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SUBURBS AND GREEN ENERGY

SUBURBIA A ZIELONA ENERGIA

Abstract

The projects for the development of suburbs in large cities are technologically advancing. With new solutions to roofing, achieving better energy efficiency is prime. To quote; “the use of the ground twice” focuses on both economical and ecological dimensions, allowing the use of land in an effective manner, so as to invest future goals in environment and energy.

Keywords: renewable energy, energy efficiency

Streszczenie

Projekty rozwoju suburbiów wielkich miast są technologicznie zaawansowane. Osiągnięcie lepszej efektywności energetycznej jest głównym celem nowych rozwiązań przekryć dachowych. Hasło „skorzystaj z gruntu dwukrotnie” skupia się na obu wymiarach: ekonomicznym i społecznym, pozwalając na wykorzystanie terenu w najbardziej efektywny sposób, tak aby inwestować w przyszłe cele środowiskowe i energetyczne.

Słowa kluczowe: energia odnawialna, efektywność energetyczna

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1. Introduction

Suburbs are not a new settlement project in large cities. Throughout our architectural history, it has become a dynamic main transport route to major urban centres, later emerging into cities; thus Suburbia. Because of its dynamic and temper-mental development and land surveys, building suburbs usually consists of many characteristics.. With this said each suburban home is compact, while being diverse in natural architectural forms. Gradually, suburban homes and surrounding areas adapt to these characteristics and form neighbourhoods. Major districts, i.e.; Krakow, have a historical background of its creation such as: Stradom, Piasek diff. Garbarze or Pędzichów providing evidence of lifestyle in the suburbs, which are part of the city [3, 4]. Progress in the development in economical and industrial areas has caused the spatial dimension of the characteristics of the suburbs to change, thus transforming cities into a more compressed environment. Peripheral districts of large cities began to replace the economic zones of production facilities, negatively affecting the environment. Suburbs have become more mono-functional and their spatial structure predictable, given the potential of its development direction in the future. Issues relating to land prices become more stable by this effect and can develop with investments in infrastructure. By building a more predictable manner in any potential suburb development, technical infrastructures become more consistent. Furthermore, let's focus on the issues of infrastructures and their efficient use. In most suburbs, buildings are powered by non-renewable sources of energy. Pro-development direction introduces such technologies and methods for the development of energy supply, making the greatest possible use for renewable energy sources. Like buildings of the suburbs, the current infrastructure development is chaotic. To some degree this is due to the scattering of buildings, which in turn hampers (mainly for economic reasons) the planning and construction of large and complex solutions central distribution systems that use renewable energy sources. Tracing the path of development of the situation in individual solutions, based on the so-called, green renewable energy is the key. Due to their much lower investment costs, and faster savings, it is a must to focus on returning invested funds and simultaneous improvement of ecological conditions, and not only the immediate environment, and/or the entire urban organism. Development of private - individual or group (f. e. cooperative type) activities, focusing on building and broadly advertising the idea of local renewable energy sources in suburbs of polish cities, is very necessary now.

2. Energy efficiency and renewable energy sources

Directive 2002/91/EC of the European Parliament and of the Council of 16 December 2002 on the energy performance of buildings, begins the first legislation on the subject. The adoption by the European Union of the Directive resulted in the coordination of efforts to create a legally defined area. These regulations have caused changes in Polish law. Energy Efficiency Act of 15th April 2011, is an essential tool to manage leading the way to better energy performance. In addition, the amended construction law, i.e.; new law passed 7th July 1994. The Act (amended) introduces an obligation to conduct energy performance certificates, given types of buildings, in relation to which the obligation relates, and also determines who can draw up the certificate.

The method and methodology defined in the Regulation of the Minister of Infrastructure of 6th, November, 2008 calculates the energy performance of the building and dwelling and/or part of a building constituting an independent whole technical - utilitarian, preparation, and design of energy performance certificates. Do not confuse that verifying the energy performance of a building with an energy audit; due to different legislation it is used for the thermal modernization. Reference is made herein the Regulation of the Minister of Economy of 10th August 2012, the detailed scope and method of preparation of energy efficiency audit, design cards energy efficiency audit and the methods for calculating energy savings. Understanding the Regulation and knowledge before performing technical functions in construction, can identify and fulfill expectations reflected in these acts. Standard issues related to the calculation of the total energy consumption in buildings such as Polish Standard PN- EN ISO 6946.

Directive of the European Parliament and of the Council 2009/28/EC of 23 April 2009 outlines the direction of the European Union, the Polish, and the issue of a new energy policy. The New Energy Policy provides a further diversity of the renewable energy sector over the period 2010–2020. Up to 2020, provides for the intensification of development in the following technologies: biogas, wind power, and solar power. Directive 2009/28/EC of 23rd April 2009, on the promotion of renewable energy sources (RES) in Poland, translates that even things which are not moving forward, or even noted, that “going in the right direction”. Parliament on 44 Meeting on November. 06.21.2013 passed an amendment to the Act – Energy Law. The Act includes separation of supervision over distribution and trading of gas and introduces more comprehensive manners than the current EU legislation on common rules for the internal market in electricity and natural gas, promoting the use of energy from renewable sources. The solution adopted by the Parliament of the solution is complete, which does not solve current problems concerning the liberalization of the following market segments. There is not also any records of specific procedural facilitation on the RES.

Directive 2010/31/EU of 19th, May, 2010, of the European Parliament on the energy performance of buildings introduces changes in relation to the Directive 2002/91/EC of the European Parliament and of the Council of 16th, December, 2002, the aim of the new Directive is totaling 20% reduction of energy consumption in the building sector of the framework of the European Union. Beginning 1st January, 2013, modification in accordance with the provisions of the directive energy certificates, will enable the tenant/owners of the premises/building to evaluate terms of energy performance. Certificates will include recommendations for optimizing the energy performance of the facility and - actions to be taken to achieve of recommended standards. So far, the solutions adopted are only palliative, which are not solving the most important problems.

3. Prospects for the use of green energy in the suburbs. Energy efficiency and renewable energy sources

3.1. Planning

A comprehensive management plan for green energy in a given area will be difficult to implement. The nature of existing suburb building is dispersed and disorganized. The direction of the development in energy performance will be shaped individually. Strengthening the regulation of energy will result in delamination of the energy performance in buildings. Quality

determines the order of building space, including the anthropogenic city. In the process of shaping the city, Franta asks; about the quality of the space, which creates a “lack of human activities”, and it is “a framework for supporting quality of life, arising out of the use of economic mechanisms and respecting social conditions; fully aware of the difficulties and limitations” boils down to a dilemma on how to develop a modern city suburbs, where they can be, if only structure that creates a vast suburbs, whether or not they boldly create public spaces and social?

3.2. Building

Characteristics of a building in the suburbs is more mono- functional promoting the development of green energy. Potentially, there are two forms of the use of property. Both groups, and single-family housing, building services and commercial productions have a limited number of co-owners. There are large residential communities and cooperatives. Characteristics of such ownerships results in a search of clear cost savings and the ability to use a long time refund. Individual Investor assumptions, which mostly focuses on single-family homes has a large percentage of consumers in green energy. The assumption that the investor group will form a major part of the green energy sector clients, seems to be plausible which most newly established buildings that will soon meet the criteria of energy efficiency and renewable energy sources. Celadyn [1] notes that “among all types of building single-family housing are associated with relatively major energy losses. Therefore, the problem to reduce energy demand and obtaining energy from local renewable sources for their needs is a matter of the most current and worthy of further consideration”.

Solutions for the application of strategies aimed only at saving energy can lead to the improvement of architectural forms, optimizing thermal insulation reducing caricature of simple forms. Single-family housing is “... a kind of building that is most demanding in terms to prevent field and the least rational. Ensuring the adequate records in local development plans seems to keep use of – cal energy sources for their needs should be considered in locally available energy. Ensuring the adequate records in local development plans” [1]. Installation of retail services, production and consumption are large costs associated with the purchase of energy from non-renewable sources. Objects located on the outskirts of cities are objects potentially negatively affecting the environment, usually having larger areas for investment. Companies exploiting such buildings can be in the future interested in having independent sources of energy.

3.3. Tendency for growing green energy plants by local governments.

In accordance with the directives implemented by the EU, there will be a separation of infrastructure managers and media suppliers, which will have a big impact on energy investment planning. Communal media owned by municipal governments are significant for the strategic planning and ensure security of energy supply introducing a degree of consistency in development of the city. They may be potentially interested in entering the market infrastructure managers. Independent and decentralized energy supply from indigenous sources of energy, especially renewable energy, are an invaluable tool that allows a municipality to strengthen local development programs. It is obvious, that perspectives of development of local renewable energy sources, according to local ecological conditions and possibilities, starting from fotovoltaic farms to many different kinds of fotovoltaic cell types as well as all other renewable energy producing methods might be implemented easier in suburbs than in city cores.

In the suburbs area it is enough space for city-agriculture, then inside Polish cities. This type of agriculture has a biomass production possibility, for renewable energy production purposes. Analyses of Polish newest buildings and settlements supplied with self-produced, renewable energy sources will be subject of following this, separate paper.

4. Conclusions

Aforementioned regulations are only the beginning of the investment process being associated with energy efficiency and renewable energy sources. Unfortunately, the current state of affairs in Poland are effectively halting investment in this area. Cumbersome procedures used by the administrators of the media, and the costs associated with the suspension of the supply of energy for a fixed term to the building, dissuades potential supporters of green energy from its actual use in detached homes. State policy encourages the use of renewable energy sources, but ignores real possibilities and difficulties of its implementations on a large scale. Solutions for the use of green energy will only be effective if the actual profit from it will be available at a reasonable level. The costs of being associated with the introduction of new, green technologies must also be enducted by the State. To achieve eco-friendliness, concern for the natural environment, and the regulations of the European Union, can not have all the problems dropped and costs of the process only to citizens. The aim of action can not be a large profit in energy producers and suppliers, but instead in the development of new environmentally friendly technologies. The real profit from driving green innovation for the citizens will take some time, mainly due to lower distribution costs and energy production. To achieve this, action is required and stable introduction of legislation governing the legal aspects of the green energy market. The development of suburbs may become an interesting testing ground and a market that is potentially able to absorb new technologies more quickly and efficiently due to its nature, flexibility and multi-million dollar potential, very much so in southern Poland. In turn this will tackle the problems of air pollution of the city and surroundings of Krakow which show that this problem is already present in media and will require decisive action in the near term.

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