

## **In the Search of Sustainable Building Pattern**

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*Abstract:* In this article we present the concept of sustainability and its application in urban design. We start with basic definition following with the strategies adopted by the Commission of the European Union. In the second half the focus is on practical application and possible solutions of finding a sustainable building pattern in today's cities in Europe. Our findings are supported with graphic material.

*Key words:* sustainable building pattern, environmental protection, European Union sustainable development strategies, housing densities

### **1 Introduction**

Sustainable development, the concept that we all talk about and all agree with, has many different interpretations and also many abuses lately. Generally we all agree with its principles. But one of the important questions is how to translate those into reality and everyday use, and even more, how to convince people to accept small changes in their everyday lives to support sustainable development.

Sustainable development means meeting the needs of present generations without jeopardizing the needs of future generations – a better quality of life now and for the generations to come. It can not be brought about by policies only, since when realizing this vision we have to cross-refer to different aspects and areas of work, every-day life, and, last but not least, the policies and decision-making at local, national and regional level.

Looking at the concept as a rather elusive, and understanding it as an objective rather than a principle, it has been elaborated surprisingly wide and accepted in environmental policy across the world. As controversial as its notion is, it is also extraordinary widely accepted, integrated in environmental policy making, and embraces diverse issues. The focus of this article will be on the EU legislation and the meaning of sustainable

development in EU law and policy, and the assessment of EU's approach to implementation. The second part of the article will focus on a specific application of the concept, elaborated on the case of built environment and the need to preserve natural environment.

### **2 The concept of sustainable development**

Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs [1]. This is the most common and the most widely quoted definition of sustainable development, given in 1987 Brundtland Report, which set out an approach to sustainable development that quickly became the dominant framework within which environmental protection must be pursued [2]. Considering its importance and overall impact it has in the international sphere, it has been elaborated at the famous Rio Earth Conference in 1992 and more recently at the 2002 World Summit on Sustainable Development in Johannesburg. Recognizing its importance at the regional level, the EU has introduced the concept of sustainable development in the Single European Act in 1986 together with

environmental policy, but the explicit Treaty commitment has followed later with the Maastricht Treaty. Because it is a global objective, it has become one of the core tasks of the European Community and is now in the Art. 2 of the Treaty Establishing the European Community. All in all, seen as an objective, sustainable development provides a framework for numerous consultations, political dialogues and a guide to decision-making. For this reason, the European Commission has prepared proposals for long-term strategies – A sustainable Europe for a Better World: A European Union Strategy for Sustainable Development [3] - because it understands the key role it has in bringing about sustainable development at regional as well as international sphere.

The ambitious vision that Europe has about its future and well-being of the society as a whole when proposing the Strategy has to be dealt with step by step, with strong political commitment, and focused on a small number of steps in a wide range of policies to address the economic, environmental and social dimension of sustainability.

### **3 The Strategy on the Urban Environment [4]**

The quality of lives of European citizens (considering the fact that four out of five European citizens live in urban areas), is directly influenced by the state of the urban environment, besides, a high quality of the urban environment also contributes to the priority of the renewed Lisbon Strategy to make Europe a more attractive place to work and invest. The Lisbon Strategy, also known as the Lisbon Agenda, is an action and development plan for the European Union. It was set out by the European Council in Lisbon in March 2000. The main fields are economic, social, and environmental renewal and sustainability. Under the strategy, a stronger economy will drive job creation in the EU, alongside social and environmental policies that ensure sustainable development and social inclusion, which will themselves drive economic growth even further [5]. The focus of this article is on the urban environment as urban areas play an important role in delivering the objective of the EU Sustainable Development Strategy, which was adopted in 2001. As it is stated in the Strategy, all policies must have sustainable development as their core concern.

In the field of sustainable cities and urban environment, a Thematic Strategy on the Urban Environment was adopted in January 2006. It is

based on extensive consultation with stakeholders and builds on existing European policy initiatives for improving the quality of the urban environment. It sets out new measures to support and facilitate the adoption of integrated approaches to the management of the urban environment by national, regional and local authorities. Its goal is to promote better regulation, and facilitate better implementation of EU environmental policies and legislation at local level through exchange of experience between Europe's local authorities. The fact is that Europe's urban areas face a number of environmental challenges, such as high levels of congestion and traffic. Thus it is important that action is taken at all levels, at EU level as well as national, regional and local. That is why cross-cutting proposals and recommendations are needed as well as steps to implement the strategy, and review of its progress has to be made.

Many solutions already exist in certain cities but are not sufficiently disseminated or implemented. The EU tries to support Member States and tackle the issue in areas where it is necessary for action to be taken at EU level. Furthermore, the EU encourages effective networking and exchange of experience between cities, and by supporting local authorities to adopt a more integrated approach to urban management. If implemented at all levels, the Strategy will ultimately contribute to improve the quality of the urban environment, making cities more attractive and healthier places to live, work and invest in, and reduce the adverse environmental impact of cities on the wider environment [6].

### **4 Built environment and the need to preserve natural environment**

Our cities are one of the biggest consumers of resources. Hence we will argue that improving the way our cities work and therefore reducing the consumption is a task that has to be addressed. It has come in our minds in recent years that resources that are available are limited. Furthermore there has been the profound change in the size of cities, their use of land and resources, and their environmental impact.

But the main resource when talking about the city besides energy is also land. It is just as limited and not used efficiently enough today. And tight relationship between smart uses of both of these resources is surprising.

Today everybody's dream is detached house with a garden. This vision is deep in our minds and we are not willing to give it up easily. But the pattern

of suburban sprawl which results in overgrowing vast landscapes, joining cities hundreds of kilometres apart along highway corridors started to show its negative effects more than 50 years ago already.

How did this story start anyway? Historical cities are compact and have well defined edges. Before industrial revolution the typical city user was pedestrian so streets were made in scale of a short walk. It was convenient that as many people as possible lived near the services. In some cases a result were densities of population concentrated on a small part of a city unimaginable today.

Overcrowding and bad sanitary conditions were common. Situation got even worse with factories located within the cities that polluted air and water.

The dream of escaping the city appeared. And with development of first forms of public transport this dream was available to wider population. Cities dispersed and deconcentrated. Growth first appeared along railway corridors. But with availability of cars dispersed city exploded even further into the landscape. There was no more gravitating force to hold people near old city centres. Every place was within the reach. In a way the dream has come true. Today most people can afford living in a house with a garden and with a relatively short travel distance away from their jobs. And for what price?

Communities, if we can speak of them, are weak, monotonous and mono functional. This is because low density neighbourhoods can not support local services. Not enough people live near enough for them to be viable. Shops, public transport and also schools and medical facilities are therefore not within a reach of walk as they could be [7]. That is why people have to depend on cars. This decreases accessibility to services to a good part of population that does not drive. It makes living harder.

Depending on cars for every-day trips also increases energy consumption and environmental impact. But our goal should not be to take away cars from people. Cars gave freedom to people to move easier and further than ever in history. They should stay. But we have to work hard to reduce the number of every day trips with cars.

Social life is less active in today's typical developments if we compare it with compact cities. Public spaces are rarely built since there is no real need for them in the eyes of a developer. Everyone owes his own small isolated private open space. Alienation and weak neighbourhood awareness result in increase of criminal. Therefore streets get empty soon after dark. Therefore more criminal can appear. The vicious circle starts and is hard to break.

Providing basic infrastructure is another factor that speaks in favour of denser built pattern. Same starting investment can serve 2 or 3 times as many people than in classical low density developments. It is quite obvious that financial and energy savings could be substantial. Even their evaluation is quite simple in comparison with for instance social impact. And not only when built, also when maintained the systems perform with much less costs if they serve to a larger number of users.

Systems like combined power and heat generators that serve certain communities mostly in Scandinavia have surprisingly high energy efficiency (around 68% in Helsinki) [8]. But they are only functional when densities of the built form are high enough. When not, big distances between dwellings and therefore longer pipes increase loss of energy and the rather high starting investment does not pay off.

And in the meanwhile, what is happening with our old city centres?

The very reason for escaping the old, congested and polluted centres is long gone. Industry moved out, sanitary standards are on excellent level. But life somehow still did not return. For now.

Despite obvious advantages is high density also not popular for new developments today. To some extent a reason for that is fear of overcrowding and lack of privacy. In our minds high density is related to high rise buildings and lower standard of life. But this view comes from a misunderstanding of the term itself.

When trying to understand some terms, let us first take a look at some definitions. The simplest one is of course that housing densities tells us a number of homes per area. But a distinction needs to be made between gross density across a site which may contain a variety of land uses such as open space, roads and building for other uses, and net density, which tries to isolate the housing areas within a larger site. So two housing estates with similar net densities but different gross densities and provision of open space or facilities in addition to housing, may be very different places to live and to manage.

Figure 1 shows just how different three developments may look like, even though they share the same density [9].

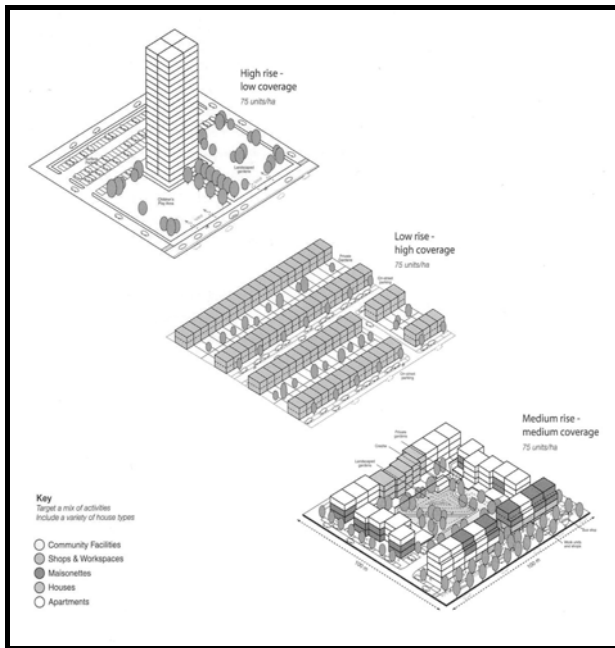


Fig.1: Three ways of achieving the same density [7]

Successful cases of well designed high density medium rise developments are surprisingly well accepted by its users [10]. Terms like public open space and green parks have been rediscovered and their impact on well being of inhabitants is immense. And if we add to this also the ecological factor then it becomes obvious how our future cities should be built. So in order to convince people to see denser environment as a good thing, we must provide all the luxuries they have in their detached houses plus some extra benefits.

Increasing the intensity of activities and people within an area is central to the idea of creating sustainable neighbourhoods. More people are close enough to communal facilities to walk, and an efficient bus service can be made viable. Moreover, the critical mass of development contributes to the informal vitality of the streets and public places that attracts people to city centres, as well as contributing to energy efficiency. [11]

## 5 Conclusion

Problems and challenges facing Europe's urban areas are cross-cutting in nature and inseparable from environmental issues. Emphasizing the importance of sustainable development in all areas of our lives, we dealt only with one small aspect of improving the sustainability – improving the quality of urban environment. We went beyond the classical theoretical definitions and presented practical solutions for implementation of the concept into

every-day life. It is important to first find ways to explain the theory behind it and popularise this sort of developments. Education of future architects and planners is a long term approach and time is precious when we talk about our environment. So for short-term effects we must also introduce some guidelines and stimulations for developers.

There is little doubt that many of the world's major environmental problems will only be solved through new ways of managing our cities and leading our urban lives, and through vigorous public participation in decision-making and implementation [8].

The EU and its Member States are aware of the importance of offering a high quality of life in Europe's cities, and the increasing number of environmental challenges urban areas are facing. There is no need for further consideration of the issues as they are clear themselves, the focus has to be on achieving changes, which can only be pursued through extensive cooperation of regional and local authorities, and the Member States, all under the umbrella of the EU.

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