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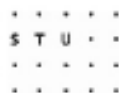
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It is an honour to introduce you a new issue of the journal TERRA SPECTRA which is devoted to real estate and real estate market. Real estate market and operations are closely related to the main orientation of this journal – to the questions of regional spatial planning. Only very few professional and scientific journals are devoted to real estate market questions, its present development as well as the turbulence which has distinctly influenced it. So this is the reason why we are trying to devote at least one issue of the journal TERRA SPECTRA to these questions yearly.

Real estate market has its characteristic peculiarities and patterns, knowledge which contributes to the possibility to prognosticate this market development and adopting of rational economic decisions on the level of enterprise as well as on macroeconomics.

A well-functioning real estate market plays an irreplaceable role in a functioning market economy. It creates conditions for using the potential of the area, its development, as well as to attract skilled labor into the urban area. The effective functioning of the real estate market significantly affects the economy as a whole, because in the properties are used for living and economic activity which creates conditions for improved quality of life.

Flagship initiative under the Europe 2020 strategy is "Resource efficient Europe", which is supposed to ensure growth during the next decade. This fact is found in various forms in published articles that focus on current real estate issues in a rapidly changing globalized world and also the consequences of the on-going turbulences in world financial markets. An integral part of that problem is the question of sustainability of construction and reconstruction of office and residential real estate, which is part of the restoration sites in terms of environmental aspects. An essential part is a demonstration of the importance of understanding the development of the real estate market in terms of its historical development. Better cognition of the real estate market and the relationships and patterns that operate on it, contribute significantly to the promotion of research in the field of real estate and in the theoretical as well as practical.

This issue has been prepared in cooperation with Prof. Ing. Koloman Ivanička, PhD., member of the Editorial Board and I very much regret having to announce that during preparation of this issue he suddenly died on 10th October, 2013, at the age of fifty-nine years. Our sense of loss will be shared by his colleagues, his students and many friends.

Daniela Špírková
Guarantor of issue



Andrej Adamuscin

THE SUSTAINABLE CONSTRUCTION OF OFFICE BUILDINGS AND ITS DEVELOPMENT IN VISEGRAD COUNTRIES

Introduction

Sustainable construction of commercial buildings try to minimize any negative impact on human health and the environment through an effective use of energy, water and other natural resources, protection of the occupant's health as well as increasing his productivity and well-being, mindfulness to the community and building surroundings, limiting waste, pollution and degradation of the environment. These buildings reflect not only the proposal for cost reduction but also the requirement for a sustainable development from tenants and investors, aided by legislative and normative regulation changes (mainly due the 2010/31/EU Energy Performance directive) in countries of the European Union.

The Main Characteristics of Green buildings

Green buildings are based on processes considerate to people and environment and make effective use of various resources (energetical, natural and social) for the whole durations of the building life-cycle, from creating project documentation through the finalising of building construction, use, reconstruction and liquidation of the building. This cycle is further enhanced by aspects of economic efficiency, functionality, durability and user comfort.

The characteristics and benefits of green buildings according to Czech Green Building Council (CGBC, 2013):

A) Takes an intelligent approach to energy

- Minimising energy use in all stages of a building's life-cycle, making new and renovated buildings more comfortable, less expensive to run and helping building users learn to be efficient too.
- Integrating renewable and low carbon technologies to supply buildings' energy needs, once design has maximised inbuilt and natural efficiencies. Safeguards our water resources.
- Exploring ways to improve drinking and waste water efficiency and management, harvesting water for safe indoor use in innovative ways and generally minimising water use in the sector.
- Considering the impact of the built environment on storm water and drainage infrastructure, ensuring these are not put under undue stress or prevented from doing their job.

B) Minimises waste and maximises reuse

- Using fewer, more durable materials and generating less waste, as well as accounting for a building's end of life stage by designing for demolition waste recovery and reuse.
- Engaging building users in reuse and recycling. Promotes health and well-being
- Bringing a breath of fresh air inside, delivering high indoor air quality through good ventilation and avoiding materials and chemicals that create harmful emissions.
- Incorporating natural light and views to ensure building users' comfort and enjoyment of their surroundings, reducing lighting energy needs in the process.
- Designing for ears as well as eyes. In the education, health and residential sectors, acoustics and proper sound insulation play important roles in helping concentration, recuperation, and peaceful enjoyment of property.
- Ensuring people are comfortable in their everyday environments, creating the right indoor temperature as the seasons pass through passive design.

C) Keeps our landscape green

- Recognising that our urban environment should preserve nature, ensuring diverse wildlife and land quality are protected or enhanced, for example by remediating and building on polluted land or creating green spaces.
- Adapting to a changing environment, ensuring resilience to events such as flooding, earthquakes or fires so that our buildings stand the test of time and keep people and their belongings safe.
- Looking for ways we can make our urban areas more productive, bringing agriculture into our cities. Creates resilient and flexible structures to a changing environment, ensuring resilience to events such as flooding, earthquakes or fires so that our buildings stand the test of time and keep people and their belongings safe.
- Designing flexible and dynamic spaces, anticipating changes in their use over time and avoiding the need to demolish and rebuild or significantly renovate buildings to prevent them becoming obsolete“.



Factors entering the process of green building construction according to Slovak Green Building Council (SKGBC, 2012):

- Efficient use of terrain – this starts with a careful choice of the building site (ideally reusing a previously build-up or industrial soil), minimal interference with nature, culturally or historically valuable objects and enhancing green sites.
- Pleasant, efficient and environmentally sound design that enables an energetically effective building operation that does not disrupt the surrounding environment, comfortable internal environment and building synergy as a complex with the surrounding environment (community, nature, transportation system and others).
- Use of safe and natural materials with the highest possible ratio of local resource utilization and if possible, use of existing structures, frameworks and recyclable material, safe recycling and liquidation of waste from the construction process.

Many big construction companies, material suppliers, construction systems and products are becoming increasingly specialized in the “green style”. They react to contemporary trends, advancements in green technologies, development in the world (energy crisis) and market demands (demand for quality and economical buildings).

In many countries such as USA, Canada or Western Europe there is a prevailing trend that public buildings must conform to high standards in sustainability so as to set an example for the private sector and as a proof of effective use of public funds. Based on these expectations, during the construction or reconstruction of public properties a high degree of green building certification is demanded. Many international corporations are also aiming for their facilities to satisfy the highest ecological and energetic standards. Higher initial costs of green buildings are returned multiple times during building life-cycle thanks to the energetic efficiency and positive influence on employee or student health and productivity as well as overall comfort of the tenant.

Studies from the past 20 years and examples of practice show that an effective design and green building construction can be achieved with minimal cost increases (in average a 2% increase, in some cases even a zero increase owing to a more efficient use of resources and environment) while retaining significant cost-savings (SKGBC, 2012).

Environmental or green certificates

A certain degree of clarity in the various concepts of green construction is provided by green certificates which

specify the criteria taken into account and to what degree. This is the reason for the numerous existing standards, norms and certification systems that pertain to varying aspects of sustainability in the construction process. Among the influential international standards there is ISO 21931 (Sustainability in building construction) and ISO 14000 (environmental management). The best known green building certificates are LEED (USA), BREEAM (Britain), HQE (France), Green Star (Australia and New Zealand) or DGNB (Germany and Austria) (SKGBC, 2012). At present probably the most used certificate is the American LEED (Leadership in Energy and Environmental Design), which began to be issued in 1998 by the U.S. Green Building Council. In Europe the most prevalent certificates are the British BREEAM issued since 1990 by the Building Research Establishment, French HQE (Haute Qualité Environnementale) and the German DGNB (Deutsche Gesellschaft für Nachhaltiges Bauen), which is awarded since the year 2008. A unifying certification authority has so far not been established in the European Union (Adamuscin, Durisova, 2011).

The individual methods vary to a certain degree, which is documented in Table no. 1 that compares the evaluation criteria utilized in these systems, as summarized in material conducted by the real estate consultancy firm King Sturge (at present - Jones Lang LaSalle).

Figure 1: A Comparison of Some Certification Systems

Assessment criteria	BREEAM	LEED	CASBEE	Green Star
Energy	✓	✓	✓	✓
CO ₂	✓	-	-	-
Ecology	✓	✓	✓	✓
Economy	-	-	-	-
Health and wellbeing	✓	-	✓	✓
Indoor environmental quality	✓	✓	✓	✓
Innovation	✓	-	✓	✓
Land use	✓	✓	-	-
Management	✓	-	✓	✓
Materials	✓	-	✓	✓
Pollution	✓	✓	✓	✓
Renewable Technologies	✓	✓	-	✓
Transport	✓	✓	-	✓
Waste	✓	-	-	-
Water	✓	✓	✓	✓

(Source: Authors' own on the basis of Haynes, B. – Nunnington, N. (2010), King Sturge)

As follows from the table, there are differences in the evaluation criteria between each system. Another major difference lies in the use and operational aspect of the various systems, with the CASBEE system being the most differentiated. CASBEE was the first system that really considered sustainability after building construction is over, although BREEAM is now equipped with the means to fulfill this requirement (Haynes, B. – Nunnington, N., 2010). Despite these differences, the majority of certification systems stems from similar principles in the process of design, construction and use, because all



buildings must fulfill the criteria for sustainable development. This is achieved through defining several dozens of specific requirements with a precise rating assessment. The certified projects collect points (credit) which are then used as the basis for final certification. The particular criteria are specified in manuals through hundreds of technical parameters. It is important to note that the so-called pre requirements are essential for the certification and if they are not fulfilled, the project cannot receive a certificate even if it scores the required amount of points. The requirements are different for various categories of buildings such as offices, shopping malls, hotels, logistical halls and apartments (the LEED certificate is not awarded outside of the USA). On the other hand it is possible to certify single building parts even in the case when the building as a whole does not have a certificate.

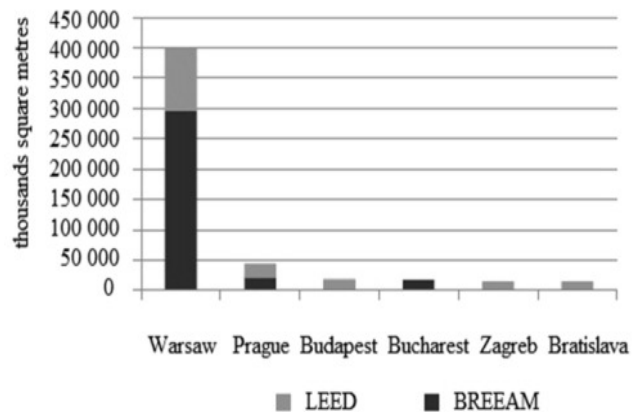
The most prevalent certificates in middle Europe are the LEED, BREEAM, DGNB and also its Czech variation SBToolCZ. These differ within each other in the level of their complexity. In Slovakia, Czech Republic and Poland, they are increasingly decision driving for investors, developers and end users when selling or leasing a commercial estate. They are also critical for long-term real estate investment funds because the certificate guarantees building quality, not only in terms of operational costs and energy spending but also taking into account the inner environment, employed technology, materials and other criteria. Very often these information are essential for potential tenants and specifically international corporations for whom sustainability is an important tool to achieve a more positive operational cash-flow, increase employee comfort and productivity, but also achieve a more positive general perception of the corporate environment and increase corporate prestige. It should be noted however, that certified buildings have higher construction costs ranging from 1 up to 7% (according to Arcadis) but this is compensated for by an array of economic and ecologic advantages and the market value of these buildings is markedly higher compared to non-certified building (Adamuscin, Durisova, 2011).

Development of sustainable construction of office buildings in the CEE region

The popularity of green certificates is on the rise in countries of central and southeastern Europe. This is confirmed by the amount of certified buildings and buildings that are currently undergoing the certification process. According to the Going Green in Eastern Europe study conducted by Jones Lang LaSalle, which focuses on the situation in Czech Republic, Slovakia, Poland, Croatia, Hungary, Romania and Serbia, there is now approximately 670 000 m² of land built-up with certified office buildings. Prague leads the ladder with by far the biggest amount of readily certified buildings (approximately 244 000 m²) with

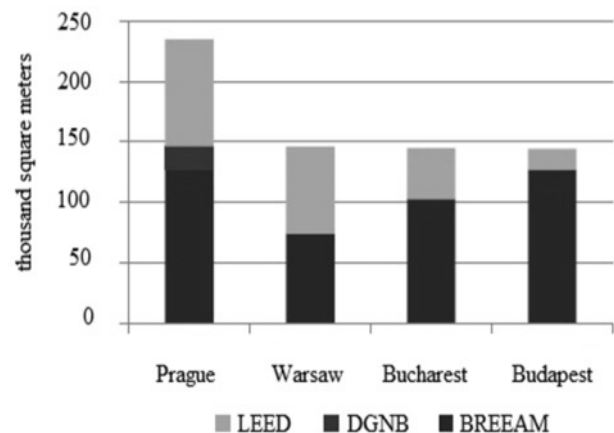
Warsaw, Bucharest and Budapest following with approximately 150 000 m² (Jones Lang LaSalle, 2012 / Figure 1).

Figure 2: Supply of green certified office spaces in capitals of selected CEE region (Sq. m/Useful Floor Area – UFA)



(Source: Authors' own on the basis of JLL, 2012)

Figure 3: Volume of Green Office Buildings under Construction that have applied for Green Building Certification



(Source: Authors' own on the basis of JLL, 2012)

Based on this data, we can conclude that European companies are reacting to the EU regulation 2010/31/EU Energy Performance in advance, because new office spaces in the region seeking certification are being build up on more then 500 000 m² of land at the moment. Warsaw is the fastest city to advance towards sustainability, with buildings on nearly 400 000 m² of land currently aspiring for green certificates. In contrast, Prague follows with only 50 000 m² and other cities such as Bratislava or Zagreb with even fewer buildings undergoing certification (Jones Lang LaSalle, 2012 / Figure 2).

According to the Going Green in Eastern Europe study, in central and southeastern Europe the most utilized certificates are BREEAM Europe Commercial and LEED for New Construction & Shell and Core (approximately 64% and 36% of currently awarded certificates in the region).



The first diagram shows that in Prague, the German DGNB certificate has also been successful but its presence among buildings currently undergoing certification is not significant, while the BREEAM certificate is in the lead thanks to a huge representation in Warsaw. However, from the second diagram it is evident that the LEED certificate is prevalent in Prague among buildings currently seeking certification (the study evaluates total administrative land yardage, not the building count). There is a growing interest for the LEED certificate among already finished buildings as well as for a similar BREEAM In-Use certificate that is currently being remodeled for international use (Jones Lang LaSalle, 2012).

According to the UN Environmental program, from a global perspective buildings are responsible for 40% of all energy consumption, 33% greenhouse gas emissions and 30% of all material consumption. For this reason, environmental certification is one way for developers, owners and tenants of commercial real estates to commit to sustainable development. For example the energy savings that are a result of a suitable building and operational design can have a major impact on lowering carbon emissions. Buildings that contribute to sustainable development tend to attract wealthier tenants, show a higher occupancy rate and accordingly a higher value for owners and investors. The Green building has become the synonym of quality. It is assumed that this fact will soon be further reflected in the building yield values and market valuation (Jones Land LaSalle, 2012).

In Central Europe the driving force behind green building construction are the developers who attempt to satisfy the demands of real estate investors. When evaluating whether an investment is appropriate, real estate investors either directly demand certification or at least take it into account. Furthermore, huge international corporations seek out green buildings to fulfill their corporate values of social responsibility, while ordinary tenants are interested in economic efficiency and lower operational costs.

In 2012 there were two buildings with a green certificate in Slovakia while two others were awaiting certification. In comparison, Poland had 32 and Czech Republic 22 certified buildings and it is assumed that by end of the year 2013 their number will duplicate. In Western Europe green buildings construction is a steady trend and in some countries even considered a standard. Potential tenants no longer ask if the building is certified but rather what degree of certification it owns. In addition, potential tenants routinely place high emphasis on inner build quality, while in Central Europe lower operational costs are still the decisive factor (Kantorova, 2012).

The phenomenon of improving the "green" criteria is most pronounced in the development of office buildings. Huge financial resources of international corporations as well as governments are allocated in this sector. Simultaneously, everyone realizes that buildings hosting a busy everyday life are the biggest energy consumers and producers of green gas emissions. On average, their

occupiers spend more than one half of active daily time inside which means that the building climate has a significant impact over their health. Research shows that it is well-advised to invest into a healthy work environment. For big companies occupying a space of more than 5000 m² the annual lease and operational costs comprise approximately 10% of their total costs. Personnel costs however, can reach as much as 80-85% and losses caused by sickness absence and lower productivity caused by low quality air affect medium and small companies likewise. Buildings have the largest impact on human life quality because we spend more than 90% of our time inside. Therefore it is important that we feel good inside the buildings that we occupy and that they have a positive effect on our health (Kantorova, 2012).

Conclusions

Energy efficiency and green building construction are long-term trends in real estate development in the Central and Eastern Europe. With tenants constantly striving to reduce operational costs and investors preferring project profitable in the long-term, it is precisely green buildings that can satisfy the contemporary demands. However, the undisputable contributions of green buildings are offset by higher construction costs. Additional costs depend on the type and version of certificate sought and in particular on the timely choice of the desired certification.

The advantages of green buildings for developers, tenants and investors are also evident from their quantitative benefits: according to studies published by the American Council for an Energy-Efficient economy, the energy expenditure of these buildings is lower by 24-50%, CO₂ production by 33-39%, water consumption by 40% and the amount of solid waste lower by as much as 70%. This translates to around 8-9%, cost savings, while the value of a green building is on average 7.5% higher and return of investment is improved by 6.6%. Statistics also point to an average of 3.5% occupancy rate increase or 3% higher feasible rentals. For the environment of Central Europe at has so far proven difficult to demonstrate quantitative benefits because of the fact that green building construction is so far only in its early phases here and long-term knowledge base has not yet formed (DTZ, 2011)

The reason for occupying a green building is not merely an image enhancement. The employers are well aware of the fact that green buildings provide a more enjoyable and healthier work environment that positively affects worker productivity. A report commissioned in 2007 by YouGov gives insight into the most important priorities of employees: work comfort, temperature and lighting have proven to be more important than accessibility. According to a BCO Guide study from 2009, green buildings provide a 25-30% increase in productivity and the savings caused by productivity increase are even greater than the savings on operational costs.



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Janka Bábelová

HISTORICAL BACKGROUND AND DEVELOPMENT OF OWNERSHIP NAD INSTITUTIONS IN REAL ESTATE MARKET

Introduction

Historical studies say that it was between 30,000 up to 5,000 before Christ when a human being – hunter slowly, step by step, changed to a human being – farmer. The fact is that many tribes still keep the primitive life style. Later the human being, when settling down, necessarily needed an origination of ownership of a certain type of dwelling.

Those who captured land and were able to protect it become primary land owners. The man as a farmer was able to care for a bigger number of children than a hunter before, families were getting bigger and there were more those who could cultivate land. Such families grouped to small communities, later to villages and some of them transformed to towns. They armed and protected against invasions of other tribes. Later their safety was secured by a created army and for all that people paid to a master or king who owned the land. So a primary system of land ownership, the tax system and the possibility of rental was created. The king logically gave land to his supporters. They collected a rent for land use from farmers. Later there was created a group of merchants who did not own land, but they owned houses which were built on it; they sold or rented them. After the fall of feudalism, land was divided into smaller parts which were bought by rich people, usually merchants or former aristocrats who survived changes of the social structure.

Legal origin of real estate market

Roman law, namely Justinian code *Corpus iuris civilis* (529-535), which was created by the initiative of Byzantine emperor Justinian I, stayed an influential legal tool also after fall of Roman Empire and achieved its renaissance in Europe in the twelfth century. It became a basis of many codifications in the ninetieth and twentieth century. Acceptance of Roman law had a big influence in Scotland, but limited in England.

Roman law created a concept of continental law about real estate, from ownership up to a specific interest in land as vassalage. Also mortgages have their origin in Roman law as well as in tribe law. Roman law also allowed for systematisation of private right and integration of acts on real estate into a certain system.

The statute *Quia emptores* was implemented under the reign of English king Edward I from year 1290 and it allowed for a purchase and sale which supported the importance of money and its use in trade. According to the statute any relationship between a master and a holder of land stopped to be inevitable for the tenure of land.

As Frascari states (Frascati, 2005), in the English legal system the ownership of real estate followed so-called fee simple, i.e. unlimited ownership of real estate. The institute of unlimited ownership of land so-called fee simple was utilized. It was exercised also in legislation of former English colonies. The organized trade with real estate is accredited also to England. Initially spontaneous ownership of land was on the basis of the rule, "if you fought for the land, so it belonged to you." Such acquisition of land ownership terminated after Norman Conquest of England in 1066, when William Conqueror by his decree declared himself as the owner of all land which he conquered."

Land tenure was allocated for various time periods mark as „ownership“ and „unlimited estate ownership.“ Unlimited ownership allowed for la and tenant to sell it freely, to transfer it after his/her death to heirs, or to leave it to somebody in his testament. Modern law recognizes namely land title to which is applied in terms of unlimited ownership. This helped the British to spread their supremacy overseas.

Ownership of land in Europe

On the basis of European Union EUI-Real Property Law - General Report (Real Property Law and Procedure in the European Union, 2005), acts on real estate are generally unified for the whole country, distinct regional differences is possible to observe in Spain and in Great Britain, nearly no diversion from generally valid legislative is possible to observe in federative countries as Germany, Austria or Belgium.

Legislative covering ownership and trade with real estates in Europe developed on the basis of tribal, feudal and Roman law. The feudal system arose on the continent after big movement within 6th up to 8th century in Britain after Normans gained control over it in 1066. Feudal system of the country organization assumed that all land was owned by the king and/or a nobleman and provided to common people as a loan, they then in exchange provided a part of harvest and/or personal services, preferably military. The feudal system later lost its importance on the British Isles but in England land is still formally considered as the property of "the Crown". In Scotland this condition was abolished in 2004.

Development of ownership and ownership relationships

In Europe the ownership cannot be timely divided whereas in Common Law valid in Great Britain the ownership might be timely limited. Common Law – it might



be written and unwritten - is the legal system based on legal conventions which settled in a certain community and they are generally recognized and followed. The difference between the recognition of ownership in common law and civil law is in the existence and wide use of trust in jurisdiction of Common Law. Scotland abolished the validity of feudal law (Abolition of Feudal Tenure etc. Act 2000 – Abolishment of Feudal Ownership etc., Act 2000), by that it joined the valid European property law.

The most common type of real estate is real estate without liabilities - without burden, which ownership is not timely limited; it is an economical equivalent of ownership according to Civil Law. English common law recognizes another difference between legal property right and property share according equity and interests in land. The right and equity represents different systems of jurisdiction coexisting side-by-side. Both types of real estate might be registered, in the case of missing registration the rule is applied in favour of legal property.

Trust– Property administration - is a tool of the Common Law and in Civil Law does not have any parallel. It has a lot of functions in land tenure and at transactions with it. It involves three parties:

- a trustor,
- trustee, who becomes an owner at law and takes a control over the land,
- beneficiary (the owner of benefits), who is the owner at equity and utilises the benefits from the land, e.g. he/she can use it, or gets rent from it.

Trusts are mainly used as an agreement when managing donation to successors, to manage co-ownership between husband and wife, at death or charity.

The rule superficies solo cedit is implied in all European legal systems and it says that the land ownership involves also everything what is erected stably on it. The exception is only rental of building sites and ownership of flats. There are some exceptions to this rule in the countries of Middle and Easter Europe. Vertical scope of ownership comprises also the earth under the land and sky above it.

Further exceptions in the form of private ownership of real estate exist in reform countries of Middle and Easter Europe. They arose on the fact that the interest of former social regime was to abolish private ownership rights and lack of interest in proper registration of real estate ownership. At the same time it caused that it was legal to build a building on the land of other ownership. The fall of Communism brought re-privatisation and effort to abolish mentioned illegal ownership.

Importance of development of ownership relationships for American capital

A world-renowned economist Hernando de Soto (Ford, 2009) was interested in the role of ownership system for the economic development. He studied how professionals managed the implementation of illegal property into the

legal system of property. He investigated the land registers in Great Britain, Alaska and Japan. He found out that professionals who deal with management of real estate system have distinctly different interests. They deal with problems which are related to ownership rights. As important seems to be to rework the institution which is responsible for administration of ownership as well as to record them to one database and to digitalize maps and frontiers between plots. But experts do not solve how to give people the right for legal ownership of properties. Implementation of legal system of real estate ownership was not related that much to the question of available technologies but with the need to modify legal regulation to economic and legal needs of majority part of inhabitants.

The USA which was 150 years ago a developing country with young creating legal system fought the arrival of a number of immigrants, so-called squatters (illegal settlers and farmers), gold diggers, armed men, or illegal entrepreneurs. Politicians realised that forces changing law are out of their control. In 1862 Homestead Act allowed settlers to own 160 acres of land if they agreed to settle there and develop it. From the side of the government it was not a demonstration of generosity but more so-called fait accompli, or irreversible step, done in non-standard way. The USA by a change of law changed assets of settlers and gold diggers into capital in the form of private ownership. The history of the USA in this way is reminded by changes in former communist countries associated with extensive migration of inhabitants, political instability, growth of illegal activities and general dissatisfaction with old-fashioned legal system insufficiently interconnected with reality.

The creation of formal legal ownership for American settlers and squatters created a base for birth of capital generation and overall this step is considered as a political strategy how to help the Americans in their effort to use enormous sources in the country, to encourage their imperial ambitions and to overcome discrepancies between legal and illegal.

Developing America and in Juxtaposition of old-fashioned British law

For 16th century was significant unprecedented movement of the Europeans from the Western Europe to the North and South America. The legal system was the base of everything in developing America. The law became a tool for all those who were selling land or they left it to other ones. If a settler counted that his gained land has a rectangular shape later he was surprised by finding that the land of his neighbors is in a shape of circle and overlaps with his one. Technical drawbacks in geodesy also contributed to chaos and insecurity in ownership. Overlapping of land evoked conflicts. As Konig says (Konig,



1987), it lasted until John Winthrop IV did not create the table of variations for land parceling in 1763.

As Hoffer states (Hoffer, 1998) far from England, sparsely settled, rich in mineral deposits, inhabited by men and women who knew what they wanted and reached out for lucrative purchase, when it occurred, and the colonies aspired for autonomy.

Squatting

Amelia Ford (Sokolski, 1957) in her study states that the first settlers in Connecticut were illegal invaders on their territory and their ownership rights based only on occupation of land and purchase of land from red Indians. These colonial illegal land owners occupied and cultivated at that time

100 000 acres of land, without any signs of legal ownership. Already in 1634 in Massachusetts the Supreme Court limited illegal land occupation by a decree on recording of all land allocation. Geodetic works ran through all towns in the presence of police.

The extensive ignorance of court orders from years 1634 and 1635 by illegal land owners led the legal assembly to intervene and enforce „a certain procedure to force people to register their land or to punish those who neglected that order.“ (Konig, 1987)

But a number of arose conflict was not possible to settle as there did not exist a sufficient amount of legal tools. Illegal owners began to use de facto tools which directed to legalisation of illegal land ownership. The most of discrepancies became evident in remote unpopulated places, today known as Vermont and Maine. To avoid the New York request the governor of New Hampshire Benning Wentworth „acted on the base of tenet that ownership is nine tenths of law ... and executed a free land allocation for citizens of New Hampshire and Massachusetts ... 131 districts were allocated to more than six thousands selected groups of individuals.“ (Tatter, 1979)

Squatters without belonging to any of states occupied whole areas and settled in Vermont wherever it suited them. Soon they came to the fact how important is mutual harmony and they started to organize petitions at governor of New Hampshire and later also of New York where they requested allocation of land including its settlement and regulations which would prove them on their land. (Tatter, 1979)

Squatting was often supported by rich politicians who wanted to utilize colonial sources. In many colonies politicians believed that only immigration can finish territorial development. To reach this goal, colonial politicians allocated land to individuals and groups of people to let them settle on non-cultivated land with promise to legalise the right for land title on the basis of occupation and cultivation of land. Squatters perceived the

formal system as too problematic and complicated. British law became more and more useless for colonial way of life and work.

Newly created social contracts

Squatters started to create their own types of extralegal ownership rights known as „tomahawk rights,“ „cabin right“ and „corn right“.

- Tomahawk rights were used so that initials of the person who cut the trees were engraved on the bark of cut tree or trees at the beginning of spring. Already in 1660ties squatters in Maryland implemented the custom to tree marking on the land which they wanted to gain before it was measured by the consent of the main colonial surveyor. At the end the American Revolution was the custom to mark trees as expression of land ownership that important that one military official wrote: „These men from the borders are used to settle on the best land creating from the tomahawk right or cultivation, as they called it, a sufficient legal title.“ (Ford, 2009) (Ford, 2009, s. 130).
- „Cabin right“ and „wheat right“ meant staking of the land by building of a cabin or gain of wheat harvest. Important was that these extralegal rights „were bought, sold and shifted - exactly as official ownership rights.“ (Sokolski, 1957) Even these rights did not give to an owner a legal right to land, there is no question that such extralegal rights for ownership of real estate could help avoid conflicts and became the base for legal right some years later.

Despite the fact that local politicians agreed with extralegal contracts, squatters met with hostility, constantly provoked conflicts with native Americans due to invasions to their territories. They were also threat for elite layer of society who was afraid of losing of their large property. That is why one of the members of elite, George Washington, in 1783 complained about „bandits who resisted official power, while they collected and disposed with the cream of the whole country at the expense of many.“ (Konig, 1987)

Even George Washington himself wanted to expel people who occupied his agricultural land, but his lawyer warned him, „that if he wins his law-suit against immigrants on his property, they will probably burn his barns and fences.“ (Ford, 2009) Relationship between other states and squatters also worsened. Migrants from Massachusetts started to settle in Maine, it means on the area which Massachusetts claimed already in 1691. Later politicians from Massachusetts tolerated flow of squatters, but after Revolution and crash of its treasury



these politicians looked at vast area of land as a main source of income. (Sokolski, 1957) Suddenly squatters in Maine became an obstacle for sale of big pieces of land. Governor in 1786 issued a regulation which banned prohibition of squatting in Maine. (Sokolski, 1957)

Massachusetts in an effort to calm potential buyers nominated a committee for investigation and requiring payments from illegal users of land. Majority of squatters refused to pay or leave the land they occupied. Instead of the effort to reach a compromise the state ordered to sheriffs to imply a claim to cancel the tenure of land. It led to open war state. Sheriffs and their people were often victims of enforcement of executions. Partially as a result of political consequences of hostility between squatters in Main, Massachusetts agreed with the creation of the state Maine in 1820. Also other colonies tried to suppress squatting also on private and state land. In 1763 up to 1768 in Pennsylvania for squatting they threatened by death penalty. Despite of it squatting doubled.

Conclusions

Legislative which rules the real estate market in Europe has its base in tribal, Roman and feudal law. Nowadays valid law on real estate is a combination of English Common Law and law valid on the European continent. Great Britain has different law in its parts England, Wales and Scotland. In other European countries ownership is solved on the regional level, e.g. in Spain. Eastern European states rule ownership of land by similar law as Western European states.

History of ownership extents to ancient history of Roman law and later to 13th century when the statute Quia emptores under the rule of English King Edward I allowed for purchase and sale of land. William the Conqueror finished originally unrestrained acquiring of land he claimed himself the owner of all land, which he allocated to his supporters thanks to what the ownership became a building element of the feudal social system. It lasted until the end of 18th century.

The most common type of owned real estate is real estate without burden. Land ownership in Europe can be timely limited. The Common Law recognizes so-called trust, i.e. administration of property and it is used at donations to descendants, co-ownership and also at charity. The rule superficies solo cedit means that to whom land belongs owns also everything what is erected on it. The Roman law implies the rule that a small part of building unwittingly built on the foreign land is in the ownership of an owner of main part of building.

Ownership in the Unites States underwent an interesting historical development, where immigrants originally wanted to apply the English Common Law. Immigrants illegally occupied land, built houses on it and created illegal ownership. They established the

tradition of so-called squatting. Illegal settlers forced the state to search the way how to implement illegal ownership into the legal system of the United States. Squatters in effort to gain legal ownership of land created their own law as tomahawk right, cabin right and wheat right. Homestead Act was issued in 1862 where the state agreed to allocate 160 acres of land for settlers if they agreed to cultivate and improve it. Squatters also enforced approval of option to purchase land which they occupied illegally. Californian Golden rush also contributed to the need to solve ownership discrepancy and to create law for land rich in mineral resources. They initiated creation of associations for defending of their illegal rights to land.

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Dana Barátová

THE INFLUENCE OF THE FINANCIAL CRISIS ON DEVELOPMENT

Introduction

Depression affects and stems from the economic environment. The proof characteristics are stating about the economic and social level, in the world but also in Slovakia. Disparity between economic performance are not only countries, but also at regional level in the country. In times of crisis, the regional disparities often aggravated. Although this fact shows selected socio - economic indicators, which are indicators of growth or decline in economic and living standards of people living in the country.

Construction has an irreplaceable role in a well-functioning market economy. Attracting skilled workers to the area creates conditions for its development. It also gives developers the opportunity to organizations and people invest. The mortgage crisis has caused disruption well-functioning real estate market, which has forced financial institutions to increase their vigilance in providing credit funds.

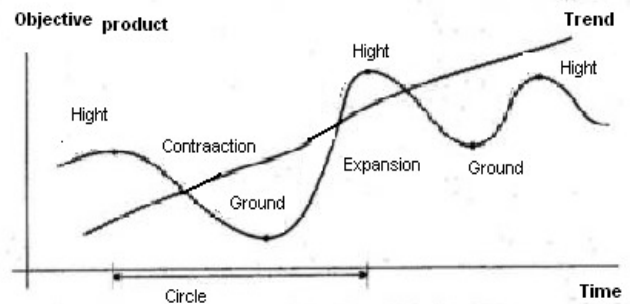
The financial crisis has made it more difficult to developers especially their financing system, since it limited the availability of external funds for investment projects. Until early 2008, the situation on the market to assist developers in creating their profits 50% increase in property prices over the total cost of construction, development organizations currently stagnant and waiting for the overall improvement of the situation on the market, or invest in the knowledge achievement of profit. The situation is also reflected in the financial institutions that required in 2008 only 15% of the co-developers to invest in projects, while today the percentage varies between 30 and 50%.

Economic crisis

The current economic crisis is actually a recession. Some economists use the term depression, but in our view, the current crisis has now entered into such proportions that could carry a similar epithet. The world economy is in a recession and to support the allegations, we help the definition of recession. First, which can be difficult to prove it, the economy growing less than the long-term trend growth and has spare capacity. The second definition is in two consecutive quarters of declining GDP. (The economist, 2012)

Crises are normal cyclical developments in the economy, as demonstrated by Figure 1, where the growth phase of the alternating phases recession.

Figure 1: Cyclical development of the economy



(Source: Makroekonomie, 2002)

The current global crisis began as a mortgage crisis in the United States, continued financial crisis, which eventually turned into an economic crisis with a global dimension and now we face new threats debt crisis and inflation.

To classical, consumer and mortgage loans were added to credit cards, issued by the extent of funds increases, he has the potential to limit lending to people and countries to which superimposes the process of transferring taxable wages from the EU and U.S. in tax havens, which represents a reduction of the benefits of national budgets by businesses. On the expenditure side of the budget expenditure growth in health, infrastructure and social sector or remain at the same level, leading to an expanding deficit and public debt growth. (Staněk, P., 2011)

When we talk about the current crisis, we can conclude that the term crisis began to be used at the end of the third quarter of 2008. While in 2008 global product grew by 2.8% year on year, which may sound positive, the fact is that in recent years the global economy has grown much more dynamic. The growth has been disrupted because a significant decline from the third quarter of 2008. The global economic crisis is fully apparent in 2009, when it reached the bottom and most of the world economies were plunged into negative territory.

THE ECONOMIC CRISIS IN SLOVAKIA

Europe significantly affected by the financial crisis in the third quarter of 2008, when it began to be noticeable trend of transferring to the United States. The European banks were in toxic assets. Which resulted in a similar pattern as in the United States by creating rescue package, guarantees, or new legislation. Monetary policy of the ECB (European Central Bank) was cautious as Fed policy, but



even so, the main interest rate was reduced to 1% (in 2008 stood at around 4%). Gross government debt burden has risen since 2008, which portrayed a new nature of the debt crisis in the European Union, specifically in the Euro zone.

To the parliamentary elections of 2010, the situation was similar in Slovakia than in the rest of Europe. The Government handed out revenues from economic growth did not consolidate the public finances, but was inspired by other European governments in creating stimulus packages. Example is the so-called. "Scrap", which was convenient for a small group of people who had enough money to buy a new car. Those who have old cars belonging to the scrap did not have enough funds to have already bought a new car and used state-subsidized discount. Thus, "scrap" materialized main objective for which it was created. Country motivate consumers to reduce savings and future spending on unnecessary immediate restoration cars.

As a technology leader Europe needs to raise government spending, but business investment opportunities, due to job creation.

The crisis has a large impact on the world economy. "The pressures on the banking sector resulted in tightening credit standards and thus further limiting access to credit and worsen the liquidity of the financial sector, helping to spill-over problems from the financial markets to the real economy." (Rokovanie vlády Slovenskej republiky, 2010)

Difficult accessibility of credit to various sectors reduces the demand for services and products, the main transmission channel in this area is the area of mortgage financing, which because of tightening credit reduces demand for construction. The financial crisis is most manifested in the construction sector, as illustrated by the decrease in orders for construction of homes, which declined in the euro area in the first quarter of 2009 compared with the previous year, an average of 20%.

Signs of the financial crisis have appeared not only in construction but also in selected socio-economic indicators.

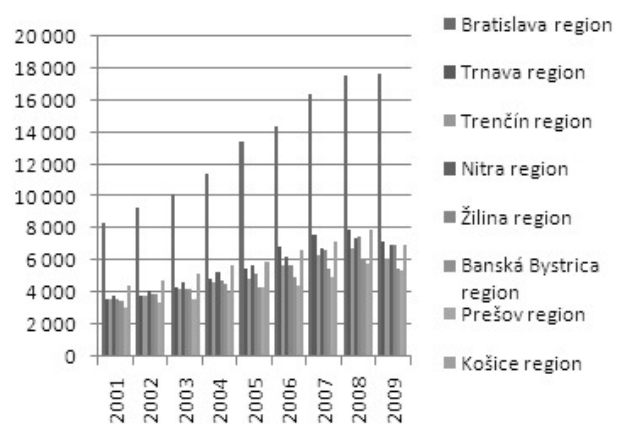
THE INFLUENCE OF ECONOMIC CRISIS ON SOCIO - ECONOMIC CHARACTERISTICS OF INDIVIDUAL REGIONS OF SLOVAKIA

Structure of Slovak regions is strong and ever deepening. Regional disparities in Slovakia are the result of interaction of multiple groups, conditions and factors, which result both from the lack of intra-market environment, the lack of economic interdependence within regions, but also of high unemployment, population, differentiated quality of human potential of a particular undersized regional infrastructure. Determining factors of regional disparities in Slovakia caused by these factors, which are compounded by the regional specificities.

Gross domestic product in regions of Slovakia

The distribution of production in the various regions of Slovakia is very uneven. A substantial proportion of GDP accounted for by a small number of large enterprises. Another factor influencing the production and the GDP is the number employed in different regions. High GDP creation is in the Bratislava region, which is economically strongest regions of Slovakia with the highest number of workers. It is due to both its urban character and the status of the capital, which are concentrated in the management and operation of institutions with high added value. In other regions the situation is considerably more balanced. (MDRRSR,2012)

Figure 2: GDP by region in € Slovakia in 2001-2009



(Source: Štatistický úrad, 2012)

During the period 2001-2007 occurred annually to GDP growth in all regions of Slovakia. However, the situation changed to 2008, where in the Bratislava region there is a slight increase in GDP, but in the Žilina region is significantly higher annual growth, if GDP is measured in current prices. In percentage terms, the Bratislava region have increased by 6.4% between 2007 and 2008 in Žilina region have increased by up to 11.5%. Since 2008, we can see the onset of the recession in all regions of Slovakia, while in 2009, Bratislava region is not so concerned onset and impact of the economic crisis.

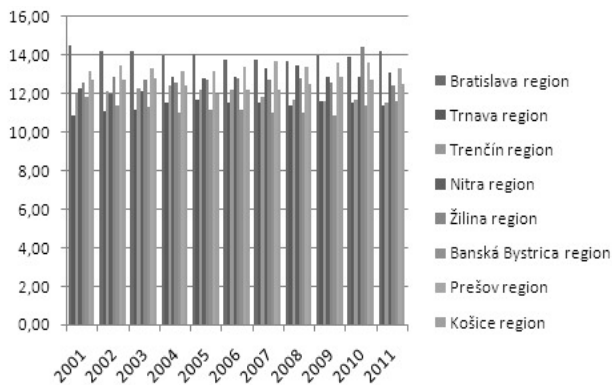
The employment rate

The expected growth in the number of workers reflects the evolution of unemployment. The increase in the number of

Workers can be seen most in Prešov, Košice and Banská Bystrica. In these regions while there is such a rapid decline in unemployment due to demographic growth. Partial cohesion policy will have to be focused on job creation in these regions. Greater increase in the number of employees can be seen only in the Bratislava region. (MDRRSR,2012)



Figure 3: Trend growth rate of employment by region SR



(Source: Štatistický úrad, 2012)

The highest number of workers under the ESA is in the Bratislava region. It is mainly due to the fact that in this region consists of most jobs are filled by workers from other regions. It is Bratislava with the status of the capital seat of many institutions nationwide character and seat of government. However, the expected number of workers in the region will fall as opposed to other regions because of the relatively more expensive labor force decline economically active population and the lack of available labor, while the expected marginal labor migration in this region due to growth and career opportunities within the surrounding regions (especially the Trnava region). (MDRRSR,2012)

The GDP, employment, labor productivity and foreign direct investment is well above the average Bratislava Region and worst situation is in the Prešov and Banská Bystrica. Apparently, this trend will not change anytime soon. In the last decade to see positive trends in Trnava, Trenčín and Žilina. In Nitra region are observed largely surprisingly adverse trends. Analysis of the economic development regions confirmed the existing known position and the specifics of each region, but also highlighted some of the changes and trends over the past 10 years occurred in devising a regional development strategy to not be taken into account.

Slovakia is a small open economy and therefore we will elaborate development of the global economy expect a substantial slowdown in economic growth in Slovakia. Since we assume that the world economy will gradually recover from the recession. The period after 2010 is marked by a gradual economic recovery process again, which will have an impact on expected GDP growth. The highest average annual GDP growth is expected in the Prešov region and lowest in the Bratislava region. Too long significantly higher growth in the region has only a slight effect cohesion, as production increases considerably lower compared to the base. Highest GDP per capita in constant prices is expected in the Bratislava region, the lowest in Prešov. This variable significantly distorted picture of economic power, because a significant proportion of GDP in the Bratislava region is made ??up of

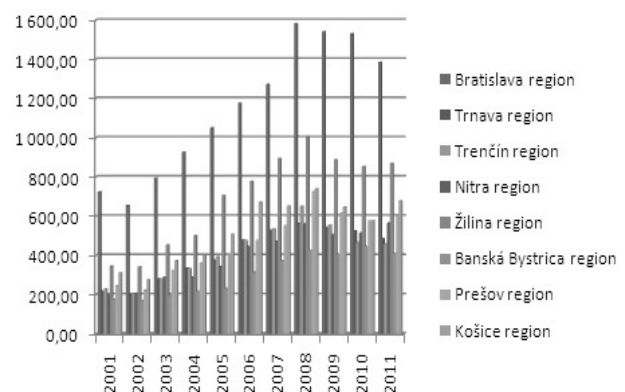
commuter workers from other regions that produce output in the Bratislava region, but a significant proportion of consumption transferred to their home regions. The Bratislava region is almost a quarter of people. Better indicator to compare the strength of the region's labor productivity per working under ESA (place of work). (MDRRSR,2012)

Construction production

Construction is despite the impact of the economic crisis in the private and public investments in the last two years been regarded as one of the key sectors of the Slovak economy. In 2011, its share in GDP stood at 8.5% (current prices), construction formed 9.4% of the total value added and employed around 7.9% of the total number of persons employed in the national economy. (Ministerstvo dopravy, výstavby a regionálneho rozvoja Slovenskej republiky, 2012).

The construction production can be seen the greatest disparity between the Bratislava region and other regions of Slovakia.

Figure 4: Construction output in mil. € B.C. by region SR



(Source: Štatistický úrad, 2012)

Year the volume of construction output in construction enterprises in 2005 a total of -1.7%. Growth in construction output in 2011 was achieved in four regions, namely in the Kosice region, 16.2% in the Prešov Region of 4% in Žilina region of 0.7%. In other regions of the SR occurred in 2011, the decline in construction output by -2.7% in Trenčín region to 10.5% in the Bratislava region. As in both 2010 and 2011, the volume of construction by individual regions unevenly distributed. The largest share of 25.4% produced building businesses Bratislava region and the lowest proportion of 7.5% by enterprises Banská Bystrica region. In other regions, the share of construction output ranged from 8.4% in Trenčín region to 15.9% in the Žilina region.



CAUSES AND CONSEQUENCES OF FINANCIAL CRISIS ON THE DEVELOPMENT ACTIVITIES

To understand the mortgage crisis and its impact on development activities is necessary to clarify the causes that triggered and caused great disruption in the areas of economic policy almost worldwide.

The mortgage market is a financial market that is developing and rapidly respond to changing interest rate, monetary and credit conditions, and is characterized by the cyclic alternating phases of growth and recession phases in the cyclical development of the economy.

With globalization created one big globalized financial market, which meant opening the banking and financial sector of each country. In the world of financial institutions began to develop speculative operations by purchasing securities tied to the U.S. mortgage market, which have good marketability. Important role in the evaluation of these securities played by credit rating agencies that rated them as low-risk. It follows that the interconnectedness of countries and globalization have caused avalanche last crisis response. Monetary policy of the U.S. Fed early 21 Century caused the shifting of the real economy false information to investors by artificially lowering interest rates.

The basic problem in mortgage lending in the U.S. has been almost trouble-free access to credit for housing. Banks provide so. "Paperless" loans, which meant that it did not examine the creditworthiness of the client important was his only entry in the central register. Another important factor was that interest rates since 2005 have increased significantly, making loan repayments increased significantly. The most significant factor is that Americans in general are accustomed to "living on credit", and do not perceive risks, such as the threat of rising interest rates and also the possible reduction in property prices, which constitute a guarantee loans. From the analysis of experts showed that more than a million Americans in 2008 came the housing. (Špirková, D., Zajacová, J., 2010)

Causes and consequences of the financial crisis were reflected mainly in 2008, when the Slovak financial institutions compared to 2007 by only one-sixth of housing loans. In recent years, this trend has only deepened. Do prudence receive not only financial institutions but also clients who are changing their view of long-term indebtedness and become much more cautious.

Given that financial institutions are currently much more cautious in providing funds for investment projects, development organizations not only invest, but began selling its upcoming projects strong financial entities.

Figure 5: **Development of residential property prices in the SR**
(Source: Národná banka Slovenska, 2013)



VIEW OF DEVELOPMENT ACTIVITIES IN SLOVAKIA

The best years of construction have developers in the country under the Tatras already behind. This is due to saturation of the market, but also weak purchasing power, thus excluding the Slovak capital. Nor is there most optimal situation.

- **BRATISLAVA**

An example is the behavior Penta Investments, the project Bory Mall. With its construction will be initially launched in 2012 and bring 65 thousand square meters.

In 2012 and opened its doors as a multifunctional project for "Central" from Austrian ImmoCap development company with area of 36 000 m² retail-led ECE. In addition it expanded its operations in 2012, the largest shopping center in Bratislava "Avion" growth up on 4 600 square meters and Ikea about 14 thousand m².

- **SLOVAKIA AND THE SECOND LARGEST CITY OF KOŠICE**

Their activities in the country restricts, one of the largest local developers in retail, HB Reavis. Closest to the opening of its branch in Trenčín, but first the developer must negotiate with the local government. Even less clear is the realization Aupark in the castle. Currently, the project is frozen. This is mainly poor tenants' willingness to expand to other cities in Slovakia. It will shortly be because the largest retail achievement in eastern Slovakia construction shopping center in Poprad, under the baton of BZ Group. The project titled "Horse Poprad" bring 20 thousand m² of retail space. Construction will begin in 2013.

- **CENTRAL SLOVAKIA**

In central Slovakia, in early June awaiting the opening of the shopping center "Europa" Shopping Centre Zvolen (24,000 square meters) of a VAV Invest. This will build a shopping center in Levice. "Europa" shopping center will bring 15 thousand m². Gates should open in autumn 2013.



VAV Invest will expand even the largest shopping center in Banska Bystrica. Construction of the second phase of the local "Europe" will begin in spring 2014, and will bring 16 thousand square meters of retail space. (Centers Dating, 2012)

Conclusions

The global financial and economic crisis is most accurately expressed in the construction industry in 2009, when construction output in current prices fell by 9.1% to 5.7 billion. Euros at constant prices by 11.3% to 4.9 billion. Eur. In 2010, construction output in current prices fell by 3.7% to 5.5 billion. Euros at constant prices by 4.6% to 4.7 billion. Eur. From this perspective, the construction was characterized 2010 as a year of decline. Development of construction in 2011 confirmed the continuation of the negative trend from 2010 or 2009. Construction production reached a total of 2011 in current prices the volume of 5 499,8 billion. Euros compared to 2010 and decreased by 0.6%. (Ministerstvo dopravy, výstavby a regionálneho rozvoja Slovenskej republiky, 2012)

Slovakia is a small open economy and therefore we will elaborate development of the global economy expect a substantial slowdown in economic growth in Slovakia. Since we assume that the world economy will gradually recover from the recession. The period after 2010 is marked by a gradual economic recovery process again, which will affect the projected GDP growth as well as the construction product. The highest average annual GDP growth is expected in the Prešov region and lowest in the Bratislava region.

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ECOLOGICAL ASPECTS IN RESTORING MONUMENTS – POTENTIALS OR LIMITS?

Introduction

Permanent and persistent crisis of culture belongs to apparent signs of modern world in this century. Its impact is so perceivable that it can be seen in all the life spectres of society, not excluding architecture.

A temporary period of “the civilisation of insecurity” is characteristic in gradual scale of values loss, condemning the authority, traditions, cultural roots... This state is thought to be unacceptable because it deforms natural relation of a man to himself and to his own culture and nature.

Current situation brings new questions in new context of the global world. Protection of natural and cultural environment is becoming the theme of discussions for a few decades. In the field of architecture we talk about care of monuments of architectural heritage and applying new strategies and procedures in ecological architecture, as the reaction to the intensive building towns in previous decades. Both processes are oriented to the protection but the aim of protection is an artificial building product in the first case and a human or nature in the second one. It can seem these two processes to be contradictory at first sight, but after a profound reflection we can state that it is an emphatic procedures application in architectural design.

Until now these tools of protection operated separately in society but increasingly devastated natural environment and the constant threat of gradual climate changes brings pressure not only into the creation of modern structures but opens up also new issues of peace interventions specifically protected cultural areas. The challenge these days is the need of internal linkage disclosure between the cultural heritage and ecology. The ecological building can draw from traditional architecture on one hand using maximally natural potential of the place where it was built; on the other hand, the climate changes, increasing energetic demands and higher requirements of living standards can also bring requirements to new interventions in protected historical structures. Only few experts have entertained this issue by today, and therefore the Faculty of Architecture at Slovak Technical University in Bratislava entered a dissertation thesis on the topic: “Alternative materials and energy sources during relic renovation”, that will try to make a certain analysis of current state and also a proposal of systematic and differentiated approach to solutions of individual model situations that could theoretically happen. In this context the monument care will not be seen only as a limiting factor for the rate of modern intervention to improve the energy statement of monuments, but also the potential for

preservation of tradition as a prerequisite for maintaining cultural continuity. Cultural continuity will be seen as one of the means to maintain sustainable cultural life.

In the following part of the paper, we will pay careful attention to the various aspects that will be examined in the mentioned dissertation thesis in the field of heritage care and also ecologically- bound creation.

Current situation in abroad

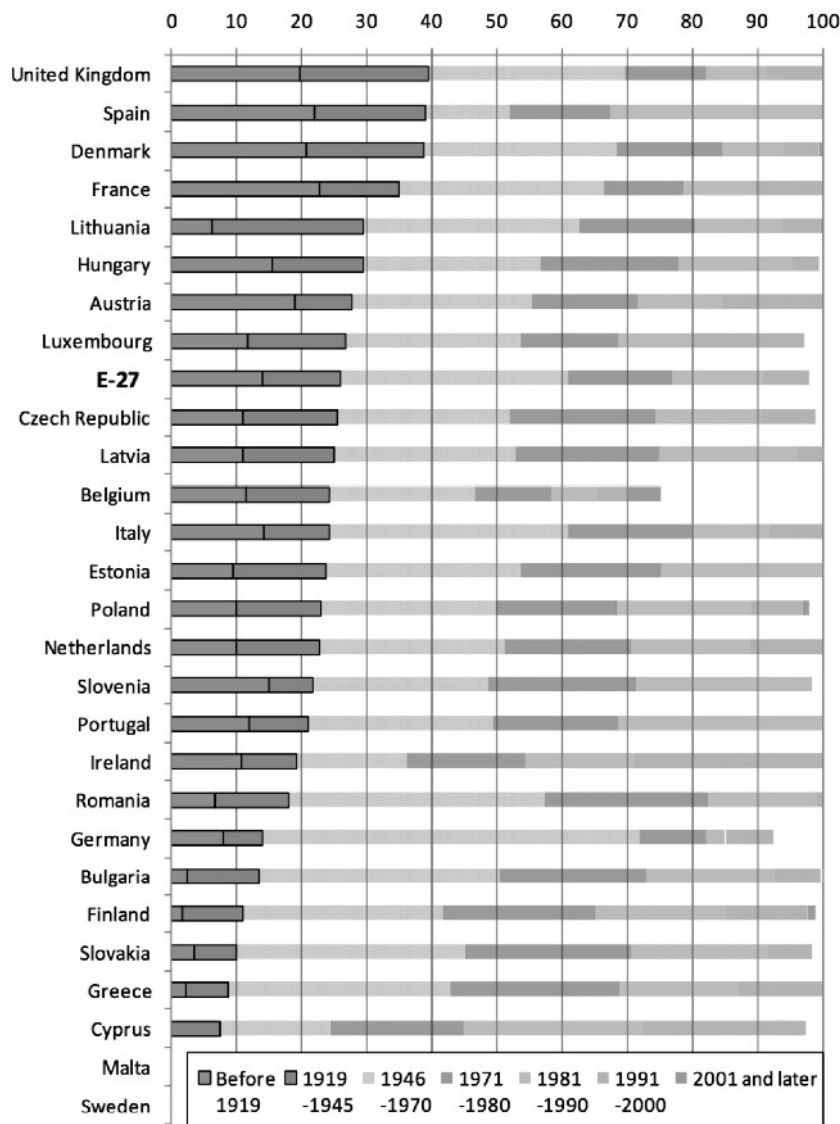
The issue of implementation process of ecological procedures into traditional structures has exceeded geographical boundaries and it became popular also in rest of European countries, where we can find first pilot projects. Consequences of human activities are alarming and so the most important CO² producers are trying to reduce them urgently and the most effectively. One of the biggest - United Kingdom, has the largest historical base in European sector

What is more, 28 percent of all emissions belong to households, which are mostly categorized as traditional structures, mainly built before 1945. For this reason, British Cultural Heritage works against for users guides for improving energy efficiency of traditional homes and decreasing CO₂ values in a way of self-discipline of owners. Similar activities were recognized also in the countries like Scotland, Italy, Germany, states of Baltic Sea Region but not only in guidances publishing but also research projects. (3ENCULT, COOL2BRICKS, HELT...). UNESCO also puts emphasis on these significant facts and so their Policy Document on the Impact of Climate Change on the World Heritage Properties is aimed primarily to importance of monuments preservation in danger as a result of climate changes.

Preferred approach abroad nowadays is not suitable for every European country because of different size of monument bases and cultural identities. We believe that approach of increasing effectivity in historical buildings could destroy the most precious values if it will be applied without consideration of all individual cultural and economical possibilities and aspects of every country. More than suitable is to clearly define conditions and limits which can eliminate an amount of inadequate applications and methods. It is important to talk about new approach based on transdisciplinarity which could be reached by analysing and choosing the best of all participated specializations. We suppose that this is the way how to create full-valued dialog among all professions and architects.



Figure 1: Share of dwellings for periods of construction for EU-27, reference year 2001, ordered by share of buildings built before 1945.



(Troj. 2011, available online http://www.3encult.eu/en/deliverables/Documents/2011_EM_Troj_Impact.pdf).

Landmark preservation – its limits and potentials

Appraisal of limits and potentials of protection of architectonic heritage changes evidently since the monument care arose. It is a part of culture that is dynamic as a system and markedly adaptable. Its meaning is also understood in different ways in different cultures.

In traditional and pre-modern system of culture and environment the protection of cultural heritage is thought to be a part of natural way of life. The way of life of a community is equal to the way of life in monuments – a monument does not mean to have neither an evident limit, nor a potential.

Modern understanding of cultural systems must accept a high measure of individualism and innovation. New impulses are put into traditional structures so much that the needs of assign of “islands”, for which specific requirements are valid. The care of monuments starts to insist on protection of traditional structures – it is becoming a limit for unlimited sanitation of the old and applying the new one – the modern one. There arises a conflict between the scales of acceptance of something modern and keeping the traditional part – the cultural identity is losing.

Postmodern understanding of cultural system is characteristic in high level of self-reflection of society, for example with regard to ecological risks, social integration,



cultural homogenisation, globalisation, migration of the population, modern Medias, unlimited diffusion of cultural artefacts. The new way of life is related to the change of primary values as a result of new immigrants, modern Medias... Keeping cultural homogeneity is sometimes difficult. An evident decrease of traditional structures requires copies or replicas of extinct traditional objects in some cases to integrate disturbed cultural islands.

Care of monuments is becoming the limit for even more consistent protection of cultural "islands" on one hand, and on the other hand, the protection of diversity of cultures is one of conditions of cultural tenability in the age of globalisation. It keeps cultural heritage as the potential for repeated development of cultural identity.

If the input of new structures into traditional structures was defined as a conflict in the pre-modern age, there are tendencies to solve the conflict in the postmodern age. There are two possible methods of solutions – conservative and flexible.

Conservative method is typical of maximal protection of authenticity. It is a widely protected area – "islands" – in urban dimension. The degree of protection is the same in the whole area. All the parts of restoration are subordinated to this goal – materials, functions, new interventions... in extreme cases, the entire structure of a protected monument is presented as an open-air museum.

Flexible method is typical of accepting new interventions, but the type and the degree of the intervention is given by the monumental and architectonic value of objects within the protected area. This differentiated approach is applicable in urban and also in architectonic dimension.

Both approaches are acceptable, but it depends on requirements, in which they are used.

FLEXIBLE METHOD AND ITS DIMENSIONS

If we want to achieve the application of new actions into historically protected structure, there will be used the flexible method. This method will be used in various dimensions of suggestions:

- Urban dimension is a dimension in which the protection of "islands" is being practised. In case of a flat protection of monumental area, differentiation in acceptance can be practised in a part of area or various objects. In case of the protection of a part of area – the areas (that do not have to be kept in the original state) – it is possible to think about new buildings at this area, in case that their look would respect the character of monumental structure. In case of objects, it is necessary to widen those objects that have their values only in the exterior. For the completion there are also objects that are neutral towards the area of monuments and objects that disrupt the character of the monumental structure. These

objects can be rebuilt or removed, so that there is a space for a new built-up area. It is evident, that everything neutral, disrupting, unvalued, or inbuilt parts of monumental structure can be regulated by a new intervention, within which the principles of ecologic design can be practised.

- Architectonic dimension is a dimension of an architectonic piece or object. Monumental objects do not have only its utility function, but also the function of a showpiece, therefore a great emphasis is put on the visual vulnerability of all valuable parts. If new interventions were applied in protected objects, it would be necessary them to be embed with a minimal visual exposure to the original. In some cases (mostly in German speaking countries), the new interventions are demonstrated as accents that are perceived as a new cultural layer.

Figure 2: Example of roofing materials, using solar energy and at the same time are so made that at first glance do not differ from shale or from metal sheet - church in Wieck, Germany



(Source: archive of J.Gregorova)

- Material dimension is a dimension that applies to the physical substance of the original. It takes into account the effort to interfere into the material aspect of the building minimally and that is the reason that the preferred procedures will be those



procedures that will design the new devices as added – reversible. In case, that the new devices cannot be added, they are placed into such places in the construction that have already been created during previous building interventions (places of existing vertical vent chimneys, grooves in vertical constructions, filling of beamed or vault horizontal structures). Separate problems are new construction and isolating materials on the natural basis, those using is compatible with traditional technological processes of constructing

Figure 3: Example of accents of photovoltaic panels on monuments in German-speaking countries - Chateau Rothschild



(Source: archive of J.Gregorova)

It is evident that it will be neither possible nor necessary to use all of the dimensions in expected applications and the main limiting factor in their choice will be mainly the future functional content of the monument.

Environmental strategies used in existing objects

The application measure of ecological strategies is linked to the conservation of historic structures and its value. Therefore, it is possible to apply ecological principles in either existing or valuable objects or less valuable objects, where will be used mainly practises adding some

elements of the existing structure. They can also be applied in new buildings, where the eco-design is used in the whole object. In this case, the only limit for applying environmental strategies is to avoid placing the contrasting visual elements at an exposed location.

The work will deal with the application of ecological design processes at the premises of protected areas. Even in these objects it is necessary to tackle with high costs for the operation and realisation, poor interior of the artificial or inappropriate material incorporated into the building structures within the insensitive alternations in the second half of the 20th century. Some used environmental strategies react to these problems. These environmental strategies include:

1) Reduction of energy consumption of buildings and the subsequent increase in property value in the future:

- a) The thermal-isolating properties of peripheral structures are improved on the material-based construction basis
- b) Integration of an artificial ventilation with heat recovery in order to reduce hear losses
- c) Application of more efficient technical equipment of objects in the form of heat pumps, ground collectors, solar collectors or solar roof tiles, photovoltaic cells, etc.

Figure 4: Solar tiles on the roof of a traditional building used primarily on the British Isles.



(Source: <http://www.solarslate-ltd.com/case-studies.aspx> available online, 5th of March, 2013)

- d) Emphasis on quality of thermal-isolating and solar properties of window filling constructions

2) Improving the quality of internal microclimate and creation of health harmless interior:

- a) Material base – uses traditional materials on the natural basis in the form of coating (clay, wood...) or according to soft or hardened polyurethanes, isolating materials (straw, hemp, wool...) and constructions (wood, straw, clay)



Figure 5: Example of an isolating material elements on the natural basis, compatible with conventional building techniques. Insulation by flax isolations with a clay plaster – Driebergen, the Netherlands



(Source: http://www10.aeccafe.com/blogs/arch-showcase/files/2011/02/082_Cornbread_13.jpg available online, 5th of March, 2013)

Figure 6: Accumulation wall of mud bricks – House, Slovakia



(Source: archive of Createrra, s.r.o., 2011)

b) Technological base – uses artificial ventilation with heat recovery air providing less dusty environment and good fresh air with adequate moisture

3) Encouraging users to ecological operation through appropriate selection of appliances, work with lighting, the principles of recycling...

4) Return to the rationalisation of creation of architectural concepts with regard to concrete physical conditions of the environment:

a) Using solar energy from environment by an appropriate orientation of objects – return to the traditional design according to the orientation of the Sun

b) Rationalisation of the size and functional content of objects

5) Return to traditional construction procedures as a homage of a verified rational solution in the past

Examples from abroad

EXAMPLE OF ECOLOGICAL INTERVENTIONS INTO THE MOST VALUABLE HISTORICALLY PROTECTED OBJECTS, WHERE THE OBJECT IS AN EXHIBIT AS A UNIT.

The Pope's House, Utrecht, Netherlands

Climate: Oceanic, influenced by warm ocean currents

Owner: the province Utrecht

Degree of protection: national cultural monument situated in the historical centre of the city Utrecht

An object of national cultural monument Paushuize (Pope's House) is one of the oldest city buildings that were built by the pope Adrian in 1527.

Figure 7: The Pope's House, Utrecht, the Netherlands



(Source: <http://upload.wikimedia.org/wikipedia/commons/9/96/Paushuize.Utrecht.jpg> available online, 5th of March, 2013)



The building served to its owner for living purposes when it was built; later it was a hotel and a cafe. Nowadays it is one of the most representative buildings of the city and the function is socially irreplaceable. The object disposes of unique historical interiors, therefore, the principle of interior isolations could not be applied.

Figure 8: **Precious interiors in the Pope's House, Utrecht, the Netherlands**



(Source: http://www.artsholland.com/sites/default/files/imagecache/detail_image/images/Paushuize%20DB%20111222-%201003.jpg available online, 5th of March, 2013)

Energetic difficulty of the building could have been decreased by effective technological background in the operation of the object mostly. Nowadays the Pope's House is thought to be energetically the most economic monument in the Netherlands. According to the calculation of the Institute for sustainable buildings DUMO, this building got the energetic class A+.

The integrated energetically effective interferences:

- a) Saving Technologies that save the consumptions of an object (elevators, commonly used appliances)
- b) An effective ventilation system with detection of CO₂
- c) Roof isolation
- d) Improvement of thermo-technical properties of windows from the side of the interior

The National Theatre – Prague, Czech Republic

Climate: mild climate influenced by ocean continental impacts

Owner: Czech Republic

Degree of protection: national cultural monument situated in the Prague historic area

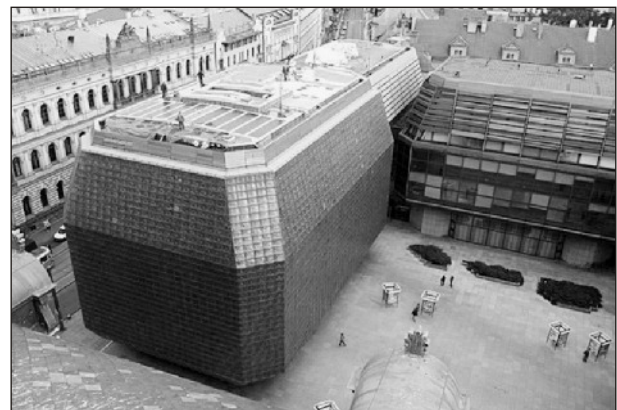
The historic building of the National Theatre and its second building in the form of the New Scene belong to important cultural and social buildings in the capital city of Czech Republic. While the oldest parts date back to the year 1881 and 1883, the New Scene of the National Theatre dates from the years 1977-1983. In 2006, mainly because of financial reasons, the theatre must have been

continuously repaired and rebuilt, that brought more than 30 per cent of energy savings in total per year. The success was contingent by a complex exchange of building energy systems. The revitalisation of the theatre was preceded by almost four years of preparation and consultation before the mentioned actions came through.

The integrated energetically effective interferences:

- a) Installation of condensing boilers and the control system modernisation
- b) Installation of heat recovery units
- c) heat recovery of the air discharged from the air-conditioned part of the building
- d) heat pumps have been connected to the Vltava River
- e) the integration of photovoltaic power plant on the roof of the building
- f) energy saving light sources

Figure 9: **The National Theatre, Prague– view of the roof of the new building covered by photovoltaic panels**



(Source: <http://img.aktualne.centrum.cz/262/33/2623394-elekrarna-na-narodnim-divadle.jpg> available online, 5th of March, 2013)

EXAMPLE OF ECOLOGICAL INTERFERES INTO COMMON OBJECTS IN HISTORICALLY PROTECTED AREAS, WHERE THE REQUIREMENTS TO MAINTAIN THE ORIGINALITY ARE PUT MOSTLY ON VISUALLY EXPOSED AREAS

Rental Houses No. 53 And No. 55 At Janáčkovo Nábřežie, Prague, Czech Republic

Climate: mild climate influenced by oceanic continental impacts

Owner: a private person

Degree of protection: objects situated in Prague historical area – house no. 55 is a cultural monument

Objects of the rental houses at Janáčkovo nábřežie from the late 19th century are part of the so-called exhibition area of residential architecture in Prague. These are kind of classic brick buildings with local sources of heating, which during its existence met the original residential function at



first, and later they were converted into offices. After building the new administrative centres they were abandoned and because of new demand in the form of luxury living with high living standards of internal microclimate both objects were reconstructed in 2006-2008. The estimated consumption for heating varied in both buildings approximately 215 kWh/m²/year. After implementing the necessary interventions, the annual consumption for the house no. 53 fell down to 114 kWh/m²/year and for the house no. 55 it fell down to 142 kWh/m²/year. (The data are presented according to the actual consumption of gas, including the preparation of hot water).

The integrated energetically effective interferences:

- a) partial floor insulation
- b) roof insulation
- c) replacement and repair of windows
- d) replacement of the source of heating – central source combined with local heating
- e) intelligent control system

EXAMPLES OF AN ECOLOGICALLY DESIGNED NEW BUILDING IN HISTORICALLY PROTECTED AREAS

Villa Of The City Writer, Driebergen, The Netherlands

Climate: oceanic influenced by warm ocean currents

Owner: Driebergen-Rijsenburg village

Degree of protection: monument of the village

The building of the villa is located in close contact with the forest in the village Driebergen and dates from around 1920.

Figure 10: View of an ecologic villa, Driebergen, the Netherlands



(Source: http://www10.aecafe.com/blogs/arch-showcase/files/2011/02/082_Cornbread_23.jpg available online, 5th of March, 2013)

The building served as a rental house for the city writer. After the death of the last tenant in 2008, the community of the village decided about renovations with the requirement

of a new part with a kitchen. The investor required the conditions of a historically protected area to be respected and integrating ecological principles with an emphasis on high quality of the microclimate and the principle of reversibility. The building received the prestigious price BNA in the category Building of the year in 2011.

The integrated energetically effective interferences:

- a) interior and partially exterior thermal isolation based on flax
- b) insulation of the floor by foam glass on the first floor
- c) roof isolation
- d) protection of the original windows and adding new isolation glasses with the emphasis on evident differentiation of new architectonic layers
- e) use of earthen interior plaster mixed with crushed bricks of the original constructions
- f) new low-temperature wall heating
- g) preserving the principle of reversibility at all architectonic and technological additions
- h) integration of solar collectors and photovoltaic cells
- i) rainwater collecting
- j) a new reservoir for hot water preparation in combination with a heat pump

The Federal House – Slavonice, Czech Republic

Climate: mild climate influenced by oceanic continental impacts

Owner: Slavonic renaissance society

Degree of protection: the object respects the requirements of the city monumental area

The original object of the German Federal house is a part of monumental area of the historical town Slavonice. The house was originally built in 1932 on the ground plan track of medieval walls. It was insensibly adapted into a cinema hall in the 80th years of the 20th century. Several unvalued new buildings were created during this adaptation and the

Figure 11: Visualisation of the Federal House, Slavonice



(Source: http://www.zelenarchitektura.sk/wp-content/uploads/2012/10/spolkovy_dom_slavonice.jpg available online, 5th of March, 2013)

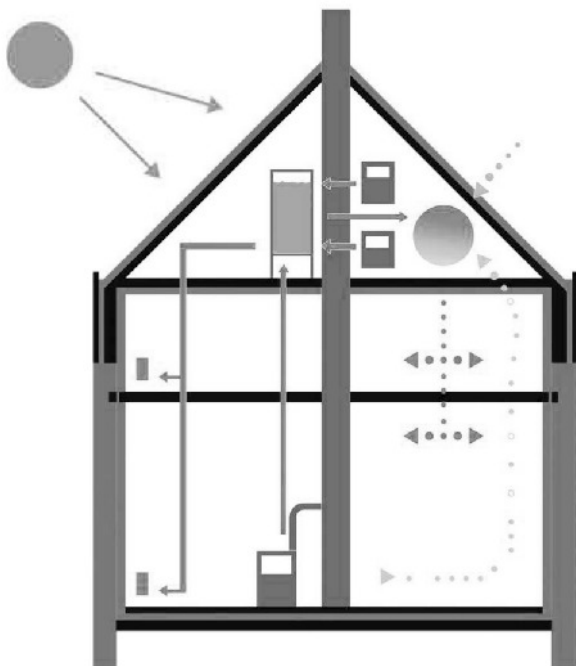


original interior from the 30th years was completely destroyed. The investor presented his concept of remodelling the house into a multi-house training centre with a café and a small hall including a requirement for low-energy standards that would consider the heritage value of the area. The building is under reconstruction at the moment.

The theoretical calculation of energy consumptions was approximately 48 kWh/m²/year. The integrated energetically effective interferences:

- a) interior insulation of the original outer walls
- b) horizontal structures insulation
- c) replacement of windows
- d) using passive solar energy
- e) floor heating
- f) solar collectors
- g) combined heating – fireplace, solar collectors, boilers for wood and back-up power-gas boiler

Figure 12: The Federal House in Slavonice
– the scheme of ecological concept



(Source:<http://img.ihned.cz/attachment.php/100/45692100/jx50WENIM9vgKfd7TCSFQz3ApIhsoB06/31-34-3.jpg> available online, 5th of March, 2013)

Situation in Slovakia

Slovakia has quite clearly and consistently developed system of cultural heritage protection. From the urban point of view it can be stated that the legislative protection in the form of monumental areas applies to 1 per cent of historic places and monumental zones take other 3 per

cent. The remaining 96 per cent of historic places is not a part of legislative protection of cultural heritage. There are also Privacy, restoration and presentation of values of historic places according to the Methodological guidelines created by Monuments Board of Slovak Republic and developed in the law no. 49/2002 Z.z. about the protection of monumental fund.

The following categories of objects are defined in this document:

1. national monuments which are a subject of paragraphs of the Monuments law
2. properties that are identified to be declared as a national cultural monument
3. properties with its historical value
4. properties that respect the heritage values of the area in which they are located
5. properties that disrespect the heritage values of the area in which they are located
6. monuments of a village
7. other objects located in a monumental area
8. national cultural monuments that are proposed their protection to be cancelled

The protection system is basically differentiated and creates conditions for the application a flexible procedure for applying environmental strategies.

Slovakia is a country with disappointing economic and technical aspect of cultural identity (an evident impact of globalisation and other-cultures impacts)... a large part of the population does not have core values clearly defined and established, so there is a problem of a based and often chaotic taking foreign role models. In comparisons with Slovakia we can state that the sense of cultural life is a matter of principles, mostly in western countries. This is adequately supported by sufficient economic and technological means.

This base is just being created in Slovakia, and therefore the effectiveness of tools for the implementation of cultural life is much lower. Therefore, also the opinion on the measure of protection of cultural heritage is different.

The practise of environmental strategies is also disappointing, although Slovakia is located in one of the most difficult climatic zones characterised by high amplitudes in temperature and precipitation.

Conclusions

The main reason, that this problem is an actual one, is an unsatisfactory state of the environment, cultural awareness and on-going climate changes. New facts raise new possibilities for problem-solving. They form opinions on the optimal solution of the situation. There may be two situations. The first one is that the existential view of the problem outweighs and it will be admitted, that climate change is an objective reason for all the structures deigned



for living to be changed – including the historically protected ones. The principle would be the necessity of acceptance of new requirements for the new standard. If these requirements will not be accepted, us – people – will do so at our own risk.

The second situation is that the social, philosophical or psychological factor overweighs and different types of structures for living will be offered to people. If new structures for living offer the standard of optimum microclimate and efficient energy concept, the traditional-historical monuments offer attractiveness, tradition, art and something atypical. The principle will be equality and the freedom of choice. It is evident, that we can see this problem in a different way in different climate conditions – the most discussed will be traditional structures in territories with high temperature amplitudes, or in places with other climatic extremes. The future will show us which way is the right one.

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Ján Ilkovič
Yakoub Meziani
Lubica Ilkovičová

ARCHITECTURAL REFLECTIONS OF ENERGY PRODUCTION IN RESIDENTIAL AREA

Introduction

Still expensive production of power generation forcing experts in the energy field to the introduction of the most advanced solutions. It is necessary to use these sources effectively. It is valid mainly at usage of gas as one of the ingenious gas. So far the highest level of efficiency of gas conversion into other forms of energy is possible to be achieved by „cogeneration“, (a combined production of electrical energy and heat in technologically relatively independent units (cogeneration combustion engines or turbines). Global trend towards combined heat and power plant based on natural gas and biogas from various sources produced by cogeneration and combined steam-gas cycle units find its place in Slovakia. But specifically located in residential area, this is typical for North and West Europe.

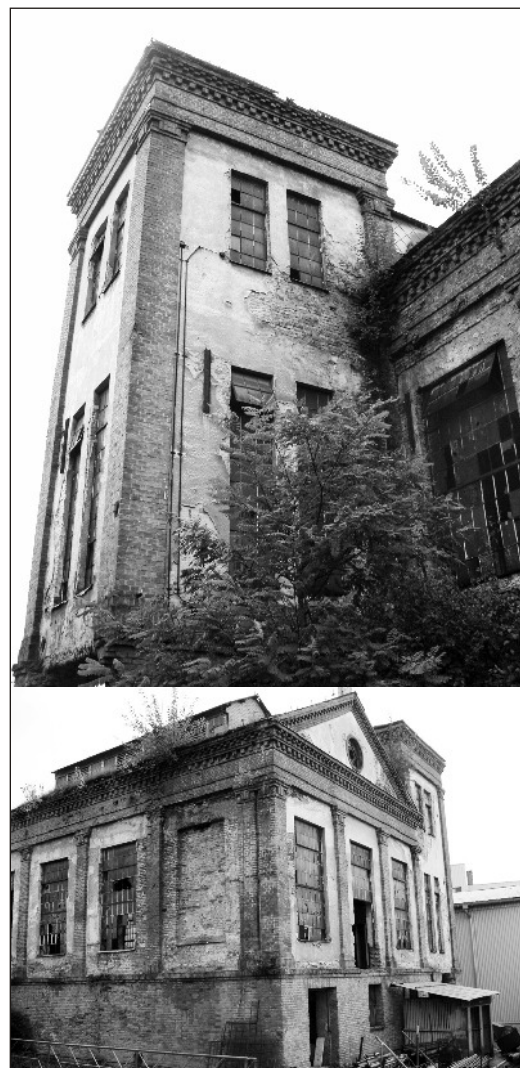
Energetic buildings in the past

History of manufacturing energetic buildings is build on heavy industry in the past (mining and iron industry). The first power plant in Slovakia was put into operation in 1884 in a mill of S. Ludwig at nowadays Krížna St. in Bratislava. Our first water power plant started to work in Krompachy with the power of 22 kW. The lead in category of city power plants (in Bratislava) belongs the power plant which was positioned at the premises of one-time Západoslovenské energetické závody in Čulenova St. Its putting into operation in September in 1901 meant a turning point in providing the street lighting in Bratislava and also the revival of the night life in the streets of the city. In connection with architectural solution of energetic equipment only in the period of industrial revolution the energy “gets” into buildings – the relationship of architecture and technology (energy production) is on the starting line here. After 1918 the building-up of heat power plants was directed into coal fields where in 1928 almost 50% of the all building-up of all power plants was positioned.

During the 2nd world war the development logically stagnated. An important success in building-up of heat power plants was then from 1951 to 1960, thanks to building-up of steam heat contrail power plants with its overall capacity from 300 to 330 MW. Another turning point is definitely also the year 1973 when the A-1 atomic power plant was put into operation in Jaslovské Bohunice (Keppl, 1979, p. 52).

The second half of the 20th century influences improvement and shaping of technology and its impact on exterior of the building. It was reflected in the physical “minimization” of technology (and also the capacity of the building) at the same capacities from the past. Gradually in period between the 20th and 21st century there is diversification of sources and the exposal of energetic technology has got an acceptable scale for environment and man also.

Figure 1, 2: Historical power plant (beginning of 20th century),
Syenit - Púchov, Slovakia



(Photo: Ilkovič, 2010)



Modern cogeneration forms of energy production

Cogeneration form of energy production is a basic concept for parallel production of several kinds of energy. The most basic examples are production of electrical energy and heat and also the examples of parallel production of three energetic media: electrical energy, heat and cool are not rare. In these cases the special term “three-generation” is used. The word “three-generation” can be interpreted as a combined production of electrical energy, heat and cool. When supplying objects like banks, hotels, business centres, sport halls, hospital etc. by forms of energy there are more and more requirements on electricity and heat as well as the need of cool necessary for air-conditioning of these objects. For a combined production of electricity and heat the word “cogeneration” comes from English, it is connected with a combined production of electricity and heat at using of combustion engines.

Cogeneration is becoming the worldwide trend in energy production mainly because of economic reasons. Cogeneration workshops nowadays present the highest scale of diversification of energy production based on gas. They are not exclusively centralised as the heat stations (power plants). Smaller production capacity enables their bigger number and also the change of localisation in areas with different functions (residential, production, polyfunctional). The development of technologies alone is reflected directly in architecture. Substance copies technological sequence and it grows in proportion to the raising of production capacity. Cogeneration technologies represent the bond between the production of electricity and heat and it is necessary to bring it to the consumer as close as possible from the view of loss. This is the reason why production of energy in cogeneration equipment is considered to be diversified production (Kadrnožka, Ochrana, 2001, p. 45).

CATEGORISATION OF COGENERATION WORKSHOPS

According to the whole installed power the cogeneration workshops are divided as follows:

- 1st category: micro-cogeneration with the installed power up to 50 kW,
- 2nd category: cogeneration of small power with the installed power up to 1 MW,
- 3rd category: cogeneration of the middle power with the installed power between 1 and 10 MW,
- 4th category: cogeneration of the high power with the installed power between 10 and MW (including systems with steam-gas cycle),
- 5th category: Cogeneration of high power with the installed power bigger than 50 MW (including systems with steam-gas cycle) (Kadrnožka, Ochrana, 2001, p. 38)

Starting points and principles of workshops localisation

Energetics has got a priority position in industry. In fact the same rules are valid for localisation of heat energetic workshops as well as for the most of industrial plants. Location of energetic workshops in the territory comes from the evaluation of circumstances which have got a direct influence on the production.

These are the factors:

- supplying by raw materials (primary energetic source) for an economically bargain price (gas, bio-gas, unloading gas),
- convenient connection to the sales of the produced energy,
- keeping the restricting limits and factors for security and quality of environment,
- conformity with industrial and social concept of territorial development of the regarded locality,
- suitable material and technical basis for building-up and operation of the facility.

It is ideal from the view of a model solution of production and consumption when the presented points “overlap”. It is the transfer of electrical energy production into the place where at the same time there is also usage of the heat, in other words, to maximally use the heat at its transport from the source (power plant) into the place of its consumption. The transfer of electrical energy production into the place of heat consumption is also convenient from the view of decreasing of loss at the electricity distribution because it is delivered into the net close to its place of consumption or at the place of the consumption. So it is typical that by the transfer of electrical energy production closer to the consumer of the energy we get into the municipal and industrial agglomerations so into the terminal places of electrical net where mainly the sources with lower power are of use.

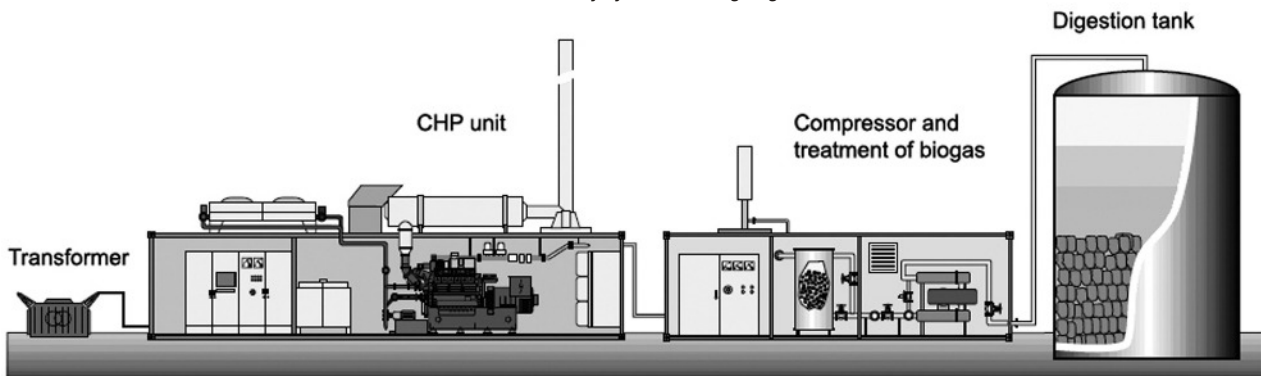
Recently mainly urbanised centres (municipal residences) as well as some country areas have experienced huge territorial development in area of living, services and industrial production. This phenomenon requires also the need of solution of energy supplying of the new territories but on the other hand there are also the trends of bringing more ecology into environment. A new hierarchy of energetic workshops arises based on strict economic rules in energetics and it is necessary to mention also the legislative support for diversification of sources and facilities.

Diversification of production appliances in four ways:

1. building (domestic source supplied by energies, back-up energy source),
2. residential precinct (steam plant at a housing estate, cogeneration heat station – power plant),
3. industrial zone (industrial power plant, city central),
4. headquarters (city heat central).



Figure 3: Technological model with the possibility of variability system of designing



(Source: Pro2, 2013)

The choice of locality is influenced by protective distance between the facility and the headquarters which shortens in comparison with the power plants on fossil fuels because at cogeneration there is a lower level of air pollutants, dust and noise – also thanks to installation of modern technology and shock-absorbers. Another important matter is orientation regarding the direction of current of the prevailing winds because here is also valid the general principle of location on the leeward side of the site and neighbouring object mainly if the objects require protection of other than production character. Distance from the site, orientation at the premises and the area of the power plant land itself is set also according to the kind and power of the power plant (Hlaváček, 1985).

DISPOSITIONAL AND TYPOLOGICAL PRINCIPLES

Energetic complex can be characterised from the typological view as a production unit focused at one building locality, its parts are operationally intentionally arranged in a way so they respond the required technological flow of change from one source of energy to another. The following factors influence the operational and disposition solution of the energetic production file:

- category of production (category I – V is set for the purpose of this work),
- the kind of primary energetic carrier,
- used technology or the size of basic power unit,
- topography of the building locality,
- wider relationships of locality, mainly with the residential zones, transport,
- relationship and possibilities of using the distributional energetic nets,
- climatic conditions (stray conditions of injurants from production and conditions for creation of the type “smoke track” (Švec, 1985, p. 75)
- demands on culture of the working environment and protection of environment.

The presented factors also determine the principles of equipment suggestion which can be summed into the following points (Ilkovič, Meziani, Ilkovičová, 2011, p. 40):

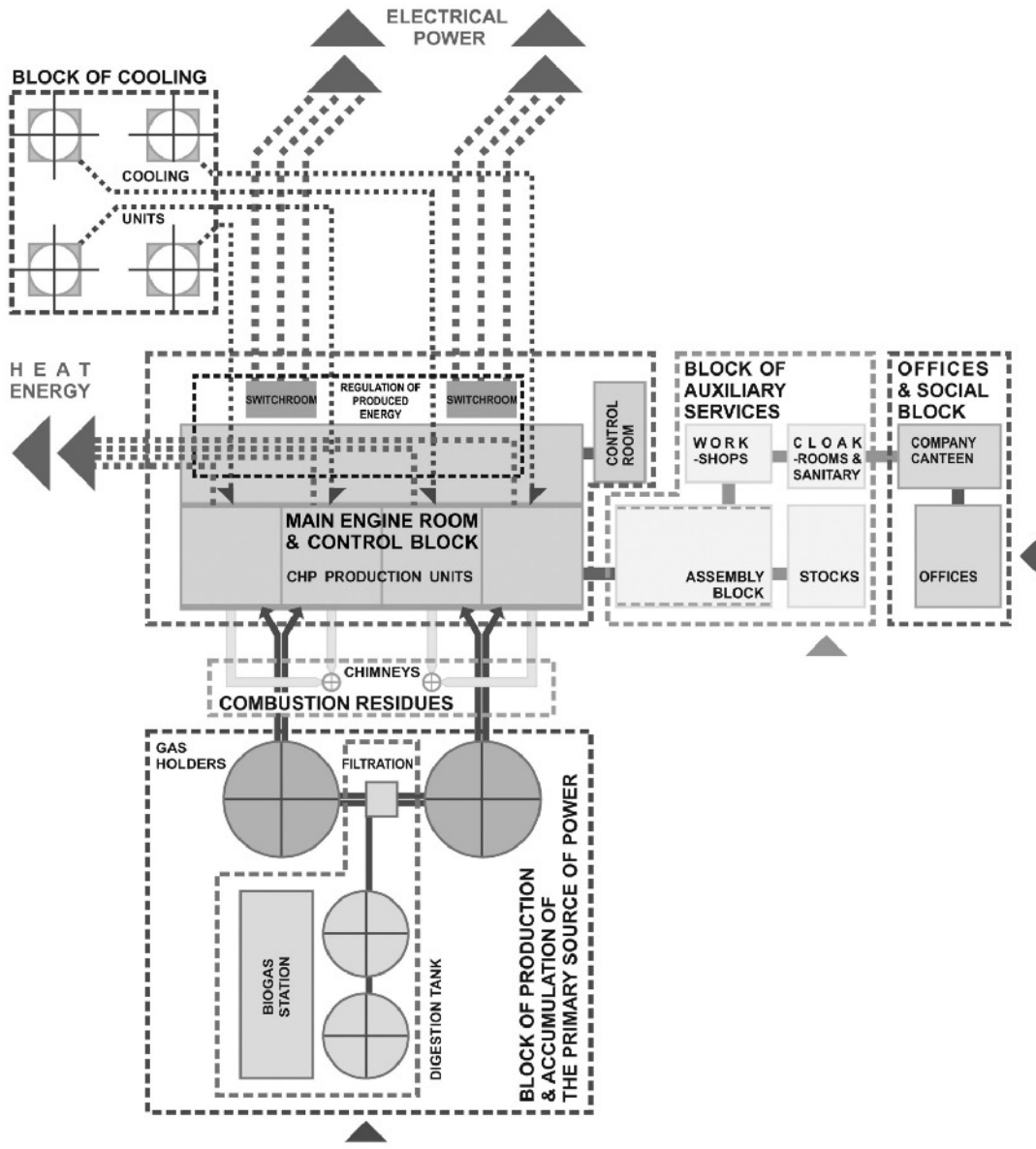
- fluency, limpidity of the operation and functional classification of the workshop (keeping the necessary direct bond resulting from the technological principles,
- security of the operation arranged by suitable dispositional solution and building arrangements,
- economic usage of the land with presumption of widening the production in future and with the suitable orientation to the world sides,
- keeping the hygienic principles at the creation of the working surroundings.

Zoning of the cogeneration workshop

The main aim of functional division of a cogeneration workshop is optimization of relations in the complex and relations to the surrounding area which come from operational, technological and transport bonds. A basic element of cogeneration workshop are: production objects, technological files, complementary objects, chimneys and cooling towers, engineering nets, communications, reinforced areas and green. Based on theoretical knowledge gained by studying of realized examples, principles of functional and operational solution of production files and practical experience we can define basic functional division of cogeneration workshop (so far without closer definition of the primary energy carrier). Some functional units can be taken as generally valid knowledge for dividing of industrial areas, others like specific which are characteristic only for cogeneration types of energetic workshops. We can set internal units (zones) in the next model (Ilkovič, Meziani, Ilkovičová, 2011, p. 52): Figure 4



Figure 4: Operational – blocked diagram of cogeneration energy workshop



(Source: Ilkovič, Meziani, Ilkovičová, 2011)

Technology and energetic architecture

At designing of energetic workshops the role of architecture is focused in two areas. The first area is taking part in solution of operational relations (including technical-technological), it means an architect enters as a coordinator of functional bonds in relation technical product – a human or he takes part in solution of a new type of working environment and also in solution of functional bonds and its impact on territorial planning (settlement, bond to production). The second area is a solution of energetic workshop from the view of artistic and aesthetic problem in relation to the surroundings and also connected with the creation of working environment, (Figure 6, 7). Energetic workshop stands as architectonic unit, as an

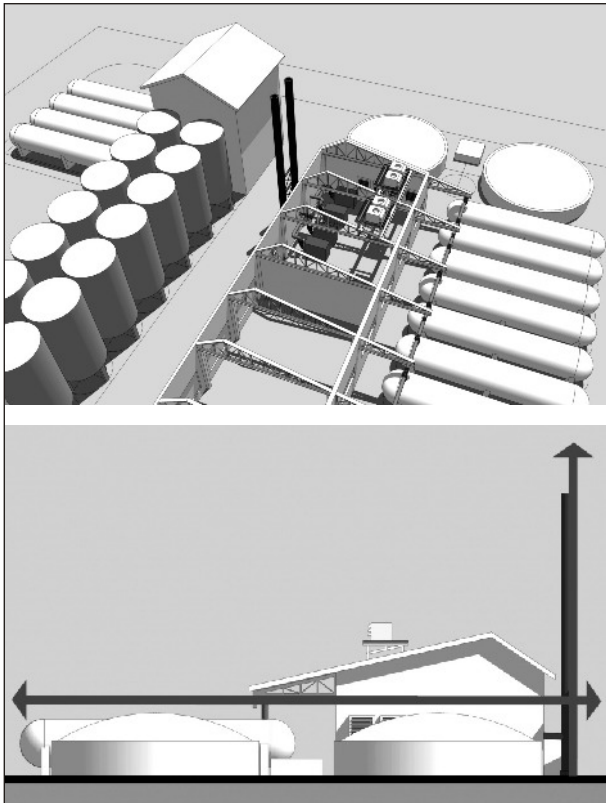
outstanding factor of land composition which has to be taken into account as from the view of its space characteristic also the from the view of physical effect on the environment (source of heat pollution of atmosphere).

Development of technique and technologies brings also new items which influence the complex creative process of the productive energetic files in an ultimate way. New technologies don't fulfil only the mission aimed at efficiency and greening of production but individual technological units immediately partake in the final architectonic and composition function of the unit (they become scenic units). It can be said that technical-technological units of the production energetic file create on one hand quantitative dimension of production and on



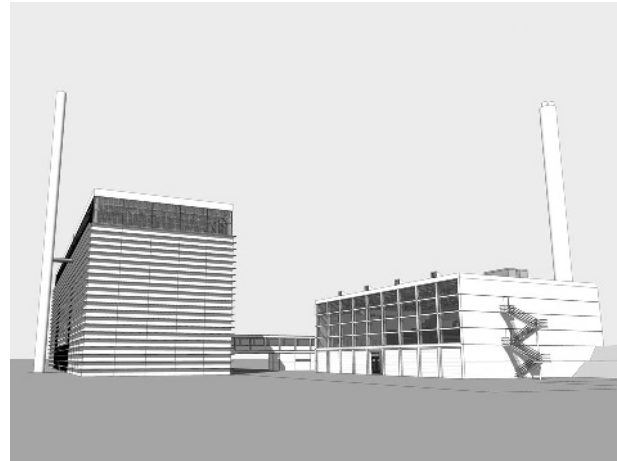
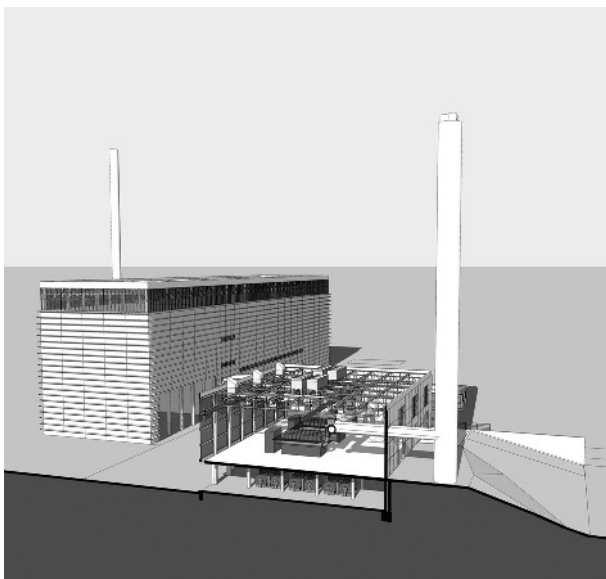
the other hand qualitative basis of production synthesis, volume and shape solution. They take also function of the outside carrier of the production activity – change of energetic carrier into the specific energy and so they partake in the direct information (Ilkovič, Meziani, 2009, p. 125).

Figure 5, 6: **Composition is affected by technology, cogeneration plant, Zelený Háj, Slovakia**



(Source: Ilkovič, Meziani, Ilkovičová, 2011)

Figure 7, 8: **Composition is affected by technology and architectural idea, cogeneration plant in Svendborg, Denmark, Lungaard & Tranberg ApS, architekt MAA**



(Source: Ilkovič, Meziani, Ilkovičová, 2011)

Architectural trends

The functionalistic motto “form follows the function” is valid at these energetic buildings. The most important form-creating factor is technology here. The fuel reservoir (energetic bins), combustion aggregates (pots), technological items of cooling (cooling towers), waste (steel chimneys), factors of transformation and regulation are the basic icons of energetic industry which are expressively changes in conformity with development of technology and architecture. It is not possible to characterise the current trends in architecture without the basic knowledge about technological innovations. Technologies are rationalized, their dimension is decreasing and at the same time, their power increases. This trend is also reflected in architecture of the dimensionally smaller masses with closed or open technology. The first type consists of technology and function, the second is presented by “technical design” and readability of technological composition in the units composition. Aesthetical dimension is shifted into the position of technological elements of design, technological process is in fact superordinate, technological fragments are carriers of architectural form.

The principle of functional and artistic unit of technology and architectonic envelope has to be valid. Technique and technology is changed and according to the kind of the primary energetic source which partially influences the form of the object (Ilkovič, 2002, p. 19). Based on analysis of architectural forms (chosen specific solutions) architecture of production energetic facilities can be divided into the following representative units (Ilkovič, Meziani, Ilkovičová, 2011, p. 65):

- 1. Conventional form** – reflects traditional processes of conversion of the primary energy with dominating mass of engine room and chimney with using of traditional expressive instruments, materials and overall expression, it is a type of architecture which could be characterised simply also by expression – pattern of architecture of energetic facilities.



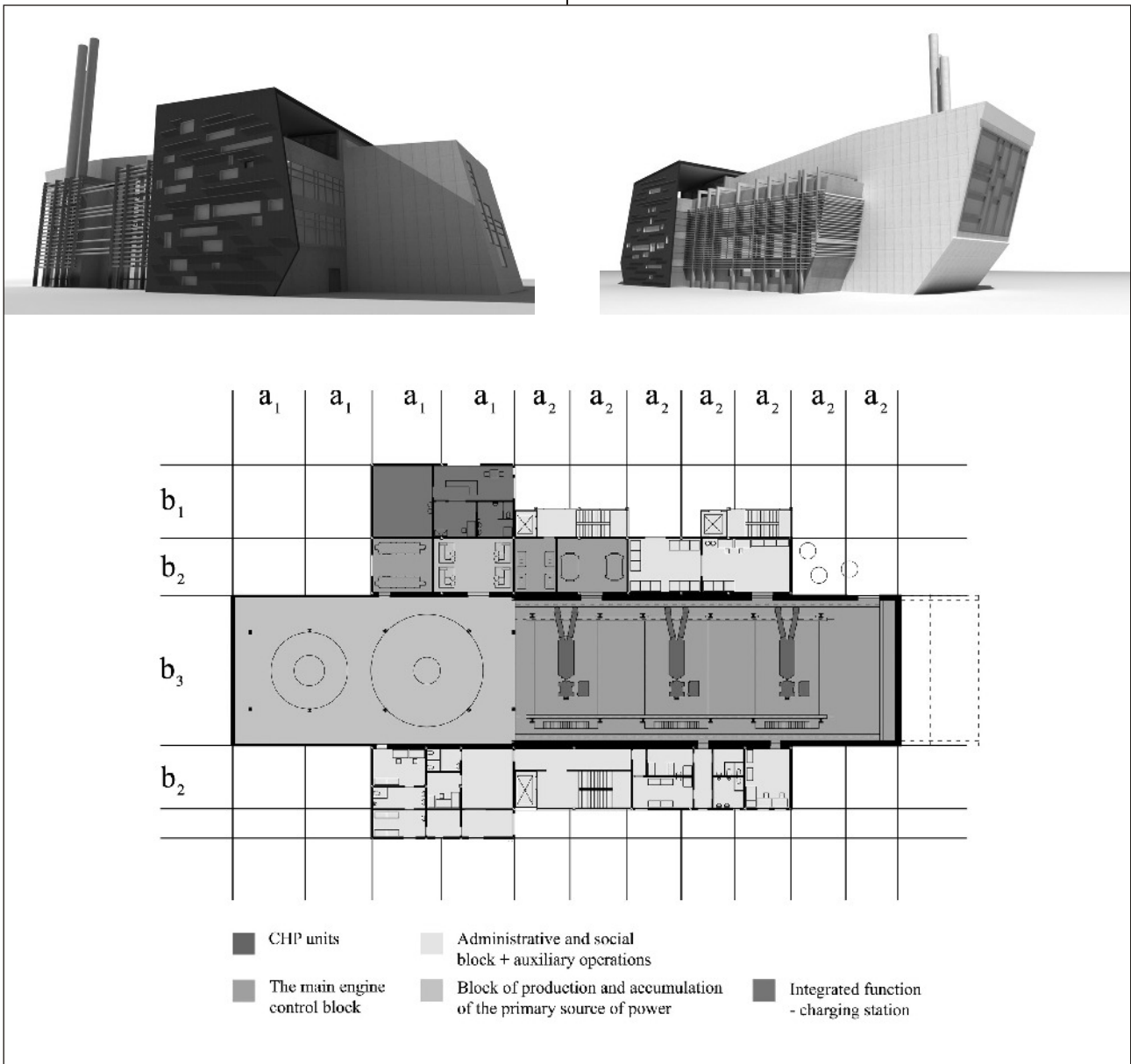
2. **Sculptural form** – systematic modelling of the mass for getting the monumental expression which reflects minimal measure of outside expression of technology, it is a type of architecture which opens inside, (Figure 8).
3. **High-tech form** – mass modern (fashionable) figuration with the purposeful uncovering of technology fragments. In architecture dominate expressional elements abstracting technique. This style is stressed by glorification of machine design, accentuating of elements by colour and expressive area graphics or a logo.
4. **Combined form** – it is a possible combination of elements from the previous forms.

Figure 9, 10, 11: **Sculptural form of architecture**
(Design studio: Salus J., supervisor: Meziani Y., 2009)
(Source: Ilkovič, Meziani, Ilkovičová, 2011)

Conclusions

According to the special technological data cogeneration shows the savings of fuel almost 40% in comparison with a traditional separated production of electrical energy and heat. An impulse for „publicity“, of cogeneration is constant raising of energy consumption and an effort of the civilised world to have a better quality of environment, reducing the greenhouse gasses and emissions and raising energy prices.

Building-up of production energetic plants is mainly the reflection of conversion of the primary energetic source. The entire development of technologies is reflected directly in architecture. Expression of technology in architecture dominates either in interior or exterior. It is suitable if these two phenomenon (architecture and technology) communicate mutually. It creates the supposition of





communication with the user, communication with the surroundings, which is inevitable for good, functional and supertemporal architecture. The opinion of an architect Claud Vasconi, the author of several energetic buildings is that "...engineers cannot make the symbiosis between architectural space of the project and its industrial connection, they have tendencies to additively positioning of machines next to each other so they create multiplying scheme...", reflects irretrievable position of an architect also in this creation which is demanding on coordination of parameters of technique and technology in architecture. This ideas are also well transformed in residential area.

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Katarína Kujanová

A VERTICAL GARDEN – AN ATTRACTIVE TREND OF LIVING WALLS

Introduction

Vertical gardens nowadays represent a new approach to solving the green facade. This new system today belongs to an attractive multifunctional use of green mainly in the urban surroundings. A vertical garden brings in green into the dense city development and at the same time does not require huge horizontal areas. So far only climbing plants have been used for greening of walls and facades. A new expression a vertical garden expresses the essence of the system – a live wall which provides plants moisture and nutrients. It is an original element of garden art, this vertical garden is like a beautiful colourful tapestry – a real piece of art. Different colourful plants can be planted on the walls which create wonderful green design of the building. Recently this system has been in minds of several botanists and architects, so many interesting solutions of vertical gardens appear mainly in the cities with warm climate. In their uniqueness and beauty the walls are the attraction for observers.

History of idea origin

The idea is not as new as it appears. Garden architects have been dealing with the connection of inanimate mass of houses and a live wall with plants since 30-ies of the last century.

In modern history, the father of the idea of green walls and the owner of the first patent in 1938 Stanley White Hart - Professor of Landscape Architecture at the University of Illinois in 1922 - 1959. "Botanical bricks," as Hart called his system were blocks of plants with installation over themselves to any height (Bibos, 2013).

Technologies of implementation have been improving and the first vertical wall with plants can be considered to be the wall from the 50ties of the 20th century in Rio de Janeiro which aroused from cooperation of Le Corbusier with a garden architect. The thought which wants to connect architecture with green walls has been approved in the past decades and nowadays there are many well-done realizations all around the world. A French botanist Patrick Blanc has been considered to be a pioneer who made vertical gardens perfect. For more than 20 years his gardens have belonged to works of art of city attractions of France, Spain, Japan and other countries. Many designers and botanists all around the world work with this form of use of green in the city. Vertical gardens can be found in Germany, Italy, France, England, Canada, USA, Thailand etc. A map of Europe as a vertical garden was erected even

in Copenhagen on the façade of the building of the European environmental agency at the occasion of an International year of biodiversity (2010). It was created out of 5000 plants symbolizing diversity of nature in Europe (Kujanová, 2012).

Currently the largest vertical garden is the installation of plants at a shopping center Fiordaliso in Italy, Rozzano. Vertical garden with area 1263 m² is the work of architect Francesco Bollani and it used 44 000 plants (Bibos, 2013).

Figure 1: Map of Europe as a vertical garden at the façade of European Environment Agency - Copenhagen, Denmark



(Source: Loozrboy, 2010)

The attractiveness of premises - variety of use

These gardens are really widely used. Vertical gardens are applied effectively either in exteriors on buildings where there is not enough space for public green or in the big interiors of important buildings. Outdoor vertical gardens on big space offer compensation of green in the premises of places where otherwise there is no space. On high-raised buildings literally vertical parks are created. These facades are mainly on important public buildings, e.g. museums, banks, hotels etc. In the interior vertical gardens appear mainly in huge representative premises of public buildings but at the same time also in small facilities. They are mainly museums, places of culture, exhibition premises, entrance halls, atriums, shopping malls, business halls, airports, hotels, restaurants, cafes, health-care establishments, wellness centres...



PRIORITIES OF A VERTICAL GARDEN

A green vertical garden :

- 1) Can be used in exterior or interior
- 2) Saves space with its uprightness, makes surroundings green in the places where otherwise it would not be possible
- 3) Offers natural protection – a barrier against the meteorological effects
- 4) Regulates temperature of the building, decreases energy consumption, creates insulation layer, in winter it protects against cool, in summer it protects against overheating
- 5) Improves quality of air, increases moisture in its surroundings, cleans air, catches dust, increases the production of oxygen and tying Co2
- 6) Restrains and absorbs noise, represents sound insulation of walls
- 7) It has got a positive influence on a human, it calms down
- 8) Protects the façade against graffiti vandalism
- 9) Is an attraction, attracts attention, brings dynamics and harmony of colours, creates an aesthetic wall - Is an architectural and ecological element

Figure 2: Vertical garden on the squaree attracts attention - Santa Cruz de Tenerife, Spain



(Source: TwistedSifer, 2011)

Principles of the construction

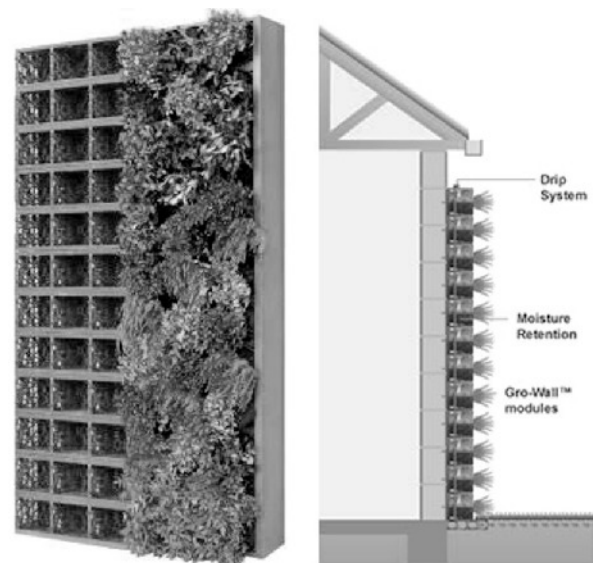
Fundamentally there exist two ways of realization of vertical green walls, with the usage of substratum or without it. Both ways are differently difficult on technology of their construction.

- System with substratum (panels): System is created by protruding e.g. aluminium panels, cassettes, façade basket filled by substratum already in their production. Panels can be planted with plants in advance or plants are planted directly at the place. Façade panels are gripped on hanging profiles anchored on the façade or a wall. They are produced in different colours of RAL scale or e.g. in the colour of natural aluminium. The colour of substratum can have a different colour too according to the required shape.

Irrigation system is inserted into the horizontal spaces between panels and its exchange is possible. The advantage of such a wall is the possibility of colour diversity of construction and also the cassette filling.

- System without substratum: A special solution of this new culturing of plants consists in inutility of substratum. It is a so - called hydroponic cultivation. On the wall is fixed metal construction – frame. To the frame are attached the plates PVC of thickness 1 cm. Two absorbing layers of polyamide felt textile are attached to this construction into which plants are put. The felt functions as moss which strengthens roots of plants. This polyamide felt is imbued by a nourishing solution which falls by gravity into the lower part of the construction. Nourishment in the form of a solution with minerals is brought to plants by electronic net of pipes. Plants take as much as they need, the rest of nourishing solution is on the bottom of the construction and is repeatedly put into the circulation by a pump. This way the system of irrigation and fertilizing is completely automatic. The green thrives in the interior as well as exterior (Kujanová, 2013).

Figure 3: Cutting and a look at modular tiles for living walls



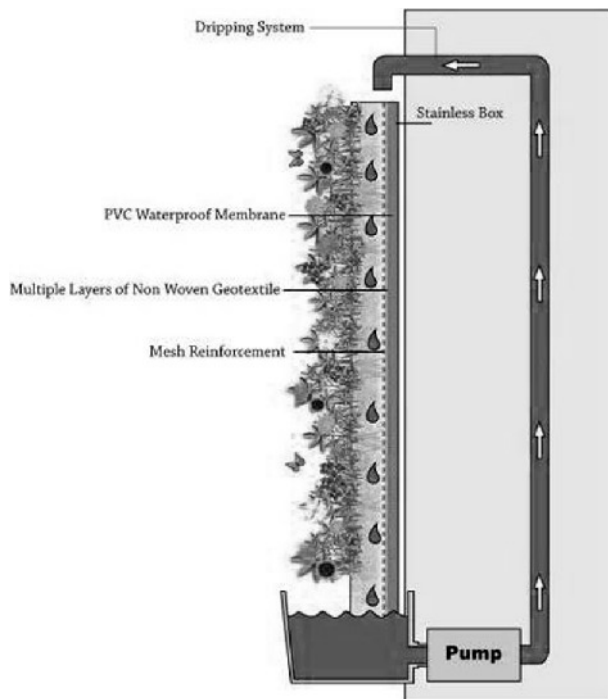
(Source: spec-net, 2013)

OUTPLANTING OF VEGETATION AND MAINTENANCE

Greenery on the vertical garden provides many opportunities to create a unique and interesting plant configuration. Different kinds are used for outplanting which are then combined into the patterns or geometrical surfaces. It is good to combine the plants so that their shapes, colour, structure and texture can be stressed. It is



Figure 4: Cutting of system for vertical garden with stainless steel construction



(Source: KHR group, 2013)

necessary to realise that plants are liable to changes according to the season and then inevitably it changes the appearance of all vertical gardens. The choice of plants is also dependent on the locality of the wall. The composition of plants has to be in accord with surrounding conditions and lighting intensity. Plants which grow in the substrate are more frost resistant than those grown without soil in the nourishing solution that is why vegetation walls with plants on the felt are applied more in warm climatic conditions. When considering exterior, the bottom is wetter and with shade, upwards are plants exposed to warmth, cold and wind. So it is necessary to take into consideration at choosing the plants in addition to aesthetic view also their demands on growing. Vertical gardens are specially irrigated by a technology which does not harm the construction. Panels and vegetation walls with absorbing felt irrigation is provided by an automatic irrigation system which constantly distributes a nourishing solution into the places in need. The rest of water is collected into the bottom in a collecting canal and is pumped to the system again. In case of these automatic, electronically controlled systems the water and electricity supply is necessary. Vertical gardens require permanent and sufficient water and nutriment supply. Input of new water is minimalized thanks to electronically controlled circulation. Vertical gardens do not require almost any care. Maintenance depends on the specific kinds of plants and consists in shaping or exchange of plants. Sometimes it is necessary to change the slack, poorly thriving plants after the planting or after the winter.

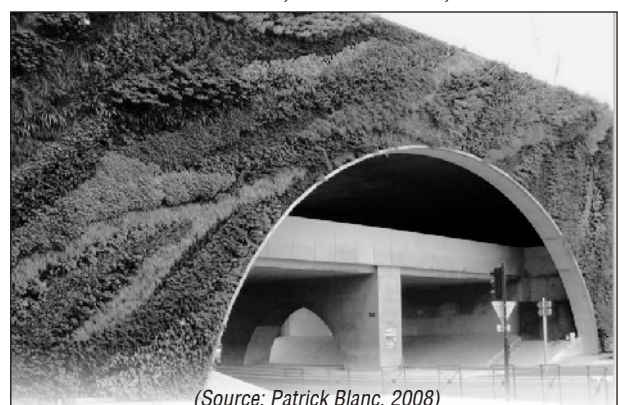
Patrick Blanc - a modern pioneer of vertical gardens

Patrick Blanc – a French botanist, scientist, designer of vertical gardens – proved that the life in the city does not have to mean renouncing of nature. He was famous by his concept of vertical green walls known as a vertical garden – “Mur vegetal”. His vertical gardens whose patent he has got – brought the green into the city areas, they plunge architecture of buildings into their own façade gardens. Patrick Blanc described these impressive green walls also in his book “Vertical gardens – from nature to the city”. More than 10 years ago he started to design vertical gardens as a part of architecture for public premises, shopping malls or huge interiors.

The well-known live wall that he designed was in Paris Musée du Quai Branly in 1988. Patrick Blanc specialises on subtropical forest stands and plants. Based on a long-term research and observation he created a concept of plants growing without the use of soil. Many kinds of plants are able to grow on the base with minimum of soil. For photosynthesis only water with some minerals, light and carbon dioxide is necessary. This knowledge was crucial for inventing the vertical gardens. This system of his can be used in the exterior as well as in the interior.

A vertical garden patented by Patrick Blanc consists of three parts: a metal frame, a PVC and felt layer, a construction is made of light grid without soil, hanging on the wall. The metal frame can be hung on the wall or it can stand also individually pre-planted, so there is also a heat and sound insulation gap. A water-proof PVC board with its width of 1 cm is put into the metal frame. The upper layer on the facade is created by biologically non-degradable polyamid felt, attached to PVC with a high capillarity providing regular irrigation. Plants are planted into this layer as seeds, cutoffs or as pre-planted plants. The whole weight of the system is less than 30 kg/m². The ready vertical garden requires only a very little maintenance. Irrigation system with nutritions is automatized and irrigation comes from above. Thinning and weeding is not necessary. Astonishing vertical gardens of Patrick Blanc can be admired in Paris, Brussels, Bangkok, Australia but also in Slovakia directly in Bratislava (Kujanová, 2012).

Figure 5: Vertical garden by Patrick Blanc, highway overpass – Pont Max Juvenal, Aix-en- Provence, France



(Source: Patrick Blanc, 2008)



A vertical garden in the luxurious interiors

Wall with vegetation in the interior is an attractive dominant with many functions. Except its aesthetic and positive psychological effect it fulfills also a practical task. A vertical garden in the interior saves space, it can make it optically larger and it creates a sound barrier when it is used as a separating wall. With its vertical design of plants it is suitable mainly in the places where the space does not allow to use a different interior system for the green. A man spends the most of his time inside the building. It was found that some plants have an ability to consume harmful substances as ammonia, formaldehyde, carbon monoxide, benzene etc. And they can decrease contain of these harmful substances in the air. At the same time the moisture is increased which kills the dust. So the vegetation wall is not only a luxurious object in the interior, it also creates a healthy environment for a man thanks to a filter ability of plants. Vertical gardens can be realized almost in every space with adequate heat and light conditions, necessary for plants. Such a wall usually needs also a supplementary lighting.

A vertical garden is from construction point of view similar to the one outdoor. It can be solved in the way that the metal construction is anchored, more-layered vegetation mat is attached into it and openings for plants are made into it. Irrigation system with nutritious solution is automatic. The choice of plants depends on the required shape and colour effect of the wall, it is necessary to accommodate the composition of plants to the conditions of lighting, temperature and Exchange of air. For the design of such garden is appropriate to invite an expert on indoor greenery (Kujanová, 2013).

IN BRATISLAVA WE HAVE A VERTICAL GARDEN TOO

Total first vertical garden in Slovakia is projected by this world-known French designer – Patrick Blanc. It was realised by an architectonic studio MIMOLIMIT within the AED project. It is a green original wall in the interior of J&T Bank Café in Bratislava sister company of J&T bank in the River Park complex. The vegetation wall is created from almost three thousands of exotic plants even 66 kinds with different demands. They grow into different height so the wall changes in course of time and also according to when the plants blossom. There are mainly succulents, precious kinds of exotic orchids, ferns, ficuses, and others (Kujanová, 2013).

Conclusions

Nowadays the vertical gardens are very interesting and very attractive alternative of the vegetation elements in architecture. Not only do they look fancy, they also fulfil many pragmatic functions. They are created by hundreds of plants that do not require substratum for their growth or only in minimal amount. These vegetation walls offer incredible possibilities of creation of interesting patterns and surfaces from green in interior as well as exterior. Thanks to swift producers offering construction systems, vertical garden systems are becoming a reality.

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Pavel Nahálka

NEEDS BRATISLAVA A GOVERNMENT CITY?

Figure 1: Presidential Palace and the Office of the President of the Slovak Republic



(Source: Nahálka, 2013)

Introduction

The capital of the Slovak Republic established by Constitution is Bratislava. Constitution of the Slovak Republic, Article 10 clearly also assumes the status as the capital city Bratislava Slovak Republic by law (Const. of SR, 1992). This regulation, law SNR of the capital of the Slovak Republic Bratislava in § 1 specifies that Bratislava is a regular residence of the President, and the National Council of the Slovak Republic. According to this Act, the Slovak President, National Council, the Government, ministries and other central government bodies of the Slovak Republic Bratislava serve as the capital of the Slovak Republic and the political, cultural, commercial and social center of Slovakia. Bratislava creates conditions for the activities of these bodies, as well as the business representative bodies of other states, which are based in Bratislava (Reg. no. 377/1990).

Conditions of the Seats of Central Authorities in Bratislava

Bratislava performs this task with considerable commitment, but also considerable financial claims to ensure the operation of the institutions. Of all the 47 highest state authorities, based in Bratislava 41 These include inter office of the President, the Cabinet Office and 13 ministries and the Supreme Audit Office, National Property Fund and the General Prosecutor's Office. In terms of control is relatively large disadvantage that they have are scattered in

32 locations. High transportation costs and demands on the logistics of the current system also include the reason for the low efficiency and effectiveness of government. The high economic energy intensity but also the functioning of the state apparatus, however, still contributes significantly to the character of the building, which used to operate. These are mostly either building built originally for another purpose (for example historic seat of noble families, church and state dignitaries), or office buildings obsolete concepts.

These buildings are substandard in terms of layout-operating and design and, above all due to poor technical equipment. Objects are built from the most traditional building materials and defined the classic layout of the premises. Without extremely costly renovations are not the most efficient possible use of existing control methods and convergent paperwork and teamwork (Arnold, 2002, p.63). While hardly be expected savings while ensuring appropriate working conditions by reducing the costs of heating, air ventilation, air conditioning and lighting of workplaces. (Gov.ord. 391/2006, Ann.1).

Certain restrictions efficient use of historic buildings for the administrative work of employees of central authorities can be also respect the historical value of this architecture. On average, there is nearly impossible economical use of office space, as well as the adaptation of buildings to the needs of citizens. Often they are buildings without spaces and zones prepared to communicate with citizens, even those buildings create for them architectural barriers (Nahálka, 2012, p. 59).



Figure 2: Locations institutions in historic buildings - the National Council, Cabinet Office, Ministry of Environment and the Ministry of Culture of the Slovak Republic



(Source: Nahálka, 2013)

Possible Solution - Government City

POSSIBILITIES OF LOCATION THE GOVERNMENT OFFICE COMPLEX DISTRICTS

The solution, which could mean significant savings on operating costs, and higher quality of activity of the state apparatus, could also be significant spatial concentration of workers from central state institutions. Government district is a concept that not only existed in the world, but also in our country. Administrative units in the form of whole cities we see in Canberra, Brasilia, and Astana, Kazakhstan. On

our own continent but most government buildings are concentrated in urban areas built complex. They tend to be either part of a relatively independent urban areas (for examples Kiryat ha-Memšala in Jerusalem), or creating a lively urban structure in contact with the core the city (City of London and Westminster, and Grubbegata Akersgata in Oslo and in particular Regierungsviertel meander of the River Spree in Berlin) .

Vision of building a government areas have emerged in our country at the origin the first Czechoslovakia. In 1929, it was intended to be used for this purpose the space of

Figure 3: Buildings of ministries in obsolete office buildings - the ministries of Interior, Agriculture, Finance



(Source: Nahálka, 2013)



Figure 4: Initial reflections on the government quarter
- Liberty Square and central postal administration



(Source: Nahálka, 2013)

Liberty Square. Even architectural competition for government district Slovak state in 1942 counted with this urban space. The whole concept of Italian architects Ernest B. La Padula and Adalbert Libera of the planned five of ministries later implemented as a central postal administration (designed by E. Kramar and Š. Lukačovič).

THE GOVERNMENT CITY - POSSIBILITIES OF ENVIRONMENTAL BENEFITS

In the international design competition for government district in Budapest in 2007, won the Hungarian and Japanese architects (Péter Janesch and Kengo Kuma). Reason was certainly also ecological dimension, which created the office complex for the 5550 workers eleven of ministries sixteen hectares in area. Total savings of office space will be reduced to only half the energy balance by using solar and heat pump led to another enormous savings. Similarly, the government center in Berlin used as part of a heating system for biodiesel cogeneration unit with regenerative storing excess heat in summer cooling in the former salt mine in a depth of 300 m below the Reichstag building. To reduce the power consumption is only a rooftop Federal Chancellery situated photovoltaic system with a total area of 1300 m² of solar panels (Oravcová, 2012, p. 76).

CONDITIONS FOR THE SOLUTION THE GOVERNMENT CITY IN BRATISLAVA

The Government intensively investigated the possibility of creating a government district in particular since 2007. At that time has shown real chance advantageous sale or substitution of existing buildings and parcels departments to finance construction of government quarters. Maximum alternative was to create a space for the 8786 employees of the then 14 of ministries and other state organizations 715 workers. The aim should be to build not only an insipid administrative zone, but where inter administration and

amenities (gastronomy, shops, services ...) and a place to rest. It also should reduce energy costs, security service, maintenance and procurement. The new complex is expected to use most recent methods of management and use of spatial and temporal Fund. At the same time they must use modern methods of communication, including communication with the citizens. They would allow the original claims required floor area considerably reduced. In the offices staff used a combination of kombi-office or business club instead of cellular offices can save nearly 20% to 30% of the workspace. Sharing of work (desk-sharing, hostelling) can save up to 30% as an overnight and mobile working from home through teleworking to 20% of the administrative officials work week (Arnold, 2002, p.63). The conditions for a new method of carrying out work of the employee such as "Home work" and "telework" already provides and § 52 of the Labour Code, which provides for specific types of employment relationships (Olšovská, 2012).

PLACEMENT OF THE GOVERNMENT DISTRICT

Different considerations on government district vary considerably according to claims mainly on the size of the floor area and land area. Therefore, localization is offered in minimum lots to the Department of Defense about Jarošova Street and into the distant location of the maximum area under construction hospital Rázsochy in Lamač.

For the success of this event, it would be much more beneficial to consider the locations closer to the center of the city, even at the cost of effecting shares to private owners of land (for example exchange for building a real government). For a maximum variant addressed students FA STU government town development in the area Prístavná Street - Winter Harbor. Particularly in relation to the necessity of building a new multimodal terminal for which sufficient current capacity of the port, this option is particularly suitable, partly because the ratio of current assets in the affected area (Andráš, 2012, p. 59).

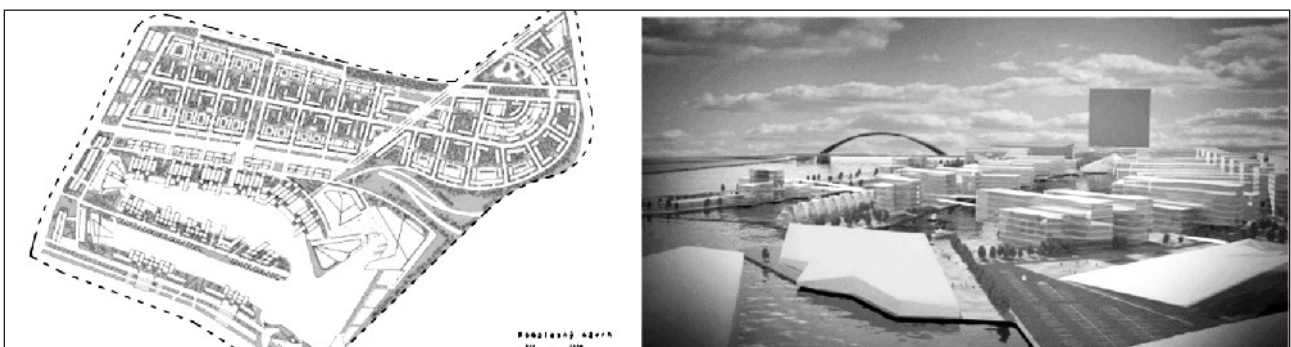


Figure 5: Winter Port and Prístavná Street today



(Source: Nahálka, 2013)

Figure 6: Winter Port and Prístavná Street in the future



(Source: Švecová, Takáč, 2011)

Conclusions

The discussion, which always develops in economically challenging plans, such as the government district, may not only reflect economic issues or political. Its outcome must allow for the architectural and urban solution that responds to the requirements of environment - employees working for government agencies and public citizens and visitors not only these "authorities", but also a new, full-fledged public space of the capital. The new urban area would in a strip between the northern pool of ports and Prístavná Street area was higher for the new type of amenities. In this area could be implemented and plans oriented to sustainability, versatility environment and maximum energy efficiency. At the same time there could be a really public high quality urban environment, urban street space is putting the finishing touches in continuation of development of eastern central urban area. Such a solution would support the completion of the second plan, the North "Danube facade" through a more compact urban structure, as well as the completion of a new urban structure in the eastern development Bratislava (Nahálka, 2012, p. 88).

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Figure 7: A full really area of the capital - Regierungsviertel in Berlin today,
Winter harbor in Bratislava in the future.



(Source: Maláriková, 2012)

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Eva Oravcová

PHOTOVOLTAICS CHALLENGE FOR ARCHITECTURE

Introduction

The unfavorable reality of this age related to climate changes is challenging us to sustainable solutions. In the EU, where buildings account for more than 40% of energy consumption implicated in CO2 emissions architectural design therefore increasingly relies on technology and materials, that are environmentally friendly and energy saving or capable of generating energy in an environmentally sustainable way (clean, no fumes).

Low energy construction is becoming a reality for the upcoming period. Meeting minimum energy performance requirements is an obligation under the law (Law Nr. 555/2005 J. of L.). Energy Efficiency is the amount of energy required to meet all the energy needs associated with a standardized use of the building. EE is determined by calculating and is expressed in numerical indicators of its total energy needs and generating of emissions carbon dioxide. The law specifies various factors which must be taken into account in the calculation. Details of the calculation determines decree Ministry of Construction and Regional Development (Decree Nr. 311/2009 J of L.). "These principals are also accompanied by environmental concepts of a building as a whole and also its individual parts with active participation of incoming users or at least employees (Nahálka, 2012, p. 113).

There is no doubt that photovoltaics are a booming technology and one of the most promising sources of renewable energy. It is rapidly a evolving and dynamically growing sector of the economy, science and research. Interest in this easily and essentially everywhere available energy source is rising. Considerable technological progress has been achieved in this area, aiming to maximize performance and reduce the price. Since 1995 this technology has been gradually incorporated into development programs and marketed in many countries.

Photovoltaics

Photovoltaics (PV) is a technology of the direct transformation of solar energy into electricity.

The basic units of PV solar systems are cells (solar cells), used to build basic construction elements - photovoltaic modules, i.e. arrays of large numbers of PV cells. The advantage of PV systems is that they do not require direct sunlight to function. They are able to produce electricity even in cloudy weather, under diffuse light. Under these adverse circumstances they are less effective, but do not cease to generate electricity

The most commonly used material for PV solar cells is crystalline silicon (c-Si, mono and polycrystalline). In view of their enhanced material efficiency, low production costs and better integration into the structural elements of buildings, new thin-film technologies (thin-film, a-Si, CdTe, CGSi, etc.) show additional promise (Figure 1). Applied to a variety of materials they are more resistant or even lighter an have superior and more variable visual characteristics. The use of crystalline silicon still prevails, even though experts expect increased efficiency and significantly lower prices from the experimental materials (multi-layer, polymer, nanofiber, organic, etc.).

Photovoltaic installation in landscape

Landscape character - its perception and evaluation has recently becomes the subject of interest and contradictory debates between experts and the lay public, particularly in context with extensive photovoltaic installations (PV systems) in a greenfield landscape. These are called solar parks - photovoltaic power plants (PVP), the generally criticised by the public at large, primarily for aesthetic reasons. In spite of arguments used by solar parks advocates, such solar parks, often callously interfere with the well-known landscape.

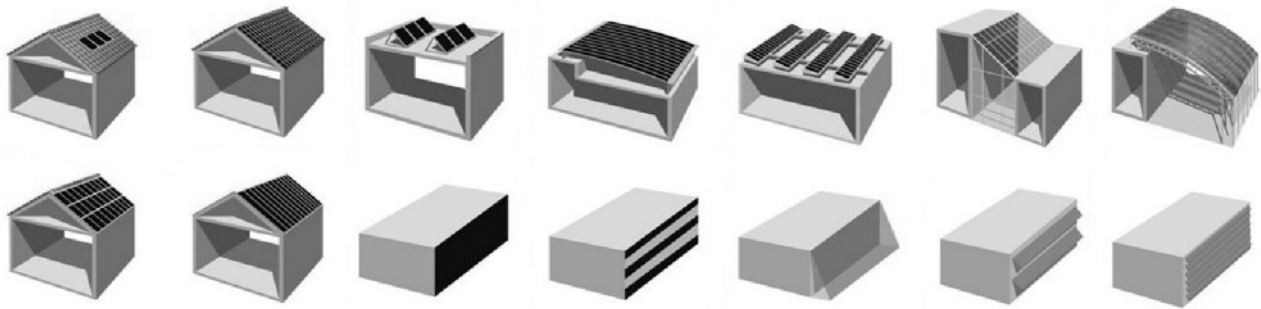
Figure 1: Solar PV cells - a wide array of choices that can be combined and connected to suit every possible project requirement.



(Source: Sapa Solar BIPV Brochure, p.19, www.sapagroup.com)



Figure 2: Examples of options integration of PV systems into the building



(Source: Organisatie voor Duurzame Energie, Vlaanderen, 2004)

Legislation which has allowed the building of large-area homogeneous photovoltaic power plants harms the positive perception of renewable energy sources (RES) as a whole. It is therefore desirable to completely refuse the concept of solar power plants in the open country on pastures and meadows, or in the vicinity of human settlements and to focus on other forms of using this technology, which undoubtedly constitutes a promising source of electricity for meaningful and adequate uses as a means of shaping the landscape both in rural and urban environments.

Long-term research has resulted real practical applications, integrating photovoltaics in the construction, reconstructions and revitalization of family and residential buildings, buildings of public utilities, objects for agricultural and industrial production - in its various forms of applications into roofs and foresides of buildings

A well-designed and properly dimensioned photovoltaic system is a small power plant (PVP), capable of meeting the energy needs of property users in terms of ensuring their thermal comfort (heating, air conditioning), lighting requirements, operation of household appliances, the preparation of domestic hot water. It is exactly the PV in buildings with low and medium power consumption should be the goal of photovoltaics.

A broadly decentralized deployment of small PVP in the buildings across the country may help 'solar' electricity to reduce dependency on the conventional energy sources (gas, coal and nuclear). Production of this "green" energy is supported by government grants. Power grid administrators are required to buy for energy networks, has to energy generated in this way at, state-guaranteed prices, during the entire period stipulated in the law. The current RONI Decree in force since 1.7.2013 establishes the regulation of prices in the electricity sector and sets the 2013 prices of electricity generated from solar energy as follows: The price of electricity produced from solar energy will from 1.7. 2013 be defined as $\square 98.94 / \text{MWh}$ with a total installed capacity of up to 30 kW. The equipment must be installed on the roof structure or the building envelope firmly connected to the ground.

Photovoltaics - use in architecture

The goal of each installation is to maximize electricity generated during long-term use. How much power a PV module can produce depends on many factors. Of major importance is the correct orientation of the module in the horizontal direction (South or SW with a deviation of 15°) angle gradient of the module in the vertical direction (30-40°), insulation, shadow, and the need for ventilation gaps (facade - panel). Provided that the requirements for orientation have been met and negative effects have been removed from the vicinity the building, the surfaces most suitable for the installation of photovoltaics include the roof and facade of the building in their various forms and as well as surfaces with distinctive architectural forms (Figure 2).

ROOFS OF OBJECTS

- Flat roof - PV modules in a horizontal and slightly inclined plane - on its own construction or as a thin-film PV. Sloping surfaces can be designed as fixed systems or rotary
- Sloped roof (pitched, gabled, other)
 - on the roof plane - PV modules are used as a full replacement of roofing, deposited directly on the roof truss they are anchored and fixed. PV foil may also be glued to the surface of the metal sheet. There may also be large-scale PV modules or small sized PV modules (special PV roof tiles, roof shingles, covering type of Eternit, mats, belt coverings...)
 - at roof plane - PV modules of different type, colour, size (but typically large-scale) are secured to their own structures. Between panel and roof there is a ventilated gap. In most cases those are additional applications to existing roofing.
- Skylights, Sawtooth roofs (more inclined south-oriented surface has integrated PV panels)



- Roofs of different shapes, ceilings of glass

PV modules, most often transparent types, create roof construction of different geometric shapes - overlapping interior spaces, such as atriums and halls, winter gardens, passages and connecting communication, skylights

FACADES

The facade becomes a structural component, which not only creates space and tries to retain received energy but also creates elements capable of actively producing energy. A PV facade is most effective if there is sufficient ventilation of the cavity between the PV panel and the wall or if it even uses generated heat discharged. Facade modules meet all the criteria applicable to a modern facade design, such as protection from the weather, sunlight, noise, fire insulation, protection against burglary.

PV modules can be used on:

- inclined surfaces, vertical - either to the entire façade surface or to a part of façade surface in vertical or horizontal strips (or combinations thereof)

The panels used on facades can perform various functions and serve as a:

- Full substitution of another material (for examples instead of stone tiles)
- Protruding hanging surface on its own individual structure, with a ventilated wall – module cavity, which is secured to the facade
- Glass facade (glass-glass) with integrated PV modules, also known as a transparent facade
Transparent PV modules (in general) have a dual areas usage – capture sunrays and convert their energy to electricity while shielding protects the

Figure 3: Solar façade, CO2-neutral factory, SMA Solar technology AG, Kassel, 2009, Germany



(Source: Sustainable Investment and Places – Best Practices in Europe, p.44-51, C.Meyer, Köln)

Figure 4: Family house fam.Meusburger 1,28 kWp, Wolfurt, Vorarlberg



(Source: <http://www.stromaufwaerts.at/de/content/referenzen.php?catID=4>)



Figure 5: Energie Calw GmbH, awning over the main entrance to the office building



(Source: <http://www.calw.de>)

interior and protecting it from excessive glare and overheating. We distinguish between them depending on

- The degree of shading (transparency stated in %)
- The shading level (or density, the ratio of full to transparent surface area of the panel due to the different sizes of gaps, i.e. spacing between elements)

Integration into additional elements of the facade Thus integrated PV cells and modules fulfil a dual function – attain their intended purpose (intensity of shading, etc. ...) and, thanks to integrated photovoltaics are simultaneously involved in electricity generation - awnings, canopies, sun shades, blinds (vertical, horizontal, fixed, variable), railings of balconies, loggias, terraces, integrated into apertures (PV film on windows, transp. variant solutions)

At the onset of computer technology to area of the protection against the sun begins the era of exclusive shading systems, which are slowly but surely becoming a daily routine of our architecture. Most progressive technology are dynamic facades (Andráš, 2008, p.31)

OTHER SURFACES

These are surfaces which are a form of architecture itself.

The PV modules used - whether transparent panels (transparent, translucent to varying degrees or shading level) carry a strong architectural message of the entire project itself i.e. they wrap, protect, define the interior. They are different forms of cylindrical segments, spherical, irregular and concave curved surfaces (when not distinguishing exactly "where the facade ends and the roof construction begins" and vice versa)

When designing PV systems emphasis should be put on

- compliance of the intended solutions with specific local conditions (wind strength, amount of snowfall, light conditions, urban area ... etc.)
- consistency with (or linkage to) existing building structures the other elements of the structure (roof, cladding, etc.)
- technology interconnection with HVAC systems,
- aesthetic integration into the overall expression of the projects,
- method of using of produced energy (direct consumption, storage batteries sale to the grid or a combination of these methods).

Conclusion Types of PV panel layers, thickness and type of glass, etc. vary according to static and thermal requirements, according to the specific needs of use.

A PV facade - in the case of a full peripheral wall this may be both cladding and also insulation. In a transparent facade and roofs (overlap areas) there is the possibility of illumination or vice versa shielding interiors, etc.

Conclusions

When proposing and designing new buildings or the rehabilitation and reconstruction of existing ones, one must be aware that standard solutions with standard technological equipment not have a prospect. "Term sustainability is also linked to the concept of user-sustainability. It has several aspects - point of view of energy efficiency and thus economic efficiency for user and the ability of the house to reflect changes in the lives of its users. Another aspect is the creation of a healthy living environment, designed according to the principles of building biology. In particular, the second aspect is in Slovakia very important, because most people, who decide to build a house, usually build only one object, which they inhabit throughout their lives (Korček, 2012, p.86). "In the



school practice appropriately designed model of sustainable energy solutions into buildings, has a direct impact on the students, their practical experience with this type of building in practice. Are built the basic assumptions for good environmental habits and perspectives for the future (Končeková, 2013, p.92)

The application of photovoltaics offers compositionally interesting, structurally undemanding construction, energy-efficient, nearly self-sufficient, virtually almost profitable solutions for construction design. Architecturally and visually appealing integration of photovoltaic systems in roofs and facades, integration options directly into the facade elements of windows, shading systems, railings, awnings, overlapping courtyard, foyers, halls, connecting roads, skylights, roofing pitched and flat roofs (even as a substitute), are a challenge for architects to come up with attractive renderings of objects and offer new alternatives for contemporary architectural creation.

An opportunity presents itself to create and successfully use a new architectural style "solar design" – in the field of designing. (Bidlová, 2010)

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Barbora Pápyová

RISK MANAGEMENT IN THE CONSTRUCTION

Introduction

Development company takes an important responsibility not only through financial input. Speaking about development process we must be able to predict the future development as the threat may meet the risk and this way the risk may become reality.

The risk is closely related to social development. The risk analysis is regarded as process of defining threats and their impact on assets, thus on determining the risks and their severity.

A great number of injuries happen during the work at construction sites, these accidents are usually very serious and life-threatening. Risks which were underestimated or incorrectly evaluated cause the health as well as economic losses. This results in unwanted fluctuation, absence and reduced competitiveness.

Economic effectiveness of the precautionary regulations to improve safety and health on the developer's level shows the efficiency of all the tools provided to achieve the economic growth through increasing the level of occupational safety and health.

Through introducing the regulations developer minimizes the threats. Improving the occupational safety and health on the developer's level shows the economic effectiveness and efficiency of all the tools (financial, material, personnel, etc.) provided to achieve the economic growth through increasing the level of occupational safety and health.

The theory of risk analysis is constantly evolving. The risk analysis investments are always viable, it can be seen in reduced expenses and losses at the work accidents or other unwanted incidents. Risk evaluation is important for safety and health of the employees and it systematically examines all the aspects of work (Ivanička, 2007).

Definition of development process

Slovak as well as foreign sources speak about development of realities as about real-estate development. The notion development process has the closest relation to the term investment process. Investing into construction work can be a source of long-term profit. No construction work can be done without an investment. The task of the investment process is to increase the effectiveness of the construction work and optimizing (reducing) the expenses (Miles, Berens, Weiss, 2000).

There are a lot of definitions which are trying to characterize the development process. In general, we can

say that it is a process which involves the process of preparing, constructing, utilizing and financing the real-estate (Ivanička, 2005).

Public needs and interests of the private sector should be connected with each other. The label „developer“ involves multiple activities resulting from the stages of the development process. The main concern of the developer is to keep the time schedule so that the construction work will be finished within the estimated time.

Development company takes an important responsibility not only through financial input, but also in the area of creating the construction, in producing new ideas, in the usage of the purchased land, efficiency of the repair works, putting it into service, maintenance, letting the newly built property, trade on the real-estate market manages the vast investment portfolios or targeted destruction (Miles, 2000).

Risks in the development process

Risk is a historic term from 17th century. It is derived from Italian word „risico“ which was related to sea transport, represented the cliffs that the sailors had to avoid. Later it was used to express the meaning „being exposed to unpleasant circumstances“. Nowadays, we know that the danger comes from different parts of life and in the theory of risk this word is related to threat (Smejkal, 2010).

Threat:

- represents the source of danger that may cause some damage,
- any phenomenon that has a potential ability to harm the interests of the particular business.

Danger:

- has a potential to cause damage.

The term risk is closely related to social development, definitions of risk in the past were different in content from the modern ones. Simultaneously, risk carries different meanings in different activities, but the common grounds in the meaning stays the same - the uncertainty. There is no single and widely accepted definition of risk. All the definitions of risk have 3 common components:

- time frame in which the risk is considered,
- probability of incident(s) occurrence
- degree of the severity of the consequences.

Risk can be expressed as „logical multiplication“ through the equation of risk:



Risk = occurrence probability X severity of consequences

Risk in the development process is related to uncertainty (what could happen) and to goal (what must be achieved) and it states the degree of threat as well as opportunities. Risk of the development process refers mainly to decision making, which is described by P. Drucker: „Decision making which does not involve risk perhaps is not a decision at all.“

Risk in the development process is probably a „sum“ of risk-related factors (internal and external), which influence the occurrence of the risk incidents (real manifestation of risk) through which the intensity of the effect of impacts of the risk incident is increased (Zuzák, 2009).

Figure 1: Risks influencing the development process



(Source: Špírková, 2009)

Risks of the particular project implementation:

- absolute risk – negative implementation for everybody,
- relative risk – positive for some, negative for others (most of the risks),
- speculative risk – expectation of the incident which will influence the positive or negative result (hazard),
- pure risk – assuming the negative incidents of the implementation,
- uninsurable risk – speculative uninsurable risks,
- insurable risk – existence of the insurer for the particular insurance area.

Risks can be divided as follows:

- systemic (market) risk – it changes according to the economic development, is dependant on monetary and budget economy, cannot be limited, is considered during decision making and is qualified,
- non-systemic (unique) risk – it is typical for a specific type of business, the reason for the implementation is usually innovation, the new competition in the market or losing the key employees (Špírková a kol., 2009).

In connection with development process we must in some way foresee the future development, thus the fact, that the risk may become real, when the threat which embodies the risk turns into reality.

The result of such unwanted incident in development process is damage.

If it is not possible to eliminate the risk, the duty of every developer is to evaluate all the threats and dangers and introduce the regulations that would reduce its impact so that the threat would be minimised. This task is especially for the specialists in management and reducing the risks but as well for the state authorities. There are different kinds of risks for instance business risk, and mainly economic, investment risk, information and legal risk because these are the most common threats to legal entities (Smejkal, 2003).

RISK ANALYSIS

The first step in the process of reducing risks is their analysis. Risk analysis is the most commonly understood as a process of defining threats, the probability of their realization and the impact on assets, hence stating the risks and their severity.

Risk analysis includes:

1. identifying the assets – defining the agent under consideration and description of the assets which are their property,
2. determining the value of the assets- determining the value of the assets and their significance for the agent, the evaluation of the possible impact of their loss, change or damage on the existence or actions of the agent (developer),
3. identifying the threats and weaknesses- determining te types of incidents and assets which can influence the value of the assets in a negative aspect; determining the agent’s weak spots which enable the impact of the threats,
4. determining the severity of the threats and the degree of vulnerability – determining the probability of the threat occurrence and the degree of agent’s (developer’s) vulnerability to the particular threat.

A quality solution of any problem from any area is based on a quality risk analysis which is the first step towards the risk management (Smejkal, 2010).

Evaluation of the risks in construction industry

The work at the construction sites are done either concurrently or in sequence. While working on a construction it is essential to use the appropriate principles to secure the occupational safety and health as well as to stick to the approved plan of occupatrional safety. (Mokoš, 2012)

A great number of injuries happen during the work at construction sites, these accidents are usually very serious



and life-threatening. It is a common knowledge that OSH in the construction industry is in a poor condition. The effort that the appointed authorities bring to improve the state of OSH in the construction industry through legislative, edifying and repressive regulations, results in just a slight improvement.

Auxiliary regulation for evaluation the risks in construction industry is Slovak Government Regulation no. 396/2006Z.z., issued on 24th May 2006 governing the issue of minimum health and safety requirements at construction sites, whose establishing carries the duty of creating the OSH plan. All the documents must be finished before any work at the construction site can be initiated. The documents discuss the principles of the occupational safety and health, safe operation of the machinery and other estimated activities. Besides the OSH plan there is an important person involved and that is the safety coordinator at the construction site. This coordinator shall not be in a position of a construction manager and he/she oversees the occupational safety and health. It can be a self-employed person qualified to perform the duty in terms of special regulations (Act no. 124/2006 Z. z. Governing the issue of occupational safety and health, article 23), so that the objective inspection activity is provided. Construction managers tend to be more lenient in evaluation of the safety regulations fulfillment or hide serious deficiencies (Vojtek, 2011).

In case there are multiple subcontractors whose employees have to cooperate at the common workplace it is crucial that all the employees are well informed about the possible risks and threats, precautions which are included in the contract. The access to the information should be available not only for the employees who work directly at the construction site but as well for those who work in the close surroundings. (Niskáč, 2011)

Education and training in OSH should be considered as a life-long training with the only possibility to influence the precaution and implementation of accident prevention measures. Informing about the risks connected with particular kinds of construction work as well as standard work procedures should be the norm before the initiation of any work which involves risk and a vital component of any training course. (Mikloš, 2013)

The highest number of deficiencies was found in the area of employment and wage regulations (6 694 case during the years 2007-2011 – 27,71%). The second largest group is represented by the violations in the area of restricted technical equipment (4 712 case during the years 2007-2011 – 18,81%, which is related to the equipment inspection at the construction site). On the third place are the violations in the area of managing OSH (3625 case during the years 2007-2011 – 14,47%, it includes the deficiencies in the work coordination at the common work places, regulations about the common work places at the contractor's, keeping the technical documentation). Scaffold, because of its character of temporary structure, belongs to the category of operating buildings and other objects, deficiencies found in this area (3527 case during the years 2007-2011 – 14,07%). Deficiencies in the group „Activities“ represent the amount of deficiencies that were ordered to be removed because of their severity and their life-threatening aspect; or they were the reason for the prohibition to be issued. They refer mainly to work in heights and at the construction sites, for instance excavations without security supports etc.

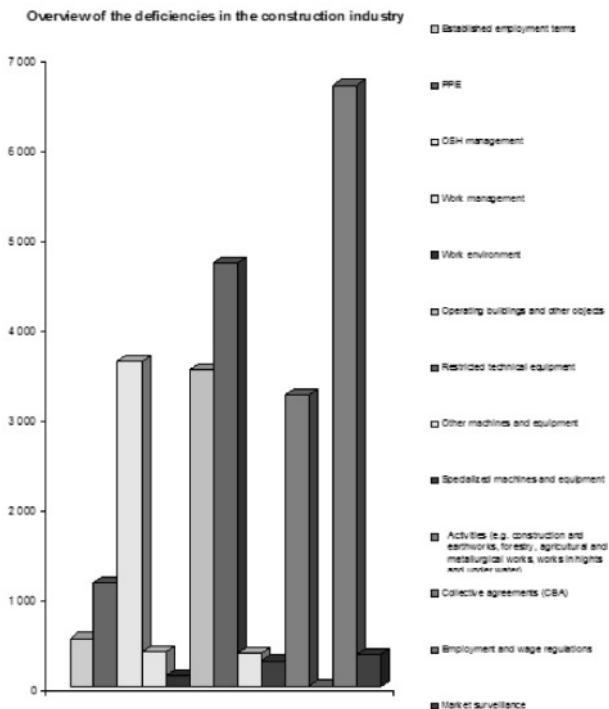
Table 1: Deficiencies in the construction industry

Work environment	13	22	30	26	31	122
Operating buildings and other objects	576	511	890	849	701	3 527
Restricted technical equipment	752	875	1 086	1 078	921	4 712
Other machines and equipment	50	50	87	68	120	375
Specialized machines and equipment	69	48	87	55	33	292
Activities (e.g. construction and earthworks, forestry, agricultural and metallurgical works, works in heights and under water)	445	376	720	934	772	3 247
Collective agreements (CBA)	1	0	3	0	1	5
Employment and wage regulations	1 283	1 274	2 000	1 259	878	6 694
Market surveillance	0	108	100	79	79	366
Unspecified	0	0	0	0	0	0
Together	4 079	4 287	6 237	5 584	4 868	25 055

(Source: Rozbor porušení v oblasti stavebnictva v organizáciách v pôsobnosti výkonu inšpekcie práce podľa zákona č. 125/2006 Z. z. v znení neskorších predpisov za obdobie 2007 – 2011)



Figure 2: Analysis of the violations in the construction industry



(Source: Z pôsobnosti dozoru Národného inšpektorátu práce podľa zákona č. 125/2006 Z. z. v znení neskorších predpisov za obdobie 2007 – 2011)

Theory of risk analysis is constantly evolving. The risk analysis investments are always viable, it can be seen in reduced expenses and losses at the work accidents or other unwanted incidents. The work efficiency is increasing which results in better organisation and higher profit for the company.

Conclusions

Nowadays, development companies tend to privilege various austerity measures in order to increase the profit. That is why architecture, ecology and safety of the whole construction work remain in the background. Excessive effort to reduce the construction material consumption and abridgement of the control mechanisms result in a great amount of risk. These may be reflected in unexpected expense growth in different stages of the construction. Underestimated and incorrectly evaluated risks may result in health and economic losses. This results in unwanted fluctuation, absence and reduced competitiveness. Through the rise of safety at the construction sites, work efficiency as well as labour productivity increase which naturally makes OSH measures more effective. Education and training in OSH should be considered an inseparable part of the construction industry. The life-long training is the only possibility to influence the precaution and implementation of accident prevention measures. Safety and health represent the permanent values.

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Alexej Veselý
Bohumil Puchýř

GOOD PROJECT REQUIRES MORE OR SOPHISTICATED SOLUTIONS AS A WAY TO THE SUCCESSFUL RESIDENTIAL REAL ESTATE PROJECT

Introduction

Due to the economic maturation of our society and due to the growing requirements of clients, demands on project management rise accordingly. It becomes inevitably more consistent and complex. Therefore in our company a comprehensive system of project management that covers all areas of project operation is set and successfully used.

A natural part of well operating residential real estate project in present day period of demand downturn is besides project management itself also well planned and operated marketing and sales. This thesis tries to show complexity of innovative project management in relation to marketing and sale process, which accompanies it. It shows that it is necessary to provide, in frame of sales and marketing, good planning and execution, where attempts to save on one or another segment may have a negative impact on overall success of the project.

Project management

Project management is a key component. In our concept, project management takes over responsibility for the turnover part of a project too. This means sales, but mainly its securing and organizing of all supportive activities. This innovative enlargement of competencies in our approach to the project management requires not only ability to manage the project as a process and as a construction product but it requires also enlargement of horizon of a project manager to more comprehensive point of view. This enlarged point of view secures at least one crucial matter for investors: by considering the project as an independent enterprise it becomes more flexible and it more easily reacts to the current situation on markets.

SETTING THE ELEMENTARY COLUMNS OF A PROJECT (LOCATION, LAYOUTS, PRICES)

At the starting line of a project it is inevitable to determine a target customer. Intentionally we must try to eliminate various interests and wishes, mainly presented by stakeholders and we determine "who, for how much and what level of fit outs", i.e. who is the customer of our project. Determining the goal significantly influences entire project. From layouts design, setting the extent of generosity of interiors and exteriors to price setting. It influences costs and above all revenues.

Let's assume that project management process is well managed, following part of this thesis is therefore dedicated to the area of marketing and sales

Marketing

Marketing of an innovative project comprises of a complex of strategic planning, execution and feedback check of project communication strategy. Good marketing creates leeway and preconditions for subsequent sale

PREPARATION

Before commencement of sales and practically concurrently with commencement of works on the project design, total marketing budget should be drawn up. At the same time communication strategy is defined and based on precious and plentifully discussed competitive tendering particular elements are outsourced.

Figure 1: Project segments



(Source: Vesely, Puchyr, 2013)

Budget

It inevitable to define our budget comprehensively, none of marketing and public relation ingredient should be omitted. PR and marketing relate very closely and for real estate purposes PR costs are embraced in marketing budget. Plan must cover contingencies like crisis communication and other activities, which even in the beginning of a project are not marked as a reserve. Based on long-term empiric experiences initially the marketing budget is calculated as 1% of planned revenues.



Plan

According to the project character, location and price level, a target customer group is defined. It predetermines overall communication strategy and its segments. To correspond the target customer preferences, we chose appropriate communication channels. This requires thorough knowledge of these channels. Their incorrect selection and usage likely leads to completely ineffective and subsequently expensive communication.

Assignment

For correct work of external subcontractors (graphic designers, programmers, copywriters) it is essential to exactly define the assignment and select substantial elements of communication strategy. Subcontractors of individual parts come out of tendering and discussions either in-house or during external consultations. The selection of a subcontractor is a fundamental issue where again attempts to save on one or another segment may have a negative impact on general impression of a campaign and later of the project in global. The most weighty selection criteria should not solely be price but entire persuasiveness of a solution, esthetical point of view and means how the proposal approaches target customer characteristics. With each of the selected solutions we will work daily for a period of at least three years what is a lifecycle of typical residential real estate project. The solution should be therefore timeless, it should not succumb temporary trends.

Basic parts of marketing communication that require engagement of an expert – outsourced subcontractor – are visualizations, graphic design, web design and copywriting.

Visualizations

Visualization is present crosswise the campaign. It will appear on web sites, leaflets, billboards, banners and others. Before the house warming the visualization is in essence only marketing tool that serves to display final project design to a client. Professional work on visualization significantly supports project sales. By contrast, unfavourable visualizations may harm even otherwise high-quality project.

Graphic design

Graphic or rather visual style provides the project with its own identity. Unless the graphic style is unified, gives a potential client the impression of a primary stimulus automatically determining perception of the project and facilitates retain the project. A graphic designer must have an assignment specified to express a substance of the project and its communication strategy. It is exactly projected to a visual style by the graphic design. Graphic style then accompanies the project for the entire lifecycle.

Unfavourable design may cause implausibility, low reception by a target customer group and decrease of credibility of text advices or simply negative perception of the project.

Web design

Project web site is a primary marketing and communication channel for entire project. Web site not only presents a project, but should also meet key criteria for users. Web site ergonomics provides a user with adequate comfort for selection of a desired flat and detailed inspection of entire housing project. Suitable web site makes user feel pleasant, even amused and he is willing to spend several minutes there. During that time the potential client already imagines living in the house and this is a key moment for future buying in client's decision-making process. Bad web site discourages clients just at the first moment therefore he only looks up necessary information and leaves the web site immediately.

Copywriting

Not only web texts, but also all the text documents must meet formal and stylistic prerequisites. Proper job of a copywriter makes the reader captured to such extend that he cannot break away from reading it. Bad text outputs by contrast make the reader bored, impedes him and it does not provide him with any useful information. It is often tortuous to read and understand. This should be by all means avoided. And securely well-known rule is also here valid: "less is more".

REALIZATION

As long as our communication strategy and marketing campaign is planned we start with its realization. Commencement of marketing campaign naturally continues in commencement of sale. During the sale all the attention dedicates especially to advertising, PR activities and project event organizing.

Advertising

Ranking of advertisement kinds according to the quantity of application is practically with no exceptions following: 1st Internet advertising, 2nd printed advertising, 3rd outdoor advertising. Inverse placing applies for prices, i.e. outdoors advertising is the most expensive and Internet advertising the cheapest when considering price for a piece.

Internet advertising

Truly functional utilization of the Internet advertising requires detailed map of advertisement servers/portals, overview of what they offer and for what prices. Internet advertising often demands necessity of sudden changes and flexible solution (for instance special offers of advertisement servers, where one must react and prepare the advertisement very quickly). Advertisements are regularly adapted in accordance with current sales status of the project.

It is appropriate to use to maximum extend opportunities to connect to other Internet channels, i.e. web and video channels. This connection significantly increases advertisement impact, thus extent of addressing potential clients.



In general the advantage of this form of advertising, unlike other forms, is above all its exact aim on web users, directly looking for particular property in particular region.

Printed advertising

Cooperation with printed media secures not only reduced prices, but also special offers, for instance last minute free advertisement spaces. What is certainly of great importance for media planning is knowledge of printed media in real estate area and its production cycles and formats. Form and contents of an advertisement is updated according to a life cycle of the project. Project presentation at commencement of sales looks different to project presentation at house warming. Updating advertisements in appropriate way is a method how to prevent effect of wearing out.

Outdoors advertising

Quality outdoors advertising is just previous forms based on knowledge and surveys of local market situation as well as on capability flexibly arrange data according to up-to-date requirements. For selection of large advertisement areas we use transportation intensity maps to show frequented locations. The advantage of outdoor advertisement is a broad aiming and addressing of a group that may not be addressed by other forms of advertisement.

PPC

Pay-per-click system of Internet advertising guarantees intake of clients searching relevant contents to our web page. This demands correct key word list where key words are considered from point of view of relevance, competition and price per click, i.e. so called SEO optimization. Together with SEO, the PPC campaigns offer highest intake of visitors to the project web site.

Following chart shows absolute number of visitations of a project web site in 2012 coming from all sources. 1st place hold Google PPC with 5.863 visitations and 3rd and 5th place is held by Seznam sklik, altogether 5.440 visitations (displayed separately due to the change of supplier during campaign on seznam.cz).

Figure 2: Number of visitations to project web sorted by sources

1. google / ppc	5 863
2. google / organic	4 226
3. Seznam / CPC	3 717
4. (direct) / (none)	3 625
5. sklik / ppc	1 723
6. seznam / organic	1 482
7. trikaya.cz / referral	885
8. residenceerasmus.cz / referral	726
9. sreality.cz / referral	596
10. ibrno.cz / referral	228

(Source: Vesely, Puchyr, 2013)

Public relation (PR)

PR activities secure maintenance of public awareness of a project as a brand. They support positive image of the project to be maintained at target groups. These groups cover besides potential clients also the public, authorities and business partners.

PR comprises in especially regular release of news and articles on the project web site. Up-to-date and attractive matter of news considerably endorses optimization for search engines and offers readers interesting matter and, in particular, reason to come back to the web site. It also informs involved persons (e.g. existing clients) about the project status.

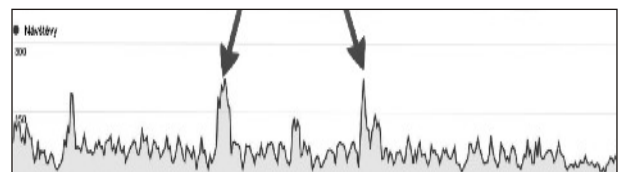
Optimizing based on news is so called off-page SEO, thus programmed part of optimizing; securing contents, back hyperlinks etc.

PR must manage as well crisis communication, which is unplanned and undesirable, nevertheless in case of real estate projects relatively frequent. It is more than obvious that a new building alone is an intervention to the neighbourhood and is negatively accepted by old residents.

Events

An effective sale support is different project events. Amongst following events belong: putting down a foundation stone, house warming party, open days. These events, backed up by only very austere information campaign, often increase public interest of the project. In the diagram of attendance of the project web page, two peaks correspond with arranged open days and their information campaign. Therefore information campaign connected to events, brings not only clients to a specific event, but also informs the public about existence of the project.

Figure 3: Two peaks on project web page attendance curve show impact of information campaign for open days



(Source: Vesely, Puchyr, 2013)

CHECKING

Another significant task of marketing department is a crosschecking of individual components of marketing strategy. Plentifully used tool is Google analytics that affords information about attendance and also about origin and behaviour of visitors. It is able to show which flats are most often displayed and on which parts of the web site visitors stay the longest. Based on that update of web sites is carried out.



Evenly we are checking retrospectively the PPC adwords functions and other. Campaigns are continuously scrutinized and in case of necessity are updated and adjusted.

Integral part of checking process is retrospective monitoring and assessment of marketing expenditures (cost controlling) and their continuous adjustment.

Sales

High quality marketing gives prerequisites to successful sales. It is commonly commences by preparation of sales strategy and milestones of project sales lifecycle.

CONTRACT TEMPLATES

Key role on deal realization is presently held by transparent enough contracts, which is able to adjust to an individual business case. Overwhelming majority of client engage their lawyer. It is inevitable to be ready to negotiate partial changes and to be aware of business conditions and limits. In general importance of contract templates is underestimated, either because their preparation is time consuming or costly. Particular types of contracts are open and notorious and plentifully used. Then only briefly:

Reservation contract

Reservation contract determines only basic payment conditions and specifies the property and its price. The most of the clients withdraws just from reservation contract before they are pushed to sign future purchase contract.

Future purchase contract

Future purchase contract already determines purchase process by payment calendar, client changes rules and describes in detail entire process of handing over to the client. A natural part of future purchase contract is the exact area and price specification.

Purchase contract

Purchase contract secures assignment of particular unit/property on the cadastral authority and enables completion of entire process.

All the contractual documentation must be considered as an aggregate and it is essential to take care of perfect interconnection and sequence of deeds. Solely then are the contract functional and facilitates progress of a transaction.

FINANCING

To secure client's funds is one of the substantial services as well as needs of real estate developer. Well secured financing enables exact control over the financial flows of an individual transaction and possible flexibility and responsiveness while creating the payment calendar.

The salesperson must be ready to grant securing by all practicable means and products. Amongst all not only mortgage or building society account but also consumer

credit, by assisting at selling old property, fixed term deposits or for instance sale of shares. The way of financing has usually principal influence to the deadline of closing balance payment. Natural thing is a preparation of all types of data for particular types of financing.

The innovation resides in responsiveness of services, which is often evaluated by client who then tends to establish privileged and at some point also long-term relation.

SALES POINT / CLIENT CENTRE

It must be of confidential and comfortable environment. Only then it makes clients feel relaxed. Which is the only way to succeed with sale while this is at most of the client life-sustaining investment. Inevitable is also assistance and flexibility of other staff regarding resolution of different queries.

In the client centre there are besides professional and well-informed salesperson available also client changes consultant and credit consultant. Client acquires information about the project, signs all contracts, discusses all client changes and signs credit contract. All in one place – this facilitates whole transaction for the client and eventually saves time.

Sample flat

Sample flat is an excellent marketing tool promoting the sales themselves. Enables real notion how to use the flat area and have variants of furnishing. For plenty of clients who are not interested in architecture or construction, is this way of presentation besides visualisation the only opportunity to see how the flat may look like after its completions and furnishing. In certain phase of the project communication between client and salesperson may move to the client centre.

Conclusions

Residential real estate project becomes sophisticated process with various levels of crosschecking of partial successes and failures. To achieve overall success means flexibly react to partial success and failures and adapt the process in the shortest possible period to maximize beneficial effect of each of activities. With sufficiently quick feedback then partial failure does not mean loss but it means the way to benefit from turning the failure to successful realization.

Acknowledgements

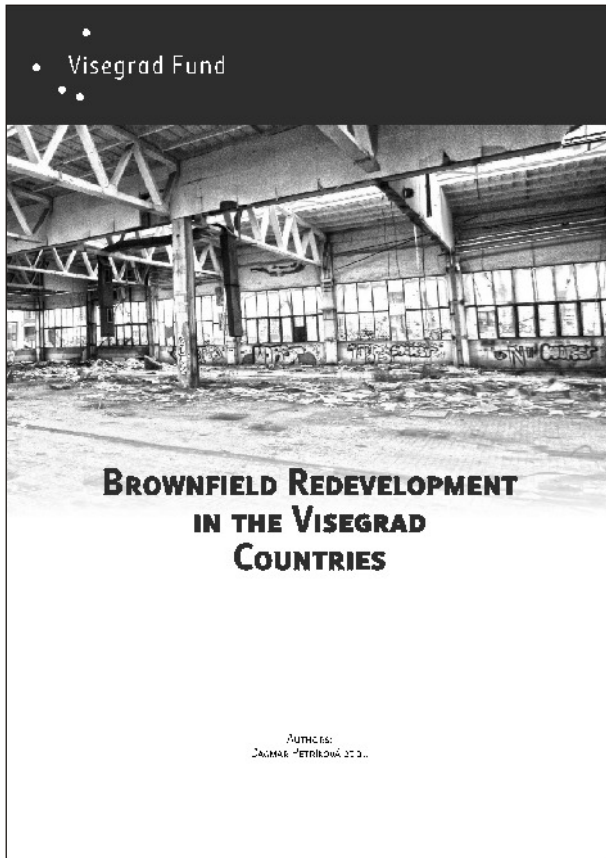
I would like to thank my colleagues and family for supporting me during writing this thesis.

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BROWNFIELD REDEVELOPMENT IN THE VISEGRAD COUNTRIES



BROWNFIELD REDEVELOPMENT IN THE VISEGRAD COUNTRIES

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Publisher:

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The publication has been created within the project "Visegrad University Study Grant No. 60900015", supported by the International Visegrad Fund, written in English.

Brownfields in the Visegrad countries originated mainly due to the loss of the function of the area or premises before transformation. Development in the Visegrad countries was based on the transformation processes in their industrialised cities and regions but it would be inappropriate to designate brownfields only as a heavy burden. On the other hand it is necessary to be aware of their undeniable potential. Buildings and equipment in manufacturing were designed and built for long-lasting high-capacity production, therefore characterized by high volume and ward size. Design procedures and used materials must conform to their role to bear enormous burdens with effortless maintenance needs associated with good resistance to external environmental influences.

The book itself has been divided into nine logical chapters, which follow each other and their order is not random. The first chapter – theoretical concepts for brownfield regeneration is also an introduction to brownfield regeneration and its spatial aspects. Basic concepts, key terms, divisions and categorizations of brownfields were defined here, together with importance of brownfield regeneration within the discipline of spatial planning. The next chapters present an overview of the regeneration process of several aspects including management of the whole process.

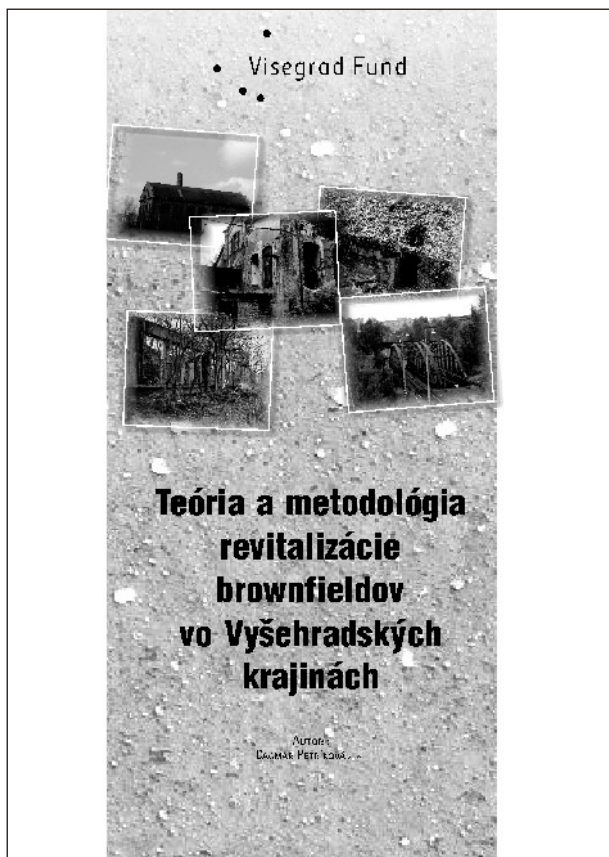
After this there is a part devoted to the approach how to avoid the origin of the next generation of brownfields, based on strategic planning system. The last three chapters are dedicated to case studies of brownfield regeneration in comparison between the achievements in the Slovak and the Czech Republics, between other European countries and in the field of cultural heritage.

Brownfield areas are one of the many forms of past heritage present in our cities today. Appropriate treatment can bring benefits of various forms to the society which is influenced by the existence of brownfield areas. The book itself is an excellent contribution to get relevant overview of the whole process and its various aspects and steps.

Vladimír Ondrejčka



TEÓRIA A METODOLÓGIA REVITALIZÁCIE BROWNFIELDOV VO VYŠEHRADSKÝCH KRAJINÁCH



TEÓRIA A METODOLÓGIA REVITALIZÁCIE BROWNFIELDOV VO VYŠEHRADSKÝCH KRAJINÁCH

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Brownfields are areas that have been formerly of functioning character, but after the close of production they remained non-active, consequently also facing physical deterioration of both external and internal structures. This degradation of large territories has a considerable impact not only on the area in direct contact, but also on the residential districts they are located in. They occupy attractive locations in larger urban centres, but not only are they not used, but they also have strong negative impact on the aesthetic character of the area. There are several reasons for the occurrence of brownfields in the Visegrad countries, however the most common are: the transition from a centrally-controlled to a market economy, new environmental standards for industrial production in populated areas, restructuring the economic focus of the Visegrad countries, returning of the property to original owners in the restitution after revolution and subsequent disagreements between them, and others. But the fact remains that brownfields as a kind of degraded urban areas require the proper approach in order to avoid further decline.

The book itself has been divided into eight chapters and the focus of the book is to show the achievements of various case studies on brownfield regeneration in the EU countries. The first chapter – the issue of brownfields in spatial development in the Visegrad countries is focused on perception of brownfields as a problem in the Visegrad countries that is closely related to new social arrangement. A change of industrial society to a knowledge-oriented urban population is mainly encountered by many difficulties arising from the collision of the 21st century lifestyle lived on a platform created for the needs of the 20th century. In addition, these problems have a spatial manifestation, where brownfields are one of these problems. The second chapter is dedicated to case studies of brownfield regeneration in Slovakia (Tatra Gallery in Poprad), in the Czech Republic (Karolína in Ostrava), in Germany (Zollverein in Essen), in Italy (Spina Centrale in Torino), in Great Britain (Quayside in Newcastle upon Tyne), in the Netherlands (Zuidpoort in Delft) and their specific uses and designs.

The next chapters present an overview of the regeneration process with its key phases and strategic planning dimension in the management of the whole regeneration process.



The last three chapters are dedicated to cultural and social aspects of brownfield regeneration, preserving cultural heritage at the same time.

Part of the book is also glossary with the main terms explained in English and Slovak. An important aspect in the revitalization of brownfields is a future use. It is significantly affected by external circumstances. Drivers that come from "outside" can play an important role in the

profitability and the success of the whole project. The context in which the whole revitalization is taking place is of such a wide range that usually it is very difficult to influence it or adjust it to the intention, so we have to adapt to the conditions of the project, and not vice versa.

Vladimír Ondrejčka



Stanislava Brnkaláková
Veronika Chobotová

ECOSYSTEM SERVICES: ADAPTIVE EU POLICIES FOR FUTURE EU REGIONS



The conservation of biodiversity provides human society with a vast diversity of benefits because genes, species and ecosystems support the provision of numerous services essential for human survival and well being. The quality of these services results – among other things - from how individuals' decisions affect each other and from how they are regulated by decentralized norms and centralized governance schemes, legislations, policies and various forms of economic incentives.

Importance of ecosystem services in EU related policies to maintain regional coherence become main message of international colloquium *Ecosystem services: Adaptive EU policies for future EU regions*, that took place in September 30 to October 4, 2013 at Slovak University of Technology in Bratislava. Objective of the colloquium was to advance understanding of the effects of existing EU legislation and policies on ecosystem services. The priority needs to be given to the further integration of ecosystem services into regional policy and other policies closely interlinked with biodiversity and ecosystem services. Benefits of resilient ecosystems are often overlooked. There is a need to take more steps for the systematic involvement of other sectors in tackling the problems of biodiversity loss and degradation of ecosystems and their services. This two-day event was organized by CE SPECTRA - joint Centre of Excellence of the Slovak University of Technology and Institute of Forest Ecology Slovak Academy of Sciences and in collaboration with CzechGlobe, Global Change Research Centre, Academy of Sciences of the Czech Republic. The colloquium was also supported by ISCH COST Action IS1204 *Tourism, Wellbeing and Ecosystem Services (ToBeWell)* and EU FP7 *EcoFINDERS* project no. FP7-264465.

Panel discussion provided science-policy platform to address the role and challenge of strategic planning for integration of ecosystem services into regional and other related policies of the EU. Key theme of the panel discussion was the issue of how the concept ecosystem services contribute to the well-being of EU regions. Moreover the discussion focused on possible measures and steps that need to be taken on the road map from disparities to diversities. Main panelists were Bedřich Moldan from Charles University in Prague and first minister of the Environment in Czech Republic, Jan-Erik Petersen from European Environment Agency and Rastislav Rybanič Director General, Slovak Ministry of Environment. The panel was chaired by Tatiana Kluvánková-Oravská, CE SPECTRA.

Research workshop concentrated on actual research challenges and concentrated on further cooperation of SPECTRA and CzechGlobe. Program started with a research overview from the perspective of Institute of Forest Ecology, Slovak Academy of Sciences (Lubica Ditmarová, Miroslav Blaženec and Tatiana Kluvánková-Oravská) and Pavel Cudlin (CzechGlobe). They presented main fields of their research and projects. Other guests, many from Czechglobe but also from Environmental Social Science Research Group in Hungary, and SPECTRA introduced their research results. After presentation part, fruitful discussion about problems and possible cooperation between present researchers was lead. The international colloquium highlighted the need to take more steps for the systematic involvement of multiple sectors in tackling the problems of biodiversity loss and degradation of ecosystems and their services. The workshop was chaired by Veronika Chobotová (CE SPECTRA) and by David Váckař (CzechGlobe).



The pilot behavioral experiment: Behavioural change and Incentive for sustainable use: Payments for ecosystem services, was part of the event held in Virtual Laboratory of Experimental Social Sciences (VEEL) – joint working place of SPECTRA. The research aims to evaluate the impact of different (agricultural) policies on collective action in regard to investments in public goods, such as ecosystem services. The quality of ecosystem services results – among other things - from how individuals' decisions affect each other and from how they are regulated by decentralized norms and centralized governance schemes, legislations, policies and various forms of economic incentives. Experiment targets to increase the understanding of agricultural policies that helps to create and protect the ecosystem services such as to test the hypothesis if monetary incentives might crowd out intrinsic

motivations. The experiment is the product of SPECTRA Centrum of Excellence in cooperation with Centre for the Study of Institutional Diversity at Arizona State University under the leadership of Veronika Chobotová (CE SPECTRA). The experiment was also supported by ISCH COST Action IS1204 Tourism, Wellbeing and Ecosystem Services (ToBeWell) and EU FP7 EcoFINDERS project no. FP7-264465 and project CE CESTA.

In October, 4th, the guest lecturer Prof. Andreas Faludi from Delft University of Technology closed this international colloquium by his speech about development of European spatial planning. The lecture titled Cohesion-Coherence-Cooperation, was opened by Prof. Robert Redhammer, Rector of the Slovak University of Technology and chaired by Prof. Maroš Finka Director of CE SPECTRA, Slovak University of Technology.



Vladimír Ondrejčka

**“COHESION- COHERENCE – COOPERATION”
LECTURE OF PROF. ANDREAS FALUDI AT THE STU IN BRATISLAVA**



The Centre of Excellence SPECTRA- the joint Centre of Excellence of the Slovak University of Technology, Institute of Forest Ecology Slovak Academy of Sciences and Faculty of Management Comenius University Bratislava hosted Guest lecture of Prof. Andreas Faludi, a chair of Spatial Policy Systems in Europe at Delft University of Technology. Guest lecture held on October 4, 2013 was part of the International Colloquium Ecosystem services: Adaptive EU policies for future EU regions.

The lecture was opened by Prof. Robert Redhammer, Rector of the Slovak University of Technology and chaired by Prof. Maros Finka Director of CE SPECTRA, Slovak University of Technology. Professor Faludi presented deep view into the history, current problems and challenges of European spatial development policy. Addressing increased complexity of EU regions in the 21st century

requires innovative cooperative approaches built on subsidiarity and polycentric systems concluded Andreas Faludi.

Professor Faludi concentrates on European dimension of spatial and strategic planning. He is a member of the Association of Dutch Planners (BnSP), honorary member of the Association of European Schools of Planning (AESOP), Faculty Associate, Lincoln Institute of Land Policy, Cambridge, MA, NUW: Foundation the Northsea-region in an Urbanised World and other world-wide leading organization and institutions and in spatial planning and spatial development research.

Importance of spatial planning in European regional, cohesion and sectorial polices has been highlighted in last two decades. Cohesion, enlargement and multilevel governance have been considered as main drivers of spatial dynamics of EU 27.





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