

EMERGENCE OF ECOLOGICAL PLANNING ABROAD AND IN LITHUANIA

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Abstract. In the 21st century it is sought to go from overuse and wasting to temperate and abstemious use. Not without reason such terms as ‘sustainable’ and ‘eco-’ are more and more visible and emphasized in all spheres of human activity, including architecture and urban planning. Loud words ‘eco quarter’, ‘eco neighborhood’, ‘eco city’ and similar recently have expanded from theory to practice – in building and territory planning. Ecology principles, such as sustainable transport, water, materials, zero waste, land use culture, satisfaction about the living environment and else, may be understood, valued and used very widely – from ecological living, farming and manufacturing to ecological planning. Of course, all these aspects are quite easily understood in theory and it is possible to image them in new and currently built towns, but quite hard in historical objects.

Keywords: eco planning, eco neighborhood, territory planning, sustainable development, living surroundings, ecology.

Introduction

Growing satisfaction about ecology and ecological lifestyles creates new valuable products, things, experience. As long as using eco products and living in eco places became popular, investors started to develop various projects, based on this idea. In urban space this concept is referred to as ‘eco planning’.

Researches and knowledge on eco sites, case studies of eco neighborhoods abroad show that eco planning and eco living is understood and valued in highly developed countries (Barton *et al.* 2010; Kline 2000; Jepson, Edwards 2010). In Lithuania the situation is a bit different: there are some investors that develop eco living ideas that are valued by some people. Usually such investors offer eco space to live by developing passive houses or their groups – neighborhoods.

The aim of the article is to research the awareness of ecological planning, find out how it is realized abroad and review the possibilities of putting it into practice in Lithuania.

The research object analyzed in the paper is ecological planning and its development possibilities in Lithuania.

The research information was collected by studying literature on ecological planning and analyzing examples. The eco planning examples presented in the paper were selected those, which were realized with the first of such objects (Germany, England), included several eco living and planning spheres together with most advanced technologies (Sweden) and solved quite simple planning problems in the eco planning way (France).

Understanding Different Size Urban Eco Sites

Eco cities, eco neighborhoods, eco districts or eco quarters are often met in the literature, and so is a variety of their definitions. According to Barton, there are different eco categories according to the spatial scale:

- the city scale (presented by Barton as the largest);
- the small town scale;
- the neighborhood scale;
- the home place scale;
- the building scale as the smallest (Barton *et al.* 2010).

A city is the biggest urban settlement, which consists of smaller clusters like neighborhoods, home places and buildings, but there is no single and exact definition of these eco settlements. Based on Kline's scientific research, the term ‘eco city’ embodies four characteristics: ‘ecological integrity, economic security, quality of life and empowerment with responsibility’ (Kline 2000). According to the eco city builders, the term ‘eco city’ is defined as a “land-use policies that maximize urban density, reduce non-renewable energy consumption, protect biodiversity, reduce travel distances, and maximize transportation options” (Jepson, Edwards 2010). According to White, “the fundamental concept of eco city is to incorporate functions of nature in a miniature manner to serve the interests of human developments. This could be done through “green design” of buildings, infrastructure and integration of nature areas and water bodies into the urban settings” (White 2002). In summary of the eco city definition, it could be said that the eco city is an entire system with many involved

players, where the principles of respect to environment are followed, and, above all, the main goal of the eco city is to reduce consumption as much as possible in all spheres.

As far as the neighborhood is concerned, similar characteristics and principles are applied as in eco city, just on different – smaller – scale. According to Barton, “Neighborhood is defined as a residential or mixed use area around which people can conveniently walk”. This scale is orientated to pedestrian access, without any established boundaries or local infrastructure, but this area has an identity, which could be recognized by local people (Barton *et al.* 2000). What is more important, the neighborhood scale was selected by policy makers. They decided that the neighborhood scale could be sufficient to form the *eco neighborhood* (or *sustainable neighborhood*), which is convenient to gather a local community for carrying out eco projects, to stimulate neighborhood lifestyles and more easily adapt public policies (Valegeas 2011). It was decided that it could help to move closer to sustainability – towards an eco city model. Based on Souami researches, there were three stages in the development of eco neighborhoods covering the period of less than two decades. Each stage could be referred to one of the three different types of eco neighborhood. They are the following:

- The initial type of eco neighborhood of the 1980-ies;
 - The ‘prototype’ eco neighborhood of the 1990-ies;
 - The new type of eco neighborhood starting from the mid-1990-ies (Souami 2009).
1. According to Souami, the initial type of eco neighborhood was often a small concentration of buildings often located in a city’s suburbs or in rural areas. Initiators of such projects were activists promoting the alternative – eco-lifestyles. The “green” development served as aspiration for these projects. Such first eco neighborhoods were called ‘*eco villages*’ and later transformed into the neighborhoods. For the organization of a community, the grouping of its inhabitants was often used according to the lifestyle they were seeking – *eco lifestyle*.
 2. Some communities organized sustainable districts – the “prototype” of eco neighborhoods and presented them during remarkable urban events to show their advantage. For example: B01 exhibition in Malmö, London Olympics, and Olympic Games bid in Paris. These sustainable districts were developed as samples of neighborhoods, which demonstrated “ambitious environmental goals” (Kyvelou *et al.* 2012). Innovative technical solutions were applied in these projects. The creation process of eco neighborhoods

involved many players from different fields, such as communities, private and public developers, groups of experts, contractors etc.

3. The third type of eco neighborhoods was arranged using ordinary tools to develop and construct the projects, but the aspect of sustainability was included into them as well. These neighborhoods were planned in a long-term period, and they were on a quite small scale. This type of eco neighborhoods can be considered the continuity of the “prototype neighborhood” and applied its characteristics and philosophy (Souami 2009).

There are no exact definitions of terms *eco district* or *eco quarter*. Nevertheless according to the literature analysis made for this research, it is possible to claim that all these *eco* phrases refer to *neighborhood-scale* and *sustainable* development, where the principles of sustainability are adapted.

Principles of Eco Planning

According to Jepson, there are 14 main land development principles which are applicable to all communities with sustainable approaches. Eco neighborhood is no exception.

They are presented below with following explanations:

- *Jobs–housing balance*. The shorter is distance to be covered in daily activities, such as moving from the living to working places, and vice versa, it helps to reduce time, human, natural and energy expenses and, of course, to improve the reduction of consumption and waste production.
- *Spatial integration of employment and transportation*. The systemic transport connections with employment improve the productivity of residents.
- *Mixed land use*. The diversity assists for community to reduce human, transportation energy consumption.
- *Use of locally-produced, clean, and renewable energy sources*. Energy should be locally generated, not imported. Moreover, renewable energy promotes to develop long-term sustainable, autonomous eco neighborhoods.
- *Energy and resource efficient building and site design*. Buildings should be constructed under the energy-efficient guidelines and they could be autonomous, and do not use or use minimum natural resources. That maintains environment protection.
- *Inter-modal transportation connectivity*. The public transportation system with the following priority methods should prevail in eco neighborhoods:

firstly walking, cycling, and public transportation. Such scheme of eco planning helps to reduce transportation energy consumption, air pollution, moreover, living in eco neighborhood is healthier.

- *Pedestrian access (walking and biking) to work and for leisure.* This is the main transportation method preferred. The system of routes is planned in eco neighborhoods, and walking, cycling has a priority.
- *Housing affordability (for all income groups).* Affordable housing for all similar socio-economic and ethnic groups “will help to protect against social (systemic) dysfunction” (Jepson *et al.* 2010).
- *Housing diversity (of style, type and tenure).* Housing diversity will encourage communication among residents with different background, skills.
- *Higher density residential development.* Compact development (opposite to urban sprawl). Such development will reduce urban growth in agricultural places and eco system will be preserved.
- *Protection of natural and biological functions and processes.* The natural system should be maintained and integrated in the entire eco system.
- *Resident involvement and empowerment.* The community in eco neighborhoods has higher organizational capacity. The *neighborhood scale* as mentioned above is a core of eco city.
- *Social spaces (public spaces to encourage social gathering).* It will assist residents to communicate more in their neighborhoods. Social contacts will be improved.
- *Sense of place.* “A sense of place increases attachment to the place” (Jepson *et al.* 2010). The community with local roots (with a sense of place) will have more organizational abilities, more responsibilities for its neighborhood.

According to these principles various programs and projects are prepared to reach the eco neighborhood’s status. In different countries, different goals are set and various tools used for embodying such eco places. A widely known example is the Northern Europe country’s (Sweden) model – the Hammarby model – called the eco-cycle, where advanced technical and environmental performances were adapted. According to Kyvelou, Southern European countries especially take into account social, economic and governance issues (Kyvelou *et al.* 2012). For example, in France the main goal for implementation of such projects

is urban quality and social integration. The tool was used for creation of social housing stocks and green public areas (Valegeas 2011).

Examples of Eco Neighborhoods in Europe

Based on the analyzed literature, various eco projects implemented in Europe in the last twenty years could be distinguished (Joss *et al.* 2011; Valegeas 2011). The “prototype” of eco neighborhood projects are BedZED (London, U.K.), Bo01 (Malmö, Sweden), London Olympics (U.K), Zaragoza EXPO 2008 (Spain). These examples were designed for extraordinary urban events and demonstrated autonomy and technical advantages. On the other hand, new types of eco neighborhoods are more adaptable to the local context and comparable to traditional projects. There are many such examples in Europe: Rieselfeldand Vauban (Freiburg, Germany), Hammarby-Sjöstad (Stockholm, Sweden), The Beauregard (Rennes, France), Saint-Jean des Jardins (Chalon-sur-Saône, France), Viikki (Helsinki, Finland) and etc.

Beddington Zero Energy Development (BedZED), London, UK. The Beddington Zero Energy Development (BedZED) is the UK’s largest mixed-use sustainable community. This project was designed by Bill Dunster and developed by BioRegional and the Peabody Trust in 2000-02 (Chance 2009). The community was located in the London Borough of Sutton, on the city’s periphery. A hundred houses were built on an old industrial site and 2,500 m² of office/commercial space. The BedZED represents the first large-scale “carbon neutral” community in Europe (Barrett *et al.* 2006). According to Chance, “The strategy for BedZED remains unusual in that it tackled carbon emissions not only in domestic and office energy use, but also by addressing the embodied impact of construction (which includes the carbon emissions arising from the building materials used), personal transport, food and waste” (Chance 2009).

In construction of this neighborhood the following main principles were used:

- Building materials chosen from natural, renewable or recycled sources. The radius from the building site location was less than 35 miles away.
- Energy-efficient design – houses perfectly insulated with triple-glazed windows and south-oriented.
- Heat and electricity produced from tree waste.
- Water strategy – reduced water consumption by a third – using water saving appliances, and reuse of rain water.

- Green transport plan – reduced reliance on the car transport.
- Recycling bins in every home.
- Energy saving – using energy saving appliances at home (Barrett *et al.* 2006).

Rieselfeld and Vauban suburbs in Freiburg, Germany.

Rieselfeld and Vauban are two eco neighborhoods in Freiburg city, Germany. “They are both transit-oriented developments designed as family-friendly live-work-play places, composed of mixed-use commercial and residential buildings meeting ecological best practice” (Broaddus 2010) (Fig. 1 and Fig. 2).

Rieselfeld neighborhood. According to Broaddus, there existed an open field used as the city’s wastewater leach area. So, 78 from 320 hectares were planned for housing, and the rest were nature preservation in 1993. The concept of newly planned Rieselfeld was a showcase of



Fig. 1. Aerial view of the Rieselfeld

Source: http://commons.wikimedia.org/wiki/Freiburg_im_Breisgau



Fig. 2. Aerial view of the Vauban neighborhood, 2006

Source: <http://www.stevemelia.co.uk/vauban.htm>

sustainable development adapting ecological principles. The idea was to create environmentally friendly, affordable neighborhood. 4,200 residential units, 10,000-12,000 inhabitants were foreseen in the project (Freiburg im Breisgau, Rieselfeld Projekt Group 2009).

The eco neighborhood was carried out by a project group, which consisted of the local cities’ administration, municipal service. Many experts were working on the project: architects, solar technologists, transport planners, etc. Moreover, urban planning, ecological guidelines were achieved based on sustainable principles: different type of houses, alternative transportation, energy efficiency, water conservation, and social infrastructure. The most known and best-adapted of such principles was the alternative transportation. The transit in various types of vehicle is excellent in Rieselfeld neighborhood. It is possible to use bicycle or pedestrian access. Car traffic is limited to 30 kilometers per hour, and the parking ratio was set 1spot / housing unit, all cars are parked underground. The city centre is reached by a tram.

Vauban neighborhood. According to Broaddus, it was a French military base with barracks, gorgeous boulevard of trees on a Freiburg’s suburb. In 1992, it was transferred to the ownership of the city (34 hectare). Freiburg city redeveloped the Vauban military base for housing. Implementing this project environmental activists (Forum Vauban) pushed the city’s authorities to ratify stricter guidelines in order to develop Vauban neighborhood, a more ecological-friendly place. After submission of a master plan, the car-free concept was compromised with an idea that the city would have an extra plot for a future parking garage. 5,000 residents and 600 jobs were foreseen upon completion of the project (Freiburg im Breisgau, Vauban Projekt Group 2006). The construction began in 1998 and is still continuing. According to Forum Vauban, such approaches of the master plan were aimed:

- Energy-efficiency, all new houses meet low-energy, passive-house or even plus-energy standards (Fig. 3);
- The idea “living without an owned car” promoted (35 % car reduction) and alternative means of transportation suggested (such as tram, bicycle or walking access) (Fig. 4);
- Harmonization of street network and open spaces (playgrounds, gardens and main boulevard). It was turned into one system adapted for social interaction;
- More than 50 workshops held with the local community and 40 housing projects initiated before 2001;



Fig 3. Solar houses in Vauban
 Source: <http://72.18.132.73/~organicv/tag/rieselfeld>



Fig. 5. Hammarby-Sjöstad neighbourhood, Stockholm
 Source: Imagebank.sweden.se



Fig 4. Tram line in Vauban
 Source: <http://72.18.132.73/~organicv/tag/rieselfeld>

- With support of the Forum Vauban being responsible for the social work, the inhabitants initiated many further activities such as starting shops, farmer’s market and a neighborhood center (Sustainable Urban District Freiburg-Vauban. Vauban Projekt Group 2002).

Hammarby-Sjöstad neighborhood (Stockholm). The Hammarby Sjöstad development is a big renewal example of urban industrial harbor area. According to Iverot and Brandt, “the area in southern Stockholm, Sweden, will be a fully developed residential district containing approximately 11,000 apartments and accommodating 35,000 people” (Iverot, Brandt 2011). The industrial area and harbor redevelopment began in 1996. The aim of the transformation was to create the neighborhood that could consume 50% less energy than other residential buildings in Stockholm. Moreover the project sought to expand the inner city across the water. The project comprises 200 hectares of brown

field with 9,000 newly constructed apartments, 400,000 sq m of new residential area (Vestbro 2005). Moreover, new canals, quays, places for business and tramways were included. The eco environment was created by combining different approaches into one planning project: transportation, public spaces, energetic demands, management of waste and water.

The goal of the project designers was to create mixed land use model with residential, commercial and workplace environment with lively streets, especially at night. The designers’ idea was to create small green spaces instead of huge parks. Moreover, canals, lakes were important factors to produce representative design, where the main issue – water – was used as the major starting point for urban planning. To this end, the U-shaped blocks provided the best solution for views on water for a maximum number of households (Vestbro 2005). (Fig. 5).

The other important goals of Hammarby Sjöstad’s environmental program are oriented towards sustainable resource use, namely, resource saving and recycling. In this project new technical solutions, such as energy supply (e.g. solar panels, solar cells), renewable materials for the building were adapted. Even more, the renewable energy sources like combustible waste or treated wastewater are used in the district heating system (Hammarby Sjöstad 1998).

It was difficult to implement the primary goals of the environmental program. One of the several crucial points was reduction of transport – the final decision of 0.7 parking space per householder was accepted after the long debates. This shows that inhabitants are not aware enough to accept the sustainable lifestyle.

Experience, Examples and Possibilities of Ecological Planning in Lithuania

Whereas objects of ecological planning on quite a large scale – eco neighborhoods, small eco towns – are widely implemented abroad, in Lithuania this experience is only emerging, and awareness of eco lifestyles still is in a genesis phase. Lithuania still lacks the legislation in regulation of ecological planning, and there are only a few examples of objects, where investors have tried to realize the eco living ideas.

The legislation framework in Lithuania regulates only ecological agriculture (Dėl ekologinio... 2009), a few documents also mention sustainable development and national strategies on seeking the better quality of nature and human surroundings, but that is all. The main law of territory planning (LR Teritorijų... 2004), fails to regulate the ecological planning; it only says that a territory development is such a process, which aims to keep or improve the territory quality and its economic, social and ecological status. The principles of sustainable development as the main planning tool are not integrated even in the main territory planning law. All this precludes from understanding of eco planning and ways of its application, as well as from encouraging planners and investors' green mentality.

Eco vision in Lithuania is widely understood as creating and building less energy using houses – passive houses (Žalieji Leliai, 2012). These houses are special because of their minimal needs for energy, ideal microclimate and ecology, and all this is achieved by the use of renewable energy.

Two realized eco villages could be mentioned in this context: *Žalieji Leliai* near Klaipėda (Fig. 6) and *Gulbinų namai* (Gulbinų namai, 2007) near Vilnius (Fig. 7). They are the villages of passive houses – the idea is based on house energy effectiveness, quite big living space and nature surroundings. But these projects reflect the current situation of territory planning and sustainable development in Lithuania. Architects and urban planners talk about usefulness of sustainable development, decreasing demographic situation in Lithuania, growing suburbs and emptying towns. On the other hand, the situation that living in a flat in some town and living in a private house in a suburb in Lithuania cost almost the same has determined that people are moving from towns. Comparing to foreign examples, they are moving not because of an idea of eco living, but because of better living conditions for the same price. So the residents of such “eco villages” are actually not the eco life advocates. The only thing they do for ecology – choose a passive house. Also there are no equal social conditions for a possibility to choose in buying a living place – cheaper



Fig. 6. Žalieji Leliai near Klaipėda
Source: <http://www.ekovizija.lt>



Fig. 7. Gulbinų namai near Vilnius
Source: <http://www.gerinamai.lt/nt-projektas/gulbinu-namai>

or eco housing. Lithuania has no system created for developing projects of housing affordability.

Being aware of such situation, investors and project developers offer only villages of passive houses that just imitate a view of eco planning.

Nowadays, eco planning in more developed countries is achieved not only by construction of villages of passive buildings, but also by creating the infrastructure for pedestrians, older people and children, developing territories of mixed use. From passive houses they moved to passive flats, planning and keeping the necessary density of population. Ecological living and planning in Lithuania is understood differently. People have a vision of happy life in suburban area, in a big passive (but not necessary) house that has big private yard and all this is surrounded by gorgeous natural environment. Knowing that, investors develop such places – villages of eco houses at the best. But comparing to foreign experience, these eco villages are not that sustainable or ecological, because their owners produce a lot of waste and pollution (everyday travelling to the city, to one's job, social and commercial infrastructure),

also due to transport (no possibility to use public transport or reach a wanted destination on foot), no sustainable materials (building materials are usually the same as elsewhere) or sustainable land (urbanizing new territories instead of reusing the old ones) use, etc.

Conclusions

1. Ecological planning is the symbiosis of ecology and sustainable development with urban, social, environmental and economic relationships.
2. In foreign countries, ecological planning is researched and tested quite well on a few levels of realized examples. This paper presented several pioneering examples realized abroad. Some of the projects were developed as samples of eco neighborhoods with “ambitious environmental goals”.
3. In comparison to foreign realizations, Lithuania is in the first stage of ecological planning: only the single-use, low density eco villages outside the towns are developed forgetting sustainable development principles as the key principles in eco planning, failing to create any social and other infrastructure. Whereas the studied foreign examples show a high priority of sustainability in eco planned territories of the inner city – eco neighborhoods, eco districts, etc.
4. Lithuania still has no laws to form the opinion on what the ecological planning is and regulate it as a process. For better planning results and continuity of the ecological living idea, a special legal framework should be created.
5. Ecological planning in Lithuania should be much more developed, as it covers not separate ideas of better planning (eco planning) and better living (eco living), also being friendly with nature (ecology), but all of them together, as one.

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EKOLOGIŠKO PLANAVIMO GALIMYBĖS UŽSIENYJE IR LIETUVOJE

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Santrauka

XXI amžiuje bandoma nuo perdėto vartojimo ir švaistymo pereiti prie nuosaikaus ir saikingo vartojimo. Neveltui „sustainable“ ir „eco“ terminai vis labiau girdimi ir akcentuojami visose žmogų liečiančiose srityse, taip pat ir architektūroje bei urbanistinio planavimo srityje. Skambūs žodžiai „eco quarter“, „eco neighbourhood“, „eco city“ ir kiti pastaruoju metu išsiveržė iš teorinės plotmės į praktinę – teritorijų, pastatų planavimo sritį ir po truputį įgauna realų pavidalą. Ekologiniai principai, tokie kaip darnus transportas, vanduo, medžiagos, nulinė tarša, žemės naudojimo kultūra, pasitenkinimas gyvenamąja aplinka ir t. t., gali būti suprantami, vertinami ir naudojami labai plačiai – nuo ekologiškos gyvensenos, gamybos, ūkininkavimo iki ekologiško planavimo. Žinoma, visus šiuos aspektus lengva suvokti teorinėje plotmėje, įmanoma įsivaizduoti naujai kuriamuose miestuose ar jų dalyse, naujai statomuose pastatuose, tačiau gan sudėtinga sukurti jau pastatytuose ir seniai naudojamuose objektuose.

Reikšminiai žodžiai: ekologinis planavimas, ekologinė kaimiškystė, teritorijų planavimas, darnioji plėtra, gyvenamoji aplinka, ekologija.