offices in cooperation with the information technology sector. While, on the one hand, Croatia still has no developed standards for ICT infrastructure in new buildings, such that would be in line with the present time, contractors and telecom operators are faced with the task of explaining the benefits of high technologies and "intelligent" construction, on the other.¹⁴

Besides the "intelligent" construction, **sustainable construction** is also a new trend in the construction sector, which is very quickly becoming the standard in the field of construction of living and business quarters, and it encompasses use of construction materials that are not harmful for the environment, energy efficiency of buildings and waste management from construction to removal of structures. Within the context of sustainable development, sustainable construction must ensure durability, quality of design and constructions, together with financial, economic and environmental acceptability.¹⁵

¹² Živković, Drago: *Let us be Germany for our eastern neighbors*, *Privredni vjesnik*. Taken from: <http://www.privredni-vjesnik.hr/index.cgi?A=I&SIF=00006&BR=003445&DA=20070108> (April 05, 2007)

¹³ Hrupić, Martina and Živko, Ivana: *POS unacceptable in the EU*, *Jutarnji list*. Taken from: <http://www.h-alter.org/index.php?page=article&id=4844> (March 26, 2007)

¹⁴ Gelo, Robert: *Intelligent construction – Buyers want square meters of new technologies*, *Privredni vjesnik*. Taken from: <http://www.privredni-vjesnik.hr/index.cgi?A=I&SIF=00001&BR=003459&DA=20070409> (April 4, 2007)

¹⁵ Ministry of Environmental Protection, Physical Planning and Construction - Directorate for Housing, Municipal Economy and Construction, Sector for Construction and Energy Institute Požar: *Guide through energy efficient construction*, page 5-7, Zagreb, 2005. Taken from: www.eihp.hr/hrvatski/pdf/vodic_ee_gradnja.pdf (March 27, 2007)

Sources of Information

The following sources of information were used for the purposes of compiling this report:

Central Bureau of Statistics (www.dzs.hr)

The operation of the Bureau is based on the Official Statistics Act (NN 103/03), and its regular statistical surveys are based on the Program of Statistical Surveys of the Republic of Croatia 2004 – 2007, which also gathers other ministries and institutions that make, together with the Bureau, the system of official statistics.

Annual implementation plans define the title, periodicity, contents, coverage, implementation method, territorial characteristic, time schedule and the status of harmonization of individual statistical surveys with national and international standards.

First releases by business sector are published monthly, and cumulative reports on development of business sectors are published in January for the previous year.

Methodology of creation of research used in this report follows the recommendations of Eurostat and The United Nations World Tourism Organization (UNWTO).

Croatian Chamber of Economy (www.hgk.hr)

Croatian Chamber of Economy is an independent professional and business organization of all business entities in the Republic of Croatia. It was established in 1852, organized in the European tradition and the so-called continental model of Austrian and German chambers with compulsory membership. Every company registered with the Commercial Court becomes a member of the Chamber.

Territorially, Croatian Chamber of Economy consists of Headquarters in Zagreb and twenty county chambers. Functionally, the CCE consists of eight departments dealing with respective branches of the economy (construction, industry, agriculture, small business, financial institutions, information and communication technology, etc.), and it also includes 40 professional associations, 87 groups and 19 affiliations.

Croatian Chamber of Economy publishes annual reports with detailed analysis of Croatian economy by individual sectors. Report on tourism is prepared by the Construction and Utility Services Department.

Ministry of Environmental Protection, Physical Planning and Construction (www.mzopu.hr)

Eleven directorates and other organizational units operate within the Ministry of Environmental Protection, Physical Planning and Construction.

Sector for Construction of the Directorate for Housing, Municipal Economy and Construction is in charge of issuing building permits, principle permits, occupancy certificates, and permits for removal of buildings, and conducts technical inspections of structures that fall under Ministry's authority. It carries out the procedures for issuing decisions on standardized projects, and issues permissions for deviations from important structure requirements.

Sector coordinates and participates in creation of drafts of regulation proposals that fall under its authority, monitors implementation of regulations, and gives expert opinions and explanations. It carries out evaluation of abilities of people involved in construction activity, and issues certificates on passed state certification exams. Also carried out within the Sector are the proceedings for accreditation of legal persons for performing the compliance evaluation procedures and issuing of compliance certificates for construction products, as well as appointments of persons for control and notification of projects, in relation to which records and registers are maintained.

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Reference list:

1	Central Bureau of Statistics, Statistical Yearbook 2006, Register of Business Entities Taken from: http://www.dzs.hr/Hrv_Eng/iletopis/2006/00-sadrzaj.htm (March 15, 2007)
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