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FORTY THIRD PLENARY SESSION OF THE PABSEC GENERAL ASSEMBLY
ECONOMIC, COMMERCIAL, TECHNOLOGICAL AND ENVIRONMENTAL AFFAIRS COMMITTEE

REPORT*

**“INTRODUCTION OF NEW TECHNOLOGIES IN MODERN CONSTRUCTION AND
ARCHITECTURE IN THE BSEC MEMBER STATES”**

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INTRODUCTION

1. Construction is one of the most effective sectors of the real economy. In the context of the economic crisis this sector has the ability to bring national economies out of stagnation upon the condition that the correct design approach, as well as application of new technologies, materials and design concepts are ensured.
2. At the same time, the construction is very sensitive to fluctuations in the world economy and develops according to the tendency towards its increase or decrease.
3. Modern new construction technologies and materials enable significant facilitation and acceleration of construction as well as reduction of its costs. This is very important taking into account the growing pace of construction, especially in the cities of the BSEC region that are growing very dynamically enlarging their territories.
4. Today's requirements for the construction materials also include high environmental safety levels. Modern consumers pay particular attention to the composition of the construction materials and whether they threaten human health.
5. It is important for the BSEC countries to intensify enhancement of new technologies in construction and architecture and to actively involve the representatives of the business communities in the process of elaboration and implementation of the new projects.
6. Current developments require increase in the pace of urban and rural infrastructure development and introduction of new types of construction and design approaches. Today there are more and more new requirements for quality housing, jobs, leisure, etc. in the BSEC countries.
7. Taking into account the growing pace of construction and infrastructure development in the BSEC Member States in recent years and the fact that the Assembly has not yet addressed the issues related to construction and architecture it was decided at the 41st Meeting of the PABSEC Economic, Commercial, Technological and Environmental Affairs Committee held in Ganja on 4 September 2013 to take up for the first time the subject of **“Introduction of New Technologies in Modern Construction and Architecture in the BSEC Member States”**.
8. **The task of the consideration of the Report by the Committee is to develop common approaches and to exchange knowledge in the field of construction standards, technologies and design in the BSEC region.**
9. The present Report is based on the information provided by the national delegations of Armenia, Azerbaijan, Bulgaria, Georgia, Greece, Romania, Russia, Turkey and Ukraine, as well as the informational material obtained by the PABSEC International Secretariat from the relevant sources of the Internet and other publications.

I. MODERN TYPES OF RESIDENTIAL BUILDINGS

10. Modern residential houses are divided into certain groups according to the types of property:

Apartment building – at present in the developed countries there are three types of apartment buildings that differ according to the forms of their ownership and management.

- Private commercial apartment building – private form of property and management;
- Condominium, cooperative – collective form of property and management;
- Municipal rental apartment building – state (municipal) form of property and management.

Let us consider some types of apartment buildings.

Commercial apartment building – this is a private property of an owner (private person - entrepreneur, company, bank), apartments in which are rented to the tenants at commercial prices without the right of privatization and the apartments are not allocated as individual properties. This is a commercial enterprise, which brings profit to the owners and taxes to the budget; this is a big sector of municipal business: mainly small and medium sized.

Condominium. This is the home of collective ownership and management. These apartment buildings appeared in the early twentieth century and they include condominium, cooperative and another form of a collective joint ownership existing in some countries.

Municipal rental apartment building. This type of residential building belongs to the category of social housing. This is a housing for the very poor, who are not able to solve their housing problems on their own.

11. Nowadays more and more people in the BSEC countries prefer to live in private homes tailored for one family. These houses are built on the outskirts of the cities or in the suburbs. Construction and exploitation of such homes require the creation of additional infrastructure, which ensures comfortable habitation in these homes (security, roads, shops, catering facilities, kindergartens, etc.)
12. In recent years, new types of buildings have appeared, construction and exploitation of which are designed to minimize the impact upon the local ecosystem and to ensure rational management of resources for the maintenance of such facilities. In general these types of houses are called *ecological*. They have good reason to become the basic type of housing in post-industrial era. Eco-house is an individual or a row house building with a plot of land, which is rather resource-saving and low-waste, sound, comfortable, and ecologically friendly. This is achieved mainly through the use of autonomous or small communal utility systems and rational construction of the houses. It is important that these houses have these features not as a separate object but also as a system together with all housing services and maintenance systems.
13. Under the concept of “ecological house” a number of individual house types could be differentiated according to the technological or other features, attention to certain factors of resource-saving, environmental protection, etc. Further on there are brief descriptions of subtypes of “ecological house”.

Energy-efficient house. Energy-efficient houses can be considered as the closest relatives of ecological houses as with their appearance generates the modern history of construction of ecological houses. Despite the fact that the energy efficiency does not cover all the aspects of ecological housing, yet it constitutes one of the main features of ecological house and the level of energy efficiency is one of its main characteristics.

Resource-saving and low-waste house. The environmentally friendly house has to be not only energy-efficient but also resource-saving in general. Along with electricity and fuels the house receives from the outside water and at the same time generates waste such as sewage and garbage. In particular, for cleaning and delivering water to houses as well as for sewage disposal large technical systems are working that cause significant damage to the environment. For the solution of the problem of waste disposal it is expedient to use portable toilets and recycle household waste.

Bioclimatic house. In the past, builders using either popular traditions or old architectural skills were successfully fitting the buildings into the surrounding landscape thus well matching the housing with the natural environment. The houses were usually closely linked with the surrounding natural systems and were constructed from local materials. They depended upon the local energy supplies, food products and water resources, natural systems that were performing

buffer role, recycling the waste. It is recommended to come back to this system through the realization of the concept of a bioclimatic house.

II. MODERN TYPES OF OFFICE AND COMMERCIAL BUILDINGS

14. In all the BSEC Member States there is the dynamics towards the increase in the number of floors in the commercial and financial buildings that are planned or are under construction. In major cities in the BSEC region it is rather common to see skyscraper office buildings and hotels. The height of these buildings is limited according to the seismic risks in particular territories and the local regulations regarding development of historic cities. In general it is exactly such buildings that constitute examples of new ideas in architecture and design. Their external appearance becomes rather different due to the originality and brave attempts of innovation. In Turkey, where the tourist industry is one of the most developed sectors of economy the architectural design of the hotels has become a separate direction in design industry.
15. At the same time, these buildings are examples of aggressive environmental engineering and urban development. They often contrast with the historic face of the cities violating the centuries-old engineering traditions.
16. In recent years more and more shopping and entertainment malls started to appear. Their design and architecture is rather standardized in all the countries throughout the world with some minor differences. Despite the crisis in the economy, these huge complexes are built in Russia, Ukraine, Turkey and other the BSEC countries.

III. OTHER TYPES OF BUILDINGS

17. Among the other types of buildings prevailing in the modern type of construction we can mention some public, educational and religious institutions. In the different BSEC countries the share of these types of buildings in modern construction is different. The most intensive pace of such constructions is traced in such BSEC countries as Azerbaijan, Russia, Turkey and Ukraine. Relatively high pace was also observed in Georgia quite recently.

IV. NEW CONSTRUCTION DESIGN AND MATERIALS

18. In recent years rapid development of technologies in the production of modern building materials is traced. Technologies of present day repair and maintenance have changed very much and also developed basic construction materials that are essential in this process. The technologies applied today in construction enable to make dry process repair using plasterboards, a big variety of panels, stretch or lowered ceilings and many other innovations in construction activities. The use of modern materials gives possibility to add a completely new, unique and original interior design to the apartments and offices.
19. Frame house building has already become one of the most popular technologies in construction of houses. With this technology it is possible to construct buildings quickly. Construction design becomes rather light and does not require any complex groundworks or lengthy preparations for beginning the construction. Installation of frameworks is simple as welding of the parts are not necessary. At the same time, it does not matter what time of the year the building is constructed and what kind of plot is selected for such a construction. The houses built by frame building method are very durable and resistant to the movement of the basis. The most important advantage is that the cost of a construction using the frame building technology enables to save about 30 % if compared to the construction of a common brick house.

20. Today, the method of constructing buildings from sandwich panels is widely used. The houses that are built with such a method can resist the UV radiation and wearing off.
21. The new methods of construction activities are closely related to the existence of the new building materials. Cement bonded particle boards, polysterene concrete, reflective insulations are some of those building materials that statred to be actively used in the construction activities in the BSEC countries in recent years.
22. The application of new technology in the construction of a cement production which is the basic building blocks is obtained various kinds of high strength cements. Wide application of this cement in the construction of the monolithic steel concrete high-rise buildings, reducing the consumptions of the armature. In recent years, during the construction of the high-rise concrete buildings used new designs - the erection of buildings by sliding formwork method.
23. In the application of this technology in the compounds are widely used reinforcement modern high-standard steel couplings, as well as the appliance anchors chemically.
24. Materials used today for the interior finishing works are divided into several groups: natural materials - limestone, marble, sandstone and granite; manmade materials - dry mixtures based on plaster, PVC, MDF, etc.
25. Present day manmade building materials can be applied in many areas because of their functional qualities and technical characteristics. When modern technologies are applied these materials acquire similar qualities as the natural materials and in some cases even have significant advantages in terms of capacity, variety and fields of application. All modern materials have to meet strict demands as they have to be environmentally friendly, to have a long life span, to be fire-resistant, to be easy to install or pack, and be easy-to-clean. In order to achieve an attractive and modern look a large variety of colors and shades are also used.
26. In recent years in order to promote sustainable growth of the modern construction industry and facilitate the use of innovative finishing materials many engineers move towards use of plastic and polypropylene pipes. These plumbing pipes do not pose any threat to human health and their costs are much lower compared to the ferrous metal pipes. These pipes meet all the modern standards and have a significant advantage in terms of much longer service life.
27. It is not a secret that the construction industry is not allowed to have any risks since at the end everyone may lose - both the client and a contractor. The first rule of highly effective construction is a timely and right choice of modern high-technological building materials that will pave the way towards the achievement of best possible results. The present day construction market offers sound, safe, inexpensive and modern insulating materials based on basalt-type rock materials. Consumers of new insulation materials are absolutely confident that the used material will keep its initial features for many decades to come.

V. MEASURES FOR ENHANCEMENT OF COOPERATION IN THE SPHERE OF ARCHITECTURE AND CONSTRUCTION IN THE BSEC MEMBER STATES

28. Due to the significant contribution of high technologies in the achievement of economic prosperity their development has become the topical issue during the last decades and is becoming increasingly important in the Black Sea region.
29. Taking into account that new technologies define the successful implementation of regional projects, the development of high-technologies and cooperation in this field between the member states is an important direction in the PABSEC activities. Having considered different

aspects of enhancement of technologies the PABSEC elaborated and adopted a number of respective recommendations.

30. The development of multilateral cooperation among the academic communities should also be aimed at applying the achievements of world science and technology to the priority fields of economic collaboration. In this respect necessary attention has to be given to the accelerated establishment of the BSEC International Center on Innovation Technologies which will play a leading role in promoting innovative research and technological development, supporting basic research, as well as creation of a special Fund for financing the most promising regional projects.
31. Today the BSEC countries are making a lot to modernize and improve the efficiency of the construction sector in the region and it is rather difficult to overestimate the importance of the ongoing activities.
32. For mainstream use of new technologies, especially in the construction sphere, it is imperative to provide precise instructions, regulations, pricing, etc., as well as tools to replicate the effective solutions. A new practical skill becomes a technology at the moment when it is properly defined and standardized.
33. However, at present the procedure for creating new technical standards are not precisely defined and developed while the existing mechanisms for the developing the standards are not yet perfect, they elapse in time and are not aligned with the modern challenges.
34. At present situation all the new technologies in the construction industry are curbed by the outdated mechanisms of creating new regulations, which is a key barrier to the speedy introduction of effective and innovative technologies in the construction industry in the region. These new mechanisms will significantly improve the energy efficiency of the facilities that are in the process of construction or are already constructed.
35. This situation is exacerbated by the fact that the pioneers - the carriers of new technologies - are generally the innovative companies representing small business and who do not have sufficient resources for necessary research and cannot easily overcome such barriers.
36. It is considered necessary that the relevant public authorities in the BSEC countries drew attention to the solution of the problem of creation and approval of standards for the new efficient technologies and building materials, among them:
 - To set up permanent structures (council, working groups) in order to ensure support to the development of efficient construction technologies;
 - To prepare and publish in the format available to the public precise “road maps” for preparing and adopting the standards for the introduction of new technologies and materials, as well as the samples of the necessary documents;
 - To develop the measures for state support to small enterprises for creating new regulatory frameworks for innovative technologies;
 - To promote interaction with government structures on the issue of shortening the time frame for adopting the elaborated standards for new technologies and materials;
 - To consider the possibility of a simplified procedure for the approval of new standards.

VI. SITUATION IN SOME BSEC MEMBER STATES

ARMENIA

37. With the aim to increase the earthquake resistance and introduce the existing special systems for increasing seismic safety of buildings and facilities under construction in Armenia it is necessary to use dynamic shock absorbers with rubber-metal layers for seismic isolation bonding the piers of the structures to other buildings within the bracing structures.
38. For the restoration and strengthening of historical monuments and ancient churches modern scientific methods are applied in the respective works. In the construction works precast wooden, plastic and metal constructions are also widely used for setting formworks for installation of concrete and monolithic buildings and facilities. Works on monolithic reinforced concrete constructions are fulfilled with reinforcing steel bars pre-stressed with the insertion of a steel strands.
39. At the same time, during the construction works the relevant requirements are applied for the implementation of all kinds of operations for pouring concrete with the use of various types of chemical admixtures. The construction technologies are being introduced for the installation of monolithic concrete wear-resistant floors.
40. The new modern study methods are enhanced in Armenia for conducting geological and hydrological engineering survey of the ground terrain of the buildings and facilities by means of necessary tools, equipment and cartography. The organization of production and installation of reinforced concrete bars are developed in order to use them in reconstruction of the railroads.

AZERBAIJAN

41. Construction of multi storey steel-frame buildings is under way in recent years in the Republic of Azerbaijan. High impact steel fittings and steel formed sections, as well as connectors with high-tension bolts are used in these buildings.
42. In the Republic of Azerbaijan traditionally natural carbonaceous stones are used for making enclosure structures. In recent years due to the reduction of stocks of these natural stones and with the aim to enhance environmental protection together with the use of these materials a new technology of production of new walling materials, gas-concrete blocks and “sandwich” panels has been launched.
43. For strengthening, reconstruction and rehabilitation of the existing buildings polymer adhesives and new types of finishing materials are widely used in modern construction of the Republic. As a result of the transition to a market economy and socio-economic changes in Azerbaijan major changes have occurred in the sphere of the development of architecture and city planning since the early 90ies of the last century. First of all the form of ownership was changed of planned and constructed buildings. In Baku and other cities of the country construction turned towards building of low-rise private buildings and high-rise commercial buildings that allow appearance of new architectural forms along with the functional requirements of the buildings.
44. Revolutionary achievements in construction technologies that opened up the new prospects for the most sophisticated ideas of the architects paved the way to the establishment of a new era in modern architecture of Azerbaijan, which includes a big variety of directions and styles. The

modern architecture of Azerbaijan reflects the heritage of the previous years in newly constructed buildings and facilities using Gothic, Classic, Modern styles with the incorporation of the elements of the national architecture.

45. Among the recent buildings and complexes built in Azerbaijan using modern construction technologies and materials could be mentioned the following:

- The multifunctional complex Flame Towers - this is an architectural ensemble with the height of 190 meters consists of three skyscrapers symbolizing flame shapes;
- The Heydar Aliyev Cultural Center with a total area of 111,292 square meters is a complex construction, which includes a convention center, a museum, exhibition halls and administrative offices;
- The Baku Crystal Hall - this is a huge cultural and sports center located on an artificial peninsula not far from the Baku city center. This is a stadium with the capacity of 25,000 people and can host not only sports events but also concerts. For the construction prefabricated metal structures were primarily used;
- The new terminal of the Baku International Airport was opened in 2013 the external appearance of which from the top resembles an airplane or a bird with the stretched wings. The terminal is designed for annual passage of 6 million passengers. The four-storied building of the terminal with the area of 65 thousand square meters widely uses the latest scientific and technical achievements of the world aviation industry;
- Among the ambitious projects under way at present in Azerbaijan should be mentioned the project of Khazar Islands - artificial islands in the Caspian Sea with buildings and infrastructure on them. The centerpiece and dominant part of the Khazar Islands will be the Azerbaijan Tower which is envisaged by the creators as the tallest building in the world in the future with the height of 1,050 meters;
- The five-star hotel «Jumeirah Bilgah Beach Hotel» is located on the shore of the Caspian Sea just 35 km away from the Baku city center and has a very unique style;
- Large-scale development project The Crescent Project was launched in 2012 and is expected to be finished in 2016. Within its framework on the shore of the Caspian Sea a number of high-rise buildings will be built at a time among which the most interesting will be the 160 meters' high The Crescent Hotel in the form of a huge arch.

46. The issues of introduction of the effective technologies in construction in Azerbaijan are dealt by the Ministry of Emergency Situations and the State Committee for Urban Planning and Architecture. According to the existing legislation of the country the elaboration of the state standards in the sphere of the urban development, construction and architecture (state standards, technical regulations, and public building norms) is funded from the state budget.

47. The elaboration of the standards for the enterprises (organizations) and administrative regulations are conducted at the expense of the companies (agencies). The issues of the approval and introduction of the standards in the field of new technologies and construction materials are dealt by the State Committee on Standardization, Metrology and Patents of the Ministry of Emergency Situations and the State Committee for Urban Planning and

Architecture of the Republic. These state agencies work closely together during the adoption and implementation of the standards in the field of new technologies and materials.

48. Azerbaijan cooperates with such BSEC Member States as Ukraine, Moldova and Russia in the sphere of technical standardization and regulation. At present this work is carried out in the framework of the Intergovernmental Council for Cooperation in Construction Activities which was established in September 1994 in Moscow by the heads of the CIS governments.
49. In the framework of the National Academy of Sciences of Azerbaijan there is the Centre of Scientific Innovations (CSI) the main purpose of which is to analyze the scientific research work, to collect science intensive fields of technological and innovation achievements and to create a database in this field. The main objectives of CSI are:
- to carry out research related to the leading science intensive areas of advanced technologies and innovations of foreign countries;
 - to conduct the state registration and to transfer to the fund the research, development, design and experimental and other works in all areas of science and technology elaborated by the leading organizations, agencies, higher education establishments, ministries, committees, various companies and corporations;
 - to establish and enhance the international relations in the field of exchange of information, innovation and technology;
 - to analyze and forecast in the Republic the areas of development of science, scientific research work, innovative projects, conduction of marketing research, creation and distribution of public funds in various fields of science, etc.
50. The main trends in the development of architecture and urban development in Azerbaijan are diversification, appearance of new areas in creative approach towards architecture and urban planning and high level of professionalism in this field.

BULGARIA

51. In Bulgaria after moving away from pre-fabricated housing in the late eighties of the last century, mass residential and public construction has been utilizing more traditional building systems and structures such as concrete, metal and wood.
52. New building materials and products are being dominant in the construction sphere in Bulgaria, including the domestically produced, are not traditional. In terms of building technologies, effective system solutions and high quality products for the technical infrastructure and security of buildings are being introduced. Computer-based systems monitor and manage lighting, ventilation, fire protection and other systems of the buildings at minimum energy consumption levels, while providing optimal operating conditions.
53. System solutions are being introduced in facilities with different functions and are used to achieve 90% autonomy in terms of energy supply, water supply, interaction with the environment etc., which is undoubtedly the future of architecture.

54. The new tendency towards “green” buildings is becoming predominant, aiming at a sustainable future for urban environment and buildings, as well as minimum energy consumption, optimal and reasonable functional solutions and deep respect for the existing architectural fabric and urban environment context.

GEORGIA

55. The new trends in the sphere of architecture in Georgia can be divided into two parts – these are the housing sector and the commercial sector. New residential buildings mainly retain the traditional methods of construction using the reinforced concrete structures but with due regard to the environmental aspects. The second type of trend in architecture is commercial, including office buildings, government buildings, shopping centers, etc.
56. Georgia is a member of the UN Economic Commission for Europe and with the support of the Ministry of Economy and Sustainable Development of Georgia currently is elaborating the National Action Plan in the sphere of energy efficiency in the housing sector.
57. The Georgian National Agency for Standardization and Metrology is a member of the European Committee for Standardization, the European Committee for Electrotechnical Standardization, the International Organization for Standardization, the International Bureau of Weights and Measures and has full access to all international standards including the standards of technologies and materials for the public sector and the citizens. The Georgian government actively supports the use of standards of new technologies and materials in the construction industry.
58. At present in Georgia the work is under way to create the Code of Construction and Planning, which is based on the European best practices in this sphere. This Code will promote the use of new technologies and materials in the construction industry. According to the Doing Business 2014 rating Georgia is in second place for obtaining the construction permits.

GREECE

59. The Ministry of Environment, Energy and Climate Change has been established in order to confront the continuous environmental problems and to adopt a new developmental model. In this context, the Ministry works to achieve urban regeneration, sustainable regional development, respecting the architectural heritage and the enhancement of mechanisms and institutions for environmental governance. The Ministry supervises various institutional bodies that monitor Environmental and Regional Planning (The Green Fund, The Hellenic Mapping and Cadastral Organization, the National Center for the Environment and Sustainable Development, the Unification of Archaeological Sites of Athens etc.).
60. The official advisor of the state for such issues is the Technical Chamber of Greece. It is a public legal entity, established in 1923, with an elected administration. It aims at developing Science and Technology in sectors related to the disciplines of its members, for the economic, social and cultural development of the country, in the principles of sustainability and environmental protection.
61. Moreover, in the field of construction, materials and production processes, the following platforms have been established in Greece: The Hellenic Construction Technology Platform, (HCTP) focusing on sustainable construction and the protection of cultural heritage. The Technical Chamber of Greece took the initiative of establishing the Hellenic Construction Technology Platform, the HCTP, whose 200 members (contractors, service and technology

providers, universities and research centers) address the future needs of construction works and built environment.

62. The HCTP, in coordination with the European Construction Technology Platform, works towards:
 - Making the Greek construction industry an advanced-knowledge economy sector at all levels of the supply chain;
 - Reducing the use of energy, materials and other resources in construction and in the built environment;
 - Supporting sustainable development and maintenance of urban and rural environments, and so on;
 - Ensuring that the cultural and architectural heritage is preserved for the benefit for society.
63. The HCTP plays an important role in promoting the environmental assessment and certification of construction materials and construction works by incorporating and implementing the relevant European Regulating Framework into Greek Reality. Development and implementation of innovation in the built environment and the construction industry is the goal set by the HCTP in the future horizon till 2030.
64. NQIS/ELOT, the Greek Standardization Body, is the sole Organization at national level, for preparing, issuing and delivering Standards and adopting European standards as national Standards in the field of Construction Products and Eurocodes under Directive 89/106/EC replaced by EE Regulation 305/2011.
65. Structures in cooperation with European platforms: The Aristotle University of Thessaloniki and the National Technical University of Athens, participating in the European Steel Technology Platform (ESTEP); The University of Patras, participating in the Manufacture (Future Manufacturing Technologies Technology Platform); The Aristotle University of Thessaloniki, focusing on multi-functional materials and high-demand materials.
66. The production and formation of construction materials comprise a significant part of the Gross National Product in Greece. The sector of construction materials contributed 7 billion euros in 2010. The sector of chemical, ferrous and non-ferrous metals and construction materials correspond to the 25,6% of the overall production of Greek Industry and demonstrate significant exporting activities. More specifically, some of the materials which are commonly used in today's construction in Greece are cement products, such as concrete and other synthetic materials (the sector is considered particularly developed and is export-oriented. Some 50% of Greek concrete is exported to Italy, Africa, Great Britain, USA and Spain), Steel, Aluminum, Ceramic products, Natural stones, Wood and Glass.
67. Also special reference must be made to the so-called Advanced Construction Materials. These are new, high-resilience, high resistance, advanced insulating and low-weight materials, such as cement and other plasters, a big part of which are:
 - Coating materials, such as paints, films and sealing compounds
 - Low-weight architectural materials, of dilated styrofoam
 - Transparent structural materials of high energy performance, such as nanotechnology pvc frames that block heat and solar radiation

68. Moreover, in the field of Road Construction, we must underline the constant efforts for producing commercial applications of novel asphalt mixtures, that how better water catchment, higher resistance against wear and longer estimated life expectancy. Finally, we must note the so-called “smart constructive materials” which diagnose failure or wear (very useful in cases of earthquakes, for instance) and many others.
69. The New Building Regulation (Law 4067/2012) that came into force in 2012 is the fundamental law that regulates building construction in Greece. Its provisions which aim at the protection of the natural, urban and cultural environment, have been updated in order to meet the latest developments in construction science and technology.
70. The NBR, adapted to the new standards that have been set, supports the use of new materials in building constructions, encourages the use of new technologies and building systems and sets incentives for environmentally friendly design.
71. It provides more space for the production of quality architecture, both in terms of morphology and function. It incorporates elements that upgrade a building’s energy behavior and encourages the use of new environmentally friendly structural materials, systems and construction technologies.
72. The NBR also introduces innovations for the protection of urban land and the revival of cities (f.i. land merging), it introduces new definitions (e.g. vertical gardens, double shells etc.) and at the same time, gives incentives for constructing buildings with minimum energy consumption. More specifically, according to this provision (article 25 of the NBR), once a building is ranked (according to its energy bioclimatic design) in one of the highest energy categories (meaning it demands the lowest possible power consumption, uses renewable sources etc.) then it is awarded with a 5% increase of its building coefficient.

ROMANIA

73. The structures dealing with the issues of construction in Romania include:
 - The Ministry of Regional Development and Public Administration. In its capacity as the state structure in the construction sector it carries out the function of a Product Contact Point in construction;
 - The State Construction Inspection is a public institution subordinated to the Ministry of Regional Development and Public Administration;
 - ICECON is a research institute for construction equipment and technology, which carries out research and development of construction technical regulations, new materials and technologies, internal systems and equipment, technological equipment, town management, environment protection, waste recycling, etc. ICECON ensures standards and technical specifications according to the European documents for construction standards and specifications in accordance with European documents for construction and provides guiding principles of the best practices for all construction organizations operating on the territories of Romania.
74. The main legislative components of the respective legal basis of Romania are: the Law No 50/1991 on the Authorization of Construction Works Execution; the Law No 10/1995 on Quality in Constructions; and the Law no 350/2001 on Urban Development and Spatial Planning. These laws were amended for several times since their adoption with the aim to meet

the requirements of new technological development and use of new building materials, as well as the application of systemic urban planning as a whole.

75. The regulatory framework also includes a number of government decrees and ordinances regarding various aspects in the sphere of construction, and related to the rules on the quality in constructions; the principles of the approval projects for public works; assistance in the preparation of technical and economic documentation for the investments; methods for issuing environmental permits, etc.
76. In accordance with Regulation (EU) No 305/2011 of the European Parliament and of the Council of 9 March 2011 laying down harmonized conditions for the marketing of construction products and repealing the Council Directive 89/106/EEC, the Member States shall designate a Product Contact Points for Construction that provide information on the provisions within its national territory. Product Contact Points for Construction shall be able to carry out their functions in a manner that avoids conflicts of interest, particularly in respect of the procedures for obtaining the CE marking.
77. As for the urban planning of systematization, each local municipality takes its own measures and standards for their architectural and landscape specificity. At present architecture in Romania reflects organic, energy-and cost-effective solutions and all the studies are carried out on the basis of ecological concepts.

RUSSIA

78. On 1 November 2013 by the Decree of the President of Russia the Federal Agency for Construction and Housing and Communal Services was transformed into the Ministry for Construction and Housing and Communal Services of the Russian Federation. The Ministry of Construction took the functions of the elaboration and implementing of the state policy and legal and regulatory framework in the sphere of construction, architecture, urban planning, housing and communal services; public services; state property management in the in the sphere of construction, architecture, urban planning, housing and communal services; as well as coordination of the implementation of the Federal Funds for Housing Development, the state corporation - Fund of Assistance to the Reforming of Housing and Communal Services and the State Corporation for the Construction of the Olympic Venues and the Development of Sochi as a mountain resort.
79. Under the authority of the Ministry of Construction of Russia is the Federal autonomous institution “Federal centre for regulation, standardization and technical assessment in construction” - FAU “FCC”. Its main functions include the following:
 - to organize and carry out work for the technical assessment for suitability of the use in the construction works on the territory of the Russian Federation of new building materials, products and constructions, as well as the requirements that are not regulated by the existing building codes and regulations, national standards or other regulatory documents;
 - to organize conduction of examination of special technical specifications with further preparation of the scientific and technical report;
 - to organize and conduct works for the elaboration of the draft of the set of rules for planning and construction, updating of the existing sets of rules in the framework of the previously approved building regulations, lists of national standards and codes;

- to ensure the operation of the secretariat of the technical committee for standardization (TC 465 Construction) in order to elaborate and examine the national standards in construction, production of building materials and construction industry, to conduct assessment of the draft regulations and preparation of the respective scientific and technical reports;
- to ensure registration of national standards, codes of practice for planning and construction and the projects of the updated construction rules and regulations in the framework of the terms by the Russian Federation legislation;
- to prepare the draft documents (technical certificates) necessary for verifying the suitability of the new building materials, products and structures, the requirements to which are not regulated by the existing building codes and regulations, national standards and other normative documents;

80. At the same time, the Institution performs such important works for the sphere of technical regulation in the construction work as:

- Organization of the Secretariat of the Technical Committee for Standardization (TC 465) Construction. (The Institution organizes the elaboration of new and the updating of the existing national standards for building materials and products and other industrial products used in construction);
- Organization of the Secretariat of the Interstate Scientific and Technical Commission for Standardization, technical regulation and conformity assessment in construction;
- Participation in the elaboration of the similar projects on technical regulations within the EurAsEC and the Customs' Union "On the security of buildings, building materials and products" as well as a draft list of regulatory documents application of which will ensure compliance with the technical regulations of the Customs' Union; promotion (protection) of all projects at all stages of intra- and inter-state agreements;
- Organization and execution of the work on the harmonization of domestic and European regulations (Acquis) in the field of construction, creation of the conditions for the practical application of the Eurocodes in exercising planning and construction works on the territory of the Russian Federation.

81. In the Russian Federation the rules that confirm the suitability of innovative products the requirements for which are not regulated adequately by the existing domestic regulations were introduced by the Government Decree of 27 December 1997 № 1636 "On Regulations For Confirmation of Suitability of New Materials, Products, Structures and Technologies For Construction Purposes". In accordance with these Regulations the suitability of new materials, products, structures and technologies (hereinafter - new products) for the use in construction is confirmed by technical certificates.

82. Establishing these rules envisaged the experience of the European countries, including Germany, the UK and France, and was aimed at protecting the domestic construction market from the unjustified use of untested production on the Russian Federation and creation of favorable conditions for the elimination of technical barriers in the introduction in the construction sphere of progressive domestic and foreign achievements.

83. In addition during the difficult period of reforming the national regulatory framework in construction sphere confirmation of suitability facilitates promotion of hundreds of new types of advanced materials, products, structures and technologies at the construction market thus preventing possible conflicts between manufacturers of these products, the supervisory authorities, engineers and builders in addressing the issues of safe construction of buildings and facilities using the new products with underestimated features. The Federal Law of 27 December 2002 № 184-FZ “On technical regulation” defines the types of the regulations existing in the country that govern safety issues.
84. Availability of standards and technical specifications of new products does not exclude the necessity to confirm the suitability of this product for its use in construction. Evaluation and verification of suitability has to be carried out during the production engineering and the use of new products and the evaluation results should be taken into consideration in the preparation of regulations for these products, including standards of organizations, as well as technical conditions that do not apply to the regulations (within the law) but are the integral part of the engineering and technical documentation.

TURKEY

85. In Turkey there is a system of state control over the construction of new buildings and structures. The main technology used in the construction in Turkey is monolithic reinforced concrete frame construction system. The ceilings used in this technology as also monolithic reinforced concrete with a built-in soundproof material on the lower part of the ceilings.
86. Due to the absence of the need to use cranes during the construction of low storey houses that mostly prevail in the construction sector, the housing construction costs in Turkey is rather low compared with the other countries of the BSEC. To fill the monolithic structures only mixers and concrete pumps are used. Exterior walls are mounted from the following materials: foam concrete blocks, ceramic blocks and bricks.
87. The Ministry of Environment and Urban Planning of Turkey promulgated the amendments to the Building Regulations on the territories of the country. According to the new amendments the height of the new buildings now will be determined by the width of the streets, avenues, alleys, etc. where they are built. Under the new Regulations a building along the road with the width of 50 meters or more, may have altitude of 18 floors and not 25 floors as it was allowed in the past. The buildings constructed along the road with the width of 40 meters are limited by 16 floors. Along the narrow roads it is only allowed to build 14, 12, and 10 storey buildings respectively for the streets with 35, 30 and 25 meter width. Along with the routes whose width does not exceed seven meters it is allowed to build three or two-storey houses. The authors of the amendments are confident that the new regulations will prevent excessive constructions in the big cities like Ankara, Istanbul, Izmir, etc.
88. In Turkey, according to the Law No: 6306 of 16.05.2012 on restructuring of areas under risk of natural disasters, necessary to determine the hazardous constructions and the areas for the reserv constructions and demolish the hazardous constructions. In line with the plan determined by the the Ministry of Environment and Urban Planning of Turkey it is thought largely to revise the cities along with modern urbanism perception. The projects (Urban Transformation Project) are being achieved successfully in countrywide, especially in big cities like Istanbul, Ankara and Izmir.
89. Conditionally to the regions the usage of the materials and their application levels which to be employed in constructions along with the Urban Transformation Project are identified by the

regulations. In this area strict audits are being executed. The relevant issue is drawn up in details by the Regulation (04.08.2012) of the Law No: 6306 (16.05.2012) on restructuring of areas under risk of natural disasters.

UKRAINE

90. The modern construction in Ukraine is mainly concentrated in the big cities and the regional centers. Construction of residential buildings takes the first place according to the pace and volume of the construction works. Office and commercial construction activity (shopping centers, supermarkets, shopping malls) significantly lags behind.
91. As for the residential construction, yet multi storey buildings dominate both in the center and on the outskirts of the cities since the low storey residential buildings are considered less profitable. In recent years construction of cottage complexes and townhouses in the suburbs has been very much activated.

VII. CONCLUSIONS

92. Architectural and construction activities cannot exist and even develop without sharing the international experience and progressive tendencies in all aspects of its realization. Therefore, international cooperation is addressed with keen attention in the BSEC countries as a multifaceted modern phenomenon.
93. All the twelve BSEC countries have their own approaches and standards in the sphere of construction and architecture. This is due to the paces of economic development, national traditions and specific demands on the building constructions.
94. At the same time, contemporary economic relations between the BSEC Member States cannot develop without the exchange of experiences in the field of architecture and construction. There is a challenge to extend the range of application of new technologies and building materials.
95. The urban development of the cities in the BSEC countries is impossible without the application of new approaches in the construction projects and the use of the latest achievements in the field of architecture and design.
96. Modern age generates the necessity to introduce the new types of residential and commercial buildings. In many BSEC countries standards of quality housing are redefined according to the new stages of economic, cultural and social development of the societies. The BSEC Member States have to pay more attention to the examination of these trends in order to improve living and working conditions of the population.
97. Cooperation between some BSEC Member States in the field of architecture and construction has acquired a fruitful and mutually beneficial nature. The contractual legal framework is formed and the contracts for realization of the concrete projects are signed. The point of link is shared priorities of social and economic development of the countries: construction of houses and development of social infrastructure.
98. Among the most topical and urgent issues in the process of implementation of mutual agreements are: elaboration of the general plans of cities and agricultural facilities; construction of housing; production of construction materials; creation of assembly units for automotive equipments; establishment of service centers; planning and construction of agricultural settlements; reconstruction of residential areas. As a whole enhancement of cooperation with the BSEC countries opens up new horizons and perspectives.

99. It has also to be noted that the construction sector can make a significant contribution to mitigating the consequences of climate change providing at the same time many other social benefits. Political courage and will, innovative investment instruments and raise of the public awareness are key factors for the transformation of the construction sector. Existing policies in this area in the BSEC countries have to be implemented in the best possible way in order to achieve the outlined objectives while the new tools and mechanisms are to be applied to ensure further development of this sphere in the BSEC Member States.