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SOCIAL BENEFITS OF PASSIVE HOUSE**Literature review**

Number of researches presents the advantages and benefits of construction of a passive building. Some of them focus only on one of the three aspects of sustainability - environmental, economical or social, while others address benefits associated with more than one of the areas of sustainable development.

According to Foster et al (2016) in the context of sustainability, the passive house is a standard that focuses on increasing owner's comfort. They consider that as a result of living in a passive house, the health of the occupants improves. The passive house reduces the dependence on the use of fossil fuels, which lead to positive impacts on the inhabitants, air quality and therefore local economies. Similarly, Feist (2006), Liang et al (2017) and Hastings (2004) point out that the passive house provides a high standard of living. The authors associate the social benefits of passive buildings with the comfort that this type of construction provides to their occupants. Schuster, Lipp (2001) also considers that passive house improves comfort and reduces energy demand through "passive" constructions and technical measures. The advantages of passive house design have been identified by a number of researchers and are associated with the increased satisfaction of the occupants (Schnieders, Hermelink, 2006). Researchers as Piraccini, Fabbri (2018) summarize the social benefits as: increasing the level of comfort in the rooms, better air quality, relative humidity and constant temperature on the inner surface. Dequaire (2012) is of the opinion that passive house standard generates long-term benefits for the economy, people and the environment. A passive building survey (Fujara et al., 2015) points out that these buildings have also another very important social function - providing training and know-how. Schnieders, Hermelink (2006) and Feifer (2011) consider that the passive house creates a healthy indoor environment with minimal operating costs.

Methodology

The aim of the paper is to assess the social benefits of passive house and on this basis to prepare conclusions and recommendation of increasing the benefits of passive house for people and society. The following tasks have been set out to achieve the aim of the paper: 1. Literature review of social benefits of passive house; 2. Assessment of social benefits of passive house based on own survey; 3. General conclusions of social benefits and recommendation for their increasing. Findings and conclusions in the paper are based on structured interviews with 48 experts from construction sector which are involved in the implementation of energy-efficient construction and passive house standard.

Results and discussion

Figure 1 presents respondents' assessments of the social benefits of passive house. Most of the benefits are very high evaluated. Creating ecological thinking and attitudes (75%), Healthy internal environment (63%), Safety and Provision of recreation amenity (56%) are the social benefits with the highest evaluations. Respondents consider that passive houses have small range of benefits for job creation.

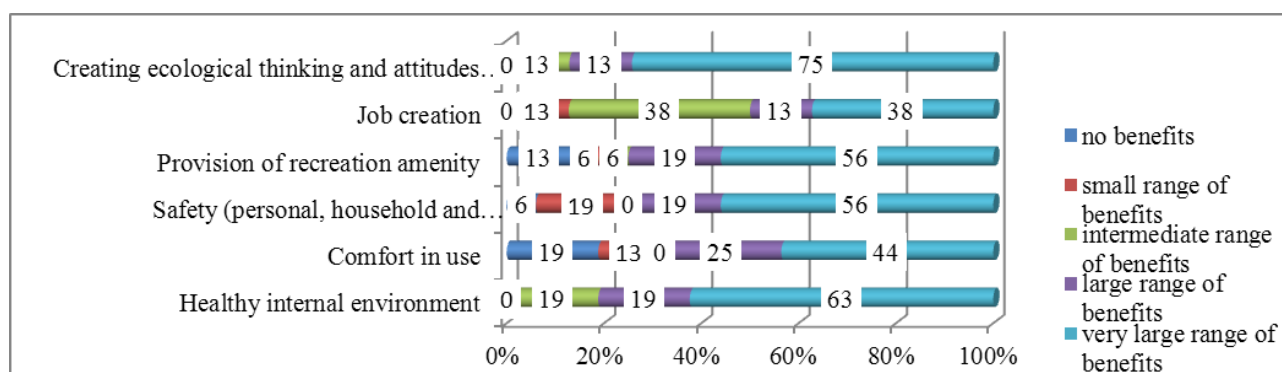


Figure 1. Social benefit assessment of passive house, %

Source: own survey

Factors that may contribute for increasing the social benefits of passive house are evaluated on Table 1. The highest support have factors as Increasing social activity of society in environmental terms (63%) and Innovation and innovative policy, know-how (63%). Half of the respondents consider that very important are factors as Labor market and the availability of qualified personnel, Training and increasing the awareness of the standard "Passive house, Increasing qualification and improving the image of firms.

Table 1. Evaluation of factors for increasing the social benefits of passive house, %

Factor	Important	Rather unimportant	No opinion	Rather important	Definitely important
Labor market and the availability of qualified personnel	6	6	13	25	50
Increasing social activity of society in environmental terms	0	13	13	13	63
Presence of associations and organizations with interests in energy-efficient construction	0	0	13	44	44
Training and increasing the awareness of the standard "passive house"	0	6	25	19	50
Increasing qualification and improving the image of specialized firms	0	0	19	31	50
Innovation and innovative policy, know-how	0	0	13	25	63

Source: own survey

Conclusions and recommendations

The benefits of passive buildings are related to the quality life of people as a healthy indoor environment, comfort in use, safety (personal, household), providing recreation facilities. On the other hand, social benefits are connected with the society as job creation, environmental safety, creating environmental thinking and attitudes towards switching to energy-efficient buildings etc. The use of non-renewable resources is limited by reducing the energy consumption of systems. The standard Passive house requires the provision and generation of certain comfort in the building. Implementation of the standard leads to higher quality in architectural and urban planning. For increasing the social benefits of passive houses is necessary encouragement and undertaken specific programs supporting investor and contractors of the passive house standard in order to increase the professional capacity and their qualification related to its implementation. Information campaigns and training of investor, contractors, owners, architects, specialists, experts, policy makers have to be organized, for increasing the awareness of the standard Passive house.

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ECOLOGICAL ASPECTS OF WATER PROJECTS IN BULGARIA

Water projects usually are classified as infrastructural projects. They spend a large investment resource, have a long duration and high level of risk, but the effects of their implementation are not only economical but also social and environmental. Integration of sustainability in the water projects management ensures environmental balance.

The environmental aspects of project management include achieving better ecological status of water and enhancing its ecological value by reducing pollution and improving its quality indicators (Stoyanova et al., 2019). One of the most important aspects is the reduction of health risks for population (Georgiou et al., 1998). Some authors analyze the benefits of avoided health risk, which shows how investments in water infrastructure can lead to improved welfare (Pattanayak et al., 2005). Water projects ensure a construction of installation for treatment of waste water. This leads to a reduction in eutrophication and associated negative effects (Howarth et al., 2001), such as the development of phytoplankton, the reduction of oxygen concentrations in water bodies and the reduction of biodiversity.