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Sustainability in different urban development contexts: The Southeastern European experience

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Abstract

Sustainable development has become a key term in urban planning on both sides of the Atlantic Ocean. There are several well-accepted definitions of the term, such as “development that meets the needs of the present without compromising the ability of future generations to meet their own needs” (World Commission on Environment and Development 1987). Yet, such definitions often provide little guidance—for example, what the needs of the present or these of the future are may be taken to mean almost anything. Thus, as many other terms which are in vogue, from democracy to freedom, sustainable development remains a fuzzy concept that yields to dramatically different interpretations, depending on the local context.

This paper aims to juxtapose the Southeast European sustainable development experience with that of North America (more particularly, the U.S.). It uses particularly the experience of Bulgarian planners. The main argument of the paper is that the North American perspective on sustainability is one-sided and has little meaning in the context of the urban conditions that characterize most Southeast European cities, as it may be true vice versa. Thus, while planners (as well as other policy-makers) in Southeast Europe commonly look up today to their colleagues in the Northwest for best practices, they are often puzzled by how irrelevant the American “advice” seems to be.

The North American perspective on sustainable development represents a direct response to the particular set of problems that came to dominate the post-war American metropolitan landscape. These problems are commonly put under the umbrella term “urban sprawl” (Galster, Hanson, Ratcliffe, Wolman, Coleman and Freihage 2001) – a pattern of extremely land-consumptive, low-density, land-use-segregated and auto-dependent development. Clearly, such pattern of development leaves little room for the needs of future generations and therefore is not sustainable, as valuable natural resources, from land to energy, are being rampantly consumed. American planners typically target the problems arising from this type of development with recommendations for increasing development densities, reducing street and parking requirements, and encouraging mixed land uses (American Planning Association 1998).

Post-war Southeast European metropolitan development, however, did not follow the American pattern. The large cities of Southeastern Europe, from Sofia to Thessalonica, from Istanbul to Naples, are *already* high-density, mixed-use, have narrow streets and barely any parking. From an American point of view, they may qualify as sustainable. Yet, what local planners in Southeast Europe see is the scarcity of urban green space and the domination of traffic over pedestrians to the point that the lack of parking lots is compensated by the total occupation of sidewalks for parking. To them, all these characteristics of the Southeast European city barely satisfy the needs of the present, not to mention future generations. Sustainable development, thus, in the Southeast European context, has an entirely different meaning. This, we argue, is due to the fact that the specific model of urban development characterizing Southeast Europe is quite (if not entirely) different than the American model.

By juxtaposing these two seemingly irreconcilable sustainability perspectives, the North American and the Southeast European, the paper strives to promote a more balanced approach to sustainable development.

Introduction

Arguments and controversial viewpoints and approaches to sustainability

There is a close connection between the growing actuality of the issue of sustainable development, the accelerating public and scientific debate on the problems of sustainability and the variety of the perspectives of numerous authors, scientists and public figures often controversial and even conflicting. Every year hundreds of outstanding and not so famous researchers join the debate and it seems that the statement to be heard most often is that a widely accepted definition could hardly be identified. This often sounds like an accusation with no address.

As a matter of fact we have no grounds to expect that a universal definition would cover all aspects of social, economic, environmental and, in general, any type of development of the compound nature of social development at the local, regional and higher levels. Taken separately the economic, social and ecological developments are complicated enough, but any process of development is even more complex, so we should hardly believe that it is possible to merge economic, social and ecological components in a general formulation that should also reflect the dynamics of development and the parameters of sustainability.

Next, it is clear that if a general definition of sustainable development is not agreed upon and more specifically – coming closer to the point of this paper – of sustainable development of human settlements and the sustainable city, then we should not expect that we could easily draw a general classification of the approaches for realization of sustainability, which could serve as a universal basis for their co-ordination and synchronism. Still it is possible to identify certain groups of approaches, systems or models of intervention.

Starting with the approaches resulting directly from the UN World Summits and Conferences in Rio de Janeiro – 1992, Istanbul – 1996, Johannesburg – 2002, three large groups of approaches could be identified. Firstly, we should point the approaches related to protection and restoration of the natural environment. Actually these are mainly ecological approaches, making use of all instruments of the ecological science like measures to preserve the eco-systems, the climate and the natural resources, without adding much new to this area human knowledge, but simply stressing on its enormous significance and further elaborating tools of implementation. Secondly, we should point the approaches related to the development of human settlements. Important UN forums and documents are focused on these issues (WCED Report-1987, Chapter 9; UNCED-1992 – Agenda 21, Chapter 7; Habitat II –1996- The City Summit, etc.) In the last decades this approach or rather this group of approaches went through a considerable evolution and actually formed a new major trend in urban sciences, mainly in the area of urban planning and design, including though the whole variety of social, economics, environmental, architectural and other technical studies, related to urban development. It comprises policies and measures like limiting the urban sprawl and imposing more compact development of settlements, reducing car dependence, enhancing the efficiency of natural resources, application of energy-saving communication models and building technologies, etc. In North America this system of approaches is known as the *Principles of Smart Development*. Other designations are popular too – like the *redesigning the city model* (Haughton, 1999).

Obviously because this *planning and design-orientated* approach became widely spread all over the world (Haughton & Hunter, 1994; Pearce, 1994; Wheeler, 2000; Hall, 2001) many critics raised their voices stating that such a preponderance of practical orientation of the work on sustainable city actually “*reduces the analysis of sustainable urban to a technical matter of*

institutional restructuring, traffic management, architectural design and the development of green technologies”(Whitehead, 2003, see also Pradic, 2003) These critics argue that such approaches are too concrete and simplify the complex nature of sustainability and that the **only proper approach must be holistic, multilateral and versatile**. Nevertheless, the approach they advocate eventually stresses on the economic and social analyses of urban phenomena (Whitehead, 2003; Astleither & Hamedinger, 2003) or on the environmental issues (Pradic, 1997; etc.). Respectively the policies and measures offered are economic, social and ecological.

There could be identified other approaches or models and systems of activities based on different approaches to sustainability. Graham Haughton, for example, identifies in a case study in the city of Adelaide, South Australia three more models (except for the already mentioned *redesigning the city* model), named by him as: externally dependant cities’ model, self-reliant cities’ model and the “fair shares cities’ model

Indeed, when discussing and analyzing a notion or a concept of such fundamental significance as the issue of sustainability it is inevitable that different, alternative and controversial approaches should exist. Perspectives to the sustainability of development of urban and natural environment, to the influence of the development of human settlements on environmental or social sustainability are various and contradictory not only in the field of science, but also in the fields of policy and politics and this often has greater and, unfortunately, negative effect on the development of human societies. Several acts that followed Agenda 21 provided occasions to demonstrate the different and sometimes conflicting attitudes of the developed Western countries, the developing world and the transitional post-communist societies towards the problems of sustainable development. For instance, many objections were raised against two conventions that were signed by the majority of the countries that participated in the Rio Summit – The Convention on Climate Change and The Convention on Biodiversity Preservation. The criticism was based mainly on the perception that these and other documents presented an insult of the developed countries onto the resources of the less developed ones. The Global Environmental Facility like many other international institutions has also been criticized to foster interests of developed nations by imposing restrictions incompatible with the structure and the trends of the economies of the Third world.

The Johannesburg Summit placed special emphasis on the co-ordination of the interests and the attitudes of the developed and the developing world (Johannesburg Declaration, items 12, 14-19, 21-23, 35)

The post-communist countries in Central and Eastern Europe have special place and respectively special perspective to these issues. Culturally and socially these countries are close to the Western states but in the same time the interests and the efforts of societies in the post-communist societies are directed towards overcoming the economic difficulties and closing the gap in the wealth and quality of life as seen in the Western market societies and this goal takes priority over environmental and resource protection and the stability of social development.(Pradic, 1997)

Differences in the meanings of the principles of urban sustainability and the smart growth in the developed, the transitional and the developing countries

The present paper is not seeking to analyze the whole diversity of theoretical views on sustainability, nor to study in more depths the political differences between the countries-participants in the worldwide process toward sustainable development.

The goal of this paper is rather to concentrate on only one of the various approaches, more specifically on the one identified as *the concept of Smart Development* (APA, 1998), or the *redesigning the city approach* (Haughton, 1999). The subject of this research is even more specific and is directed to a less analyzed, or, at least, insufficiently analyzed area of study – the differences in the principles and the approaches between the Western world and the East European countries or, rather, new trends of development in some of the transitional societies. However, for certain reasons, analyzed below the differences that this paper is seeking to identify are characteristic not only for the comparison of West and the East, but also for the comparison between the North and the South, the developed and the developing countries, which actually is due to the different or, respectively, similar models of urban development.

What is more – the present paper claims that the scientific records of the world abound in studies and analyses of issues of sustainability in models of urban development characteristic of the developed world only – the USA, Canada, the West European countries, Australia, etc. On the contrary – studies and analyses focused on the problems of sustainability in transitional states are, firstly, scarce and insufficient in volume, and, secondly, researches are concentrated mainly in the area of ecology and the balance of resources and the evenness of economic and social development – issues, though important especially for the region, but by far not covering all aspects of the agenda of local sustainability. Eventually studies in the field of the *smart urban growth* or the problems of *redesigning the city* are almost missing. In fact, most of the problems presently faced by the “traditional” for the region urban planning and design are actually identified by planners, architects, other professionals and politicians, by citizens as well. In the transitional states, in particular, and in Bulgaria as an example, an on-going professional debate is discussing the retreat from many principles of urban planning (Nedovic-Budic, 2001, Tsnekova, 2001) including such as the balance of local development, the defense of public interests and, generally, form the principles of the holistic, multilateral approach in the current planning practice (“The City”- 2001-2003, “Bulgarian Architect”- 2000-2003, Dandolova, 2001; Alexieva, 2001). However - what is missing is the awareness that these problems have a common origin and are elements of a general misconception of the currently applied planning approaches and to the specific requirements for sustainability of urban development, typical for the region. Finally, there is no proper evaluation of the problems of urban sustainability in Eastern and Southeastern Europe, which are probably bigger than those in the Western world, and that they should be formulated in a concept eventually analogical to the concept of the smart growth, but definitely different from the forms and methods characteristic of the different Western reality.

A key point in this paper is the understanding that different and alternative urban contexts exist and respectively – different models of urban development, which result in different urban structures – a statement, which seems evident and not needing any special proof. The density of housing (residential density, density of development) is one of the most important if not the most important factor, characteristic of the models of urban development. It should be noted that the average net housing density in the developed world typically ranges within the limits of 15 – 25 residential units per hectare (the USA, Canada, Australia), in most countries in Western Europe - within the limits of 30 – 35 units per hectare. In the big cities the densities are different but not quite in most of the cases. On the contrary, in the big cities in the developing world densities typically ranges within the limits from 250 to 350 units/ hectare, often up to 400 – 500 units/ hectare. Obviously there should be great differences in the morphology as well as in the way these two controversial models perform urban functions, so we have grounds to identify *low-*

density, medium-density and high-density or often it would be more appropriate to name the last as *highly intensified* urban models.

This research is focused on the current trends to new high-density models of development in Bulgaria and also in other transitional countries in Southeastern Europe. It should be stressed that such trends are to a great extent alien to Bulgarian traditions in medium density urban structures. Finally, as far as these trends are associated with high-density models, most of the observations and the conclusions would be relevant to urban development in the developing world.

Speaking about sustainability in the context of a greatest variety of housing densities a technical matter that should be mentioned is related the measures used in low-density and in high-density urban forms. The measure “housing units per hectare” is being used mainly related to low-density forms. In countries with high densities the *ratio*, the *factor of intensity* or just the *development intensity* is often more popular. This is probably due to the fact that in high-density development the variety of residential forms and the mix of uses are more typical. The (factor of) development intensity measures the ratio between the total floor space and the space of the housing plot, or the housing area, or the residential zone.

Basic features of the sustainability of urban development of towns and cities in Eastern Europe in the period of “communist”-type planning

Because of the specific goals of the present paper, only two of the features of urban development in the period of “socialism” will be pointed out. Firstly, the enormous volume of housing construction in this period based on prefabricated concrete elements – popular as concrete panels. Hundreds of thousands of housing units were built with panels. In Bulgaria the number of panel-made housing units amounts to over 600 thousand (NSI Housing Stock Statistics, 2000). This amounts to one third of the housing stock in Bulgarian urban settlements and to about the half of the stock in the big cities. In Romania the share of the panel housing in the towns and cities is 80 %. It is well known that these are houses with very poor indicators concerning environmental sustainability, because of the use of not recyclable materials and very low indicators of energy efficiency due to the low thermo insulation qualities (Tonev, 2002).

However, as far as the urban planning approaches are referred, the objective analysis would assess urban development in this period as generally positive. Urban planning like any type of planning needs a certain level of centralism and it was not for the first time in human history when centralism in the structure of society resulted in positive development in urban structures. The big, often huge residential complexes in Eastern Europe hold many disadvantages typical for the approaches of modernism such as too “hard” application of zoning principles, loss of human scale, anonymity of urban space, etc.(Nikiforov, 2003), but, at the same time they are compact urban forms with average housing density of 80 – 150 units/ hectare, which is close to what we regard as optimal, with sufficient open and public areas that offer many opportunities for greenery and public amenities and a good means to compensate for the loss of human scale by additional development of retail and service premises and providing opportunities to bring in architectural and urban uniqueness fighting anonymity.

In summery this paper claims that in the “socialist” period of the East European states competent urban schools were established and developed capable of a successive application of functionalism and modernism as well as capable of well-grounded critical attitude towards the modern approaches, and in both case – keeping up to good professional standards. A personal view is that in Bulgaria, in particular, this period contributed to a certain alienation (in some

extend) from high density urban forms, characteristic of the developing world and the oriental countries, and to moving closer to a well-planned and well-balanced type of urban development, more typical of the European traditions. This trend existed well before the rule of communism, but it seemed to become clearer in the “socialist” period.

Changes in urban planning approaches in the Southeast European countries in the period of democratic transformations

The changes in urban planning and urban development in the East European countries in the transitional period naturally reflect democratic transformations in society – political, economic and social. First of all, private initiative took the place in economy that it deserved. We should, however, note that, also naturally, small and, less often, medium sized businesses dominate the economic reality at this stage. The enormous state building enterprises were liquidated and, respectively, urban development “moved” from the residential complexes to piecemeal development of urban properties and of urban territories, concentrated mainly in the central areas of towns and most of all – the central areas of cities (Dandolova, 2001; Nikiforov, 2003).

The result with greatest positive significance was that in only 2 – 3 years development of panel housing was thoroughly ceased and this building technology was replaced by traditional technologies based on reinforced concrete structures (NSI, 2000).

Simultaneously the small scale of new developments particularly in Bulgaria produces certain negative effects. In the first instance, the urban planning vision is often being lost and very often the type of development in a concrete plot does not comply with the requirement of the general urban plan – either in size, or with respect to the land use. In this way the complex, well-balanced approach is being violated (Alexieva, 2001; Dandolova, 2001).

A widely-spread problem is related to underestimating and compromising public interests. After the decades of communist rule when private interests were severely disadvantaged now the public feelings are toward compensating for the former suppression, but, unfortunately this contributed to moving from one extreme to the other (Hirt & Slaev, 2002). While in the past private owners were not allowed to develop their property in accordance to their own intentions, at present private interests are so well defended that very often they prove to be an obstacle for the realization of public interests. The work of municipal officers reflects these public feelings and urban plans often fail because it turns to be impossible to confront the interests of a single landowner.

This problem is directly connected to the issue of sustainability, because it is the public interests that correlate in maximum extent to the principles of sustainable urban development (Slaev, 2002).

Specific aspects of the differences of the “redesigning the city” approach (smart growth / sustainable urban design principles) in the Western world, the states in transition countries and the developing

Housing densities – the big issue

As it was noted earlier in the statement the density of development in different models of urban development may vary not only by percentage but by times and tens of times. There is no doubt that housing density is one of the critical, if not the most critical quantitative indicator of

housing and urban forms and models. That is the reason why many researches on urban sustainability focus on this indicator. What is more – the housing density predetermines the value and the performance of the basic factors of urban sustainability – i.e. not only the consumption of land resources, but also much of the rest factors – the efficiency of urban services, the efficiency of the transportation options, etc. *Density of communities is associated with efficiencies of infrastructure and with reduced automobile dependence, with ecological and economic implications which flow from that* (Alexander & Tomalty, 2002)

Higher urban density is envisaged to contribute to a range of ecological, social and economic benefits (Alexander & Tomalty, 2002, USEPA, 2001, Downs, 2001) such as:

- *Efficient use of land and less pressure to convert agricultural land to urban uses*
- *Reduced car use and reduced commuting distances*
- *Greater clientele and employee base due to more mixed land uses*
- *Better access to social services due to more mixed land uses and shorter distances*
- *Reduced consumption of water and energy*
- *Greater efficiencies in the provision and use of infrastructural systems*
- *Improved quality of life for a wide variety of people by providing services and amenities closer to home*
- *Improved variety of housing types*
- *Greater housing affordability*

The relation between the housing densities and the factors of sustainability had been a subject of many researches. One example could be the research undertaken by Don Alexander & Ray Tomalty reported in their paper **“*Smart Growth and Sustainable Development: challenges, solutions and policy directions*”** (2002) – a research focused on the effect of development densities on 1) the variety of housing forms, 2) the efficiency of infrastructure provision, 3) the mix of land uses, 4) the use of cars and the average commuting distances, 5) housing affordability and 6) quality of life. They had investigated communities in three regions of British Columbia, Canada.

In their investigation Alexander and Tomalty observed that higher density municipalities had a more diversified housing stock, had more efficient infrastructure (less land dedicated to roads – 3.7 ha per 1000 people compared to 4.1 in lower density communities, lower sewer and water infrastructure – 6.7 km per 1000 people against 18.0 km/ 1000 people), had a better mix of land uses, shortest average commuting distances.

Yet after stating all these facts, observed relations, and conclusions we should, however, emphasize that this research refers to typical a low-density urban model. In this specific case study the housing densities of the communities investigated ranged from 0.3 units/ ha in Belcarra, to 34.0 units/ ha in Vancouver. What is more – only 6 of the examined communities (all 26 in number), had densities higher than 10 units/ ha, out of which only 4 – higher than 25 unities/ ha – these being Vancouver, North Vancouver City, White Rock and New Westminster.

Then the question that comes reasonably but seems not arisen by anyone is:

Do these relations and conclusions refer to high-density models as well?

Perhaps we should firstly draw a clear classification of what low-density and what high-density housing is. As it was mentioned earlier in this paper almost all analyses with respect of the effect of housing densities on the characteristics of urban environment, sustainable urban development and especially the principles of smart growth in all possible aspects come from the

Western world, which is featured by low and very low development densities. The researchers do not state any classification or just what in their view high or low is – they provide no quantitative criteria. The reader can only suggest having in mind the background of the authors that by low densities they probably mean **net** densities between 5-10 and 25-30 units per hectare; by medium – densities between 30 and 80 units/hectare, and by high – any density above 80 units/ hectare. This is reasonable as far as we refer to single-family housing.

Since the present paper is trying to address models of urban development in the transitional states and in the developing countries as well as in the western countries, then a more appropriate classification of **net** residential densities would be:

- Very low density housing – below 20 units/ ha – single-family detached houses
- Low density – from 20 to 40 units/ ha – single-family houses, detached and semidetached, row housing
- Medium density housing – from 40 to 120 units/ ha – row housing and mixed types
- High density housing – from 120 to 250 units/ ha – apartment blocks
- Very high density housing – above 250 units/ ha – high rise, highly intensified apartment block housing

So one should not be surprised to find out that if a density of 20 houses/ hectare is doubled then the efficiency of use of infrastructure will become higher – perhaps doubled two. But what would happen if we double a density of 200 units/ ha? Would this contribute to an increase in efficiency in the same proportion?

▪ **High densities and efficient use of land resources**

Generally speaking it is clear that higher housing densities provide for smaller urban territories. More densely populated cities occupy smaller territories and less agricultural land will need to be converted to urban.

However, one reasonable consideration (or doubt) is whether the Law of diminishing efficiency is applicable here. This paper claims that this law is definitely relevant with respect to the range of housing densities. It means that if housing densities are tripled the effect on the size of land occupied will be smaller than 1.5 times the effect if densities are doubled. This could be illustrated by the following example:

Plovdiv is the second largest city in Bulgaria, its population amounting to 346,400 people (NSI Report, 2002). The English city of Liverpool has a population of 463,700 (http://europa.eu.int/comm/regional_policy/urban2/urban/audit/src/searchcity.htm), so the two cities are comparable in size of population. The average net housing density in Plovdiv is 61 units per hectare against 37 units per hectare in Liverpool. It means, the average net density in Plovdiv equals 1.65 times that in Liverpool. However, the total residential area of Plovdiv is 3665 hectares (General Plan, 2004, in process of elaboration, Dobрева, 2004; Popov, 2004), so if we consider the gross figures then the gross density of Plovdiv is 29 units/ ha, which is 1.45 times the gross density of Liverpool - 20 units/ ha. This could be explained by the fact that it is possible to intensify housing much more efficiently than to intensify urban services (infrastructure, social services, etc). By increasing the housing density we may reduce the land dedicated to residential buildings, but we cannot respectively reduce the land for urban services, which is also measured and sized per capita. Therefore the effect of intensification of housing is progressively diminishing.

Yet we should take into consideration another aspect of the issue, which could be identified as even more important – *the level of intervention*.

A general objective of sustainable development is reducing **the impact** on the natural environment. Higher urban densities discussed above have direct influence on the quantitative aspect of this goal by reducing the quantity of urbanized land.

However, the quantitative aspect is not always the most important. The *level of intervention* represents the qualitative aspect of the issue. Natural land is changed or “absorbed” by anthropogenic environment whether for the purpose of agriculture, or for human settlements, or for many other uses, but the rate of intervention in the first case should be assessed as totally different from the rate of intervention in the second. Different types of built environment represent different levels of intervention – e.g. the impact on environment of a farm compared to the impact of an atomic power station. If this is a rather extreme example we may assess that a difference of a similar character draws between a two-storey wooden house and a 10-storey reinforced concrete residential building.

Housing densities are closely related to the technology of construction. For instance low housing density would allow for almost any type of building materials and building technologies – brick structures, wooden structures, reinforced concrete structures, etc. Low densities are not very suitable for application of prefabricated concrete elements, though this is possible too. High densities, on the contrary, as far as they usually require high-rise building structures are associated with application of industrial methods of construction, reinforced concrete, prefabricated elements, etc.

One negative feature of the industrial methods of construction is the associated high energy consumption. In general, on-site works usually require more labor and less energy while industrial methods require less labor and more energy. Yet we may assume that industrialized technologies would provide high level of thermo-insulation, so they could be energy saving throughout the life cycle of the houses. (This is not to say that less industrialized methods associated with more on-site labor could not provide the same level of insulation).

One of the most popular methods to measure the rate of intervention is by estimating the efforts and the costs for removing the impact away – i.e. the efforts and the costs for dismantling the buildings and demolishing all elements and materials or for preparation for re-usage. The costs for demolishing a wooden house will be much smaller than the costs for demolishing a reinforced concrete one. Timber could also be reused, at least partially, while concrete should be crushed and grinded. Concrete does not directly contaminate the environment since the material is not poisonous or cancer-causing, but cement industry is a major polluting agent. Implementing an on-site recycling system is definitely easier in the case with the wooden structure. (Report of mixed-use development of Kelvin Grove Urban Village, Queensland, Australia) Of course, costs and efforts not only for demolishing the source of impact but also for restoration of the environment in its initial state should be taken into account too.

When discussing activities like dismantling and demolishing we have to consider the life cycle of the building. Though a wooden house is much cheaper and easier to demolish, the life cycle of a “brick and concrete” building is several times longer. Concrete and steel are, no doubt, durable building materials – in Bulgaria the norm for the life cycle of a building with reinforced concrete structure is adopted as 100 years. Nevertheless, one of the prevailing views is that either the owners of a house or their specific needs or both will change every 20 years, 30 years at the maximum. This arises a big question whether it is reasonable to construct residential buildings with durability longer than 30 years. This consideration gains greater importance at the level of urban planning where the changes in societal needs and in respective urban functions and land uses occur more often and with greater certainty.

In the Southeast European countries and in Bulgaria, in particular, this has major implications related to sustainability. In Bulgaria, for instance, in the 20th century the housing problem in towns and cities had been solved (or rather attempts were made to resolve it) three times but each time the problem was treated in a most unsustainable way so that a few decades later either the housing problem was back up in the agenda of society, or other big problems of sustainability were caused.

Firstly, in the beginning of the century in the times of peace before the First World War and between the two World Wars when considerable groups of rural population moved to towns and cities and built their houses. Vast urban areas were built up with poor quality buildings at very low hygienic standards (Ghanchev & Doychinov, 2001). So a couple of decades later the housing problem became acute again.

The second time the problem was being “solved” was after the Second World War when the communist government set the objective to deal with the housing issue in shortest terms. The poor small houses were to be replaced by “modern” hygienic “socialist-type” apartment blocks. Unfortunately, as already stated earlier in the paper, the technology of building based on prefabricated elements – panels became widely spread in all countries of the communist block. An important factor was that it proved to be more difficult building panel complexes in already urbanized territories (where the old “shabby” houses were located), because this caused social problems. The reason was the almost unachievable objective – hundreds of thousands of families were in the waiting list, which was growing year after year. It was due to the extremely high rates of urbanization as a consequence of the “socialist” industrialization policy (Nikiforov, 2003) and also to the short-witted populist system of the waiting lists, which instead of encouraging people’s initiative and helping people resolve their housing problem by contributing themselves, in reality generated extra housing needs. Whatever the reasons were, the result was that most of the vast territories built up with old poor quality housing within the towns’ and especially the big cities’ precincts (many of them in the very central areas) remained not developed or underdeveloped (actually – were not redeveloped). As a rule all panel complexes were built in the outskirts of the towns and cities embodying the communist vision of “socialist type” of housing.

Yet one fact should be mentioned with respect to this housing policy, its implementation and its effect on sustainability. The rates of construction were really high – in Plovdiv in the 1970s the average annual rate of new construction was 12.38 housing units per 1000 citizens, while in the 1990s (a decade including a boom of construction 1991-1996 and a recession in 1998-2000) the average annual rate was 4.45 housing units per 1000 citizens (NSI statistics, 2002). The rates of housing development in the rest of Bulgarian cities were about the same.

The third time that the housing problem in Bulgaria is being solved is in the period of transformations – i.e. after 1990. Liberating private initiative, which was suppressed till the transition started, produced a boom of construction. One of the very specific features of the preferences of Bulgarian population that affected the development of urban market was the willingness of Bulgarians to possess the house they occupied. The apartments in the panel blocks were sold to the occupiers very quickly but most Bulgarians were dreaming to buy a flat in the new private developments in the central areas of the cities. This produced pressure on the market causing thus the boom of construction 1991-1996. The market demand was directed to the central areas (Alexandrov, 2000; Nikiforov, 2002, 2003). These areas, which were not very suitable for large-scale “socialist-type” developments, were now ready for redevelopment and the construction activities were concentrated in the central territories.

Unfortunately, because private development companies followed their natural interest in maximizing the profits in this case it meant rising the densities to levels inconceivable from the point of view of local traditions. A general reason was that market demand would not oppose such development.

To draw the comparison it should be stated that the development intensity in the panel complexes built in Bulgaria in the period from the beginning of the 1960s till the end of the 1980s ranged in the limits of 0.75–0.85 (75–8500 square meters of total floor space per hectare) (= net housing density of 105-115 units/ ha) to 1.0 (130 units/ ha). This should be compared to the current trend, which is characterized by very high intensity of usually 2.2– 2.8 (22–28 000 square meters of total floor space per hectare) respectively 310-330 units/ ha and in many cases intensity of development 4.5-5.5 – i.e. 600 units/ ha.

Was this third attempt to solve the housing problem successful so far?

It is difficult to assess whether a housing problem is resolved. Many “for” and “against” should be weighted. In Bulgaria on the one hand because of the strong preferences toward home-ownership 96.6 % of the housing stock is owner-occupied (NSI, 2002 report). Only a very limited number of the households live in leased houses. In Plovdiv the average number of persons living in one housing unit is 2.67. This average number for the country as a whole is 2.29 persons in a housing unit (NSI, 2002 report). On the other hand the extremely small percentage of units owned by the municipalities and the state – only 3 % of the housing stock – does not provide for an efficient (if any) social policy. Particularly since prices of properties went up it is now extremely difficult for young households to buy a house.

However, even if housing problem is solved, it is solved only temporarily because two “time-bombs” of unsustainable development were set to burst not too far in the future.

The first one is the “bomb” of the panel complexes. It was set in the 1970s and 1980s and the societies in Eastern Europe are well aware of it. It is already in the agenda of these societies, but this is not making the problem smaller. In Plovdiv 46 % of the housing stock is in panel buildings.

The second “bomb” is still underestimated by the population and by the professionals as well. It is located in the central city areas, which are at present being (re)developed at better building standards, but also at very poor environmental standards. A good example of sustainable development is when a nation has solved its housing problem at a standard that would meet the needs of the future generations or leave room for options to improve the houses and the living environment to the level required. Insufficient open spaces, less greenery, no children playgrounds, sidewalks occupied by cars – the built environment developed during the last 10-12 years in Bulgarian inner cities does not meet reasonable standards (Research Report, Slaev, 2002), nor the needs and requirements of the present generation (explained below in more details), and certainly is not the environment to bequeath to the future generations. Worse than that – these areas are built up with 6-7 storied reinforced concrete buildings, which would not allow for any flexibility or any alternative options. Any changes would incur enormous financial losses, losses of time, efforts and expenses and would cause even more acute environmental problems.

However, this is the current trend in urban development of big Bulgarian towns and cities, which is, no doubt, irrelevant to Bulgarian medium density traditions of the 20th century.

With only a few exceptions problems of inner city’s decay had not been faced in Bulgaria and in the rest countries in Southeastern Europe so far, but it will inevitably be faced in another

decade or couple of decades due to the unsustainable over-dense pattern of development at present.

- **High densities and efficient use of communications, transportation options, infrastructure and urban services**

Most of the greatest benefits of high urban densities are associated with bringing the destination of a connection or a trip (work, cultural, etc.) closer to its origin. For this reason high densities are regarded as a means for improving the efficiency of infrastructure – smaller length of the electrical and water supply networks, smaller length of the sewerage system, shorter communications and commuting distances. The benefits for society are many and are expressed in smaller financial burden for funding infrastructural development and public works, reductions in raw materials and energy consumption for manufacture and emplacement of infrastructural networks, less transportation expenses, smaller oil and energy consumption, less air pollution and greenhouse gas emission, smaller losses of energy and water in the networks (APA, 1998).

High densities are also associated with improved transportation options. Shorter distances allow for a wide choice of means of travel like cycling, public transport, walking, etc (Alexander & Tomalty, 2002). Shorter distances also mean improved access to social amenities, commercial, cultural, educational, and health services. Improved access then serves for a greater clientele and employee base, resulting in better conditions for economic development and better economic factors for the prosperity of the community.

All this is well known and developed in details by many researchers and scientists in the area of sustainable development and the smart urban growth.

What this paper seeks to find out is whether this works in the same way in urban forms with existing high and very high urban densities, which are characteristic of most towns and cities in the developing world and of many new developments in the European countries in transition, particularly during the last decade of the 20th century, particularly in Bulgaria.

Generally speaking all above-mentioned advantages refer to high-density cities as well. These advantages are actually the reason why Bulgarians like many other nations claim to prefer individual (detached or semidetached) houses to apartments (52 % - Gehnov & Gehnova, 2000, Videlov, 2000) but the market demand proves that apartments in the inner city are by far more popular than single-family houses on the urban fringe (single-family houses in the central areas represent less than 0.5 % of the housing stock). Single-family houses amount to only 11.4 % of the units in Plovdiv, yet 91 % of the residential units sold by Plovdiv real estate agencies in 2002 were apartments and only 9 % - detached or semidetached low-rise houses (Real Property Index Magazine, 2/2004). Whether or not Bulgarian customers are aware of their real reasons and what forms their preferences – the facts prove that they eventually prefer high-density because of the short connections and the easy access to social amenities that such urban forms provide.

However, that does not mean that connections (transportation, infrastructure, access to social amenities) in the high-density cities of Southeastern Europe and in the developing countries do not need special attention and treatment different from the treatment in the countries with prevailing low densities. On the contrary these issues in high-density urban environments need respective study and special approach because less space is left to accommodate these functions, which are much more intensified, and at a certain point they turn into a threat to the quality of the living environment. Therefore the biggest problem is in the absence of such relevant approach.

It should be admitted once again, that the sources (publications, studies) treating these issues in the target countries are quite insufficient. Similarly to the rest aspects of the issues of sustainability, studies and researches on the subject are conducted mainly in the developed Western countries and sources from the transitional or the developing countries are scarce. The interests and the efforts of the societies and the interest of scientists and researchers in the developing and the post-communist countries were already discussed (Pradic, 2001).

Modern smart growth approach, responding to the trend to sustainability, requires reduction of car dependence and less space dedicated to car traffic and car parking. Still we can state that only in Singapore an urban policy was really successful in combining high densities and firm restrictions on private car traffic. This system based totally on the public transport network works in the Asian city-state extremely well, but it could hardly be implemented in the countries in Southeastern Europe, where the number of private cars per 1000 people follows the Western pattern. Nevertheless the proper approach should be directed to dedicating less space to car traffic and car parking and imposing simultaneously strict restrictions on car traffic. The first element of such policy is already put into practice, though actually unwillingly, because these sorts of considerations are usually ignored by the specialist and officers at local governments. Private developers are more interested in building shops and other commercial premises in the ground floors of the new high-rise residential buildings, rather than building garages and this is tolerated by municipal officers, who are encouraged legally or illegally to “support private initiative”. A legal provision of the Law on Spatial Planning of the Territory (Zakon za ustrojstvo na teritoriyata - ZUT) demands that one parking place space should be secured within the precincts of every plot for every housing unit accommodated (article 43), but when the allowed factor of intensity is 3.0 for residential areas in the big cities and 5.0 for the central areas (= 30,000, respectively, 50,000 sq. meters per hectare) (Regulation No 7), then too many housing units are accommodated in one plot, so the provision of article 43 is legally abandoned.

Therefore the situation in Bulgaria regarding the traffic and car parking policy is simply: no policy. Neither new terrains are dedicated to traffic needs and parking spaces, nor any action is being taken to restrict car usage. The result is that cars have “conquered” all urban spaces and pedestrians are actually severely disadvantaged in this situation. Streets are congested with cars and sidewalks are turned into parking spaces.

This situation is characteristic not only of Bulgaria, but also in all countries in Southeastern Europe and not only in the post-communist ones. In the big cities in Turkey and Greece the situation with the traffic & parking problem is even worse. In Istanbul and Thessalonica densities often go beyond 400 units per hectare and still no provisions are made neither for parking spaces, nor for restrictions on car usage. In Athens an enforced restriction requires that only cars with even registration numbers may be used in even dates and those with uneven numbers – on uneven dates, but still pedestrians are losing the “battle” against cars for urban space.

▪ **High densities and the mix of uses**

The relation between high densities and the mix of land uses is another principle of smart growth, which should be analyzed and implemented in a different way in countries with already existing high and very high housing densities, or in countries like Bulgaria, where such trends are observed.

Mix of uses is an important and required element of urban sustainability both in towns and cities with existing high densities and those with low densities. However the starting point in

the two alternative situations is quite different, which establishes different frames of implementation.

A basic factor is that a single-family house (the typical low-density housing) is not suitable for mix of uses, so the mix needs to be imposed at the local level by a planning policy, while a multi-family residential building (typical for high-density housing in the big towns and cities in the developing countries and in the transitional states) is particularly suitable for a mixed-use development. In the second case the mix of uses usually needs not to be imposed – it is realized by the developer due to his/her natural market interests, since the selling price of retail and other commercial premises and offices is highest.

Eventually, though the mix of uses in all types of urban forms is a characteristic of sustainability, it should be stressed that in urban models with high and very high densities if not properly applied it may become also a threat to sustainable urban development. This refers to a very limited number of cases as far as we consider already developed urban areas with established structures of land-uses in towns and cities in the post-communist countries, but it is widely spread in many European settlements, especially in the southern part of the continent, in many settlements in the developing countries and is becoming increasingly spread in the newly urbanizing suburbs in Southeastern Europe. Intolerable vicinity of residential and industrial uses (though complying with the established hygienic norms) is nowadays much more often to be observed on the urban fringe in Bulgaria than it used to be in the past decades. The reason for the increasing spread of this phenomenon is again in the poor balance between private and public interests, which was explained earlier in this text.

- **High densities and human environment, human-scale design, green areas and open spaces**

Human environment, meaning environment designed to meet the needs of human beings and human society, is another key issue of sustainable urban development.

Important aspects of the connection between high densities and human environment have already been discussed through the statement. It is featured by human intimacy and intimacy with nature, greenery, parks and all sorts of human spaces facing nature and sunlight. Therefore human environment requires sufficient open spaces, which is often conflicting with very high densities. If special planning and special design are not applied and special care is not taken, then densely developed urban areas turn to be inhuman and, respectively, unsustainable.

Very high housing densities make human spaces highly vulnerable especially with respect to car traffic and car parking. Car traffic requires for every car around 18 times the space of a walking person. One also must add the space consumed every time the car is parked. The total consumption can range from 30 times for short time parking up to 90 times for workplace parking. (P. Laconte, 2002). Of course, it is a matter of urban policy to deal with this problem, but it needs social support, developed human resources of the implementing agency, and time resources and all these are problematic, if the priorities of transitional and developing societies are placed on different economic and social issues.

Another aspect of sustainable human environment that might be threatened by very high urban densities is the human-scale design. This is because high and very high densities, in particular, can be achieved by high rise, which is conflicting with human scale. It has also been stated that high-rise buildings require industrial technologies of construction, which, in turn, are associated with unification of construction elements and this certainly is not a *human-scale*

approach. Also, a contradiction between such approach and industrial design is the absence of smaller, individual, “hand-made” type details.

Alternatively, if not very high density and medium density areas are developed with high-rise apartment blocks, then distances between the residential buildings become not proportional in size and this is just the next conflict with the human-scale design approach to sustainable urban development.

Conclusions

In summary we may conclude that it is not **only** the quantitative aspects of efficient use of land resources that should be taken into account in planning if the goal is sustainable urban development. The qualitative aspect, i.e. the rate of intervention in the urbanized areas, is not less important. Planners should promote compact urban forms, but there should be a well-conceived balance between housing densities and the rate of intervention. Very high densities of more than 300 housing units per hectare could be estimated as unsustainable in most of the cases. This statement is supported by consideration such as:

- The environmental quality in such very high-density housing areas is usually poor with acute shortage of open spaces and greenery
- The building methods and systems of construction of high-rise buildings are too rigid and highly industrialized, which represents a major intervention in natural environment. They also allow for no flexibility and strongly limit the options of the future generations to change the built environment in accordance to their needs and the changed social conditions.

Therefore very high housing densities (over 200 units/ ha) should not be regarded as relevant to sustainable urban development. They should be rather regarded as a threat to sustainability of human settlements in the transitional countries and the countries and especially in the Third world, where such very high densities are widely spread

Medium densities of 100 to 150 units per hectare seem to be most relevant to sustainability of urban and natural environment, because the ratio between the quantitative and the qualitative factors of sustainable use of land are best balanced:

- Such densities allow for a largest variety of urban forms, including low-impact urban structures in the residential areas. This also means sufficient opportunities for high standard of the living environment, green areas and open spaces, a wide choice of housing forms, etc.
- Medium density allows for low-impact building technologies like wooden structures and less application of “environmentally-rigid” technologies such as reinforced-concrete structures, metal high-rise structures, etc.

Medium densities also provide:

- Sufficient opportunities for shortening the distances between origins and destinations of communications and therefore for limiting private transport and for a good choice of other transportation options. These densities are especially suitable for different approaches in fine-tuning the balance between public and private transport, since they encourage public services and leave enough space to accommodate the unused private vehicles. In general any provisions for private transport may be regarded as a compromise, but they prove to be essential for the application of relevant policies.
- Intensification of the urban infrastructure

- Opportunities for urban and architectural forms of human scale and appropriate design of streets and urban spaces.

While it can still be argued whether high densities or medium densities are “the universal remedy” for sustainable urban development, yet there should be no doubt that in models of urban development with medium, high and very high densities the problems of sustainability definitely differ from those in low density models.

In high and very high densities typical for many developing countries and for the current trends in some of the transitional states acute problems with great significance for sustainability of urban development are:

- Extremely high rigidity of urban forms and building structures, which causes major obstacles to tuning the urban structure to the changing societal and individual human needs
- Insufficient open spaces, insufficient greenery, insufficient playgrounds
- The conflict between pedestrians and cars is exceptionally acute, and needs extra policy measures, more elaborated approaches and more efforts than usual
- The balance between public and private interests becomes greatly vulnerable and very often public interests suffer from the mix of uses. The mix of uses is generally positive but it very often goes beyond reasonable standards and unacceptable vicinity of conflicting uses is often realized.

All stated problems make it much more difficult to follow a lasting and sustainable urban planning policy in high-density settlements and any misconceptions prove to be much more difficult to avoid, to address and to repair.

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