

Green roofs and green walls – legislative framework in Bulgaria

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Abstract

In Bulgaria, public relations associated with spatial planning, investment design and construction are regulated by the Spatial Development Act (2001). According to article 62 (10) of this act, each Municipal Council adopts an Ordinance for the construction and protection of the green system on the territory of the municipality. There are 265 municipalities in Bulgaria and they are free to customise this ordinance as long as the goals and framework of the Spatial Development Act (2001) are maintained. The aim of this article is to review all Ordinances for the construction and protection of the green system available in Bulgaria and to analyse the included information and regulations regarding the construction of green roofs and green walls. The review of the ordinances showed that the construction of green roofs and green walls is not sufficiently addressed in the Bulgarian legislation at the municipal level. About 30.2% of the municipalities in the country do not have an Ordinance for development, maintenance and protection of the green system, 33.6% of the municipalities have such an ordinance but it does not mention green roofs and green walls and only 30.9% have an ordinance and it regulates the construction of green roofs and/or green walls.

Keywords

green roofs, green walls, regional legislation

Introduction

The benefits of building green roofs and green walls include additional thermal insulation, noise insulation and waterproofing of buildings, facilitation of the drain-

age system and speeding up the return of rainwater to the atmosphere, the effect on the temperature of the building itself and the surrounding area, positive visual impact, biodiversity maintenance, etc. Worldwide, there is an increasing public, scientific, industry and government interest in establishing green roofs for over a decade now (Williams et al., 2010), including in Bulgaria (Kisova, 1986; Kuneva, 2011, etc.).

The policies regulating the construction of green walls and green roofs worldwide are implemented at the local, municipal, regional, national and supranational levels. As a part of the policy for sustainable urban development, they are implemented mainly at the municipal/ local level (Guergova et al., 2019).

In the last decades, some European countries have developed standards for the regulation of the design, construction and maintenance of green roofs. The German guidelines (FLL, 2018) are widely adopted as a reference basis for green-roof design and regulation worldwide, due to their exhaustiveness and proven tradition (Catalano et al., 2018).

In Bulgaria, public relations associated with spatial planning, investment design and construction are regulated by the Spatial Development Act (2001). The proper spatial planning guarantees sustainable development and favourable living, working and leisure conditions for the population. The rules and regulations for the organisation of the different types of territories and development zones are regulated by Ordinance No 7 of December 22, 2003 for rules and regulations for the organisation of individual types of territories and development zones.

According to article 62 (10) of the Spatial Development Act (2001), each Municipal Council adopts an Ordinance for the construction and protection of the green system on the territory of the municipality. This ordinance regulates the public relations associated with the planning, construction, sustainable maintenance, conservation and development of each municipality's green system, regardless of the ownership. The local authorities are free to customise the ordinance as long as the goals and framework of the Spatial Development Act (2001) are maintained.

There are 265 municipalities in Bulgaria and according to the Spatial Development Act (2001), each of them should have an Ordinance for construction and protection of the green system.

The aim of this article is to review all available Ordinances for the construction and protection of the green system and analyse the included information and regulations regarding the construction of green roofs and green walls.

Methods

In March 2020, an application for access to public information under the Access to Public Information Act (2000) was sent to all municipalities in Bulgaria, requesting the provision of the current Ordinance for the construction and protection of the green system. The ordinances available on the municipalities' websites were reviewed.

The information was analysed for all 265 municipalities on the territory of Bulgaria. All available ordinances were reviewed in terms of the included information/guidance regarding green roofs and green walls. Based on the results of the review, the municipalities are grouped depending on the statutory requirements for green roofs and green walls.

Results and discussion

With respect to the local legislation regarding green roofs and green walls in Bulgaria, the municipalities can be divided into three similarly-sized groups: (1) municipalities that do not have an effective Ordinance on the development, maintenance and protection of the green system; (2) municipalities that have such an ordinance but it does not mention green roofs and green walls; (3) municipalities that have such an ordinance, regulating the construction of green roofs and/ or green walls. The ratio between these three groups is given in Fig 1. For 14 of the municipalities we do not have information about the existence or the content of such ordinance, they are organised in a separate group.

A total of 80 municipalities in Bulgaria do not have an Ordinance for the construction and protection of the green system. In some of these municipalities, there has been such an ordinance, but it is repealed. In others, it has never been adopted. In many municipalities, work is underway to create one. Only two of the municipalities with no effective Ordinance for building and protecting the green system have

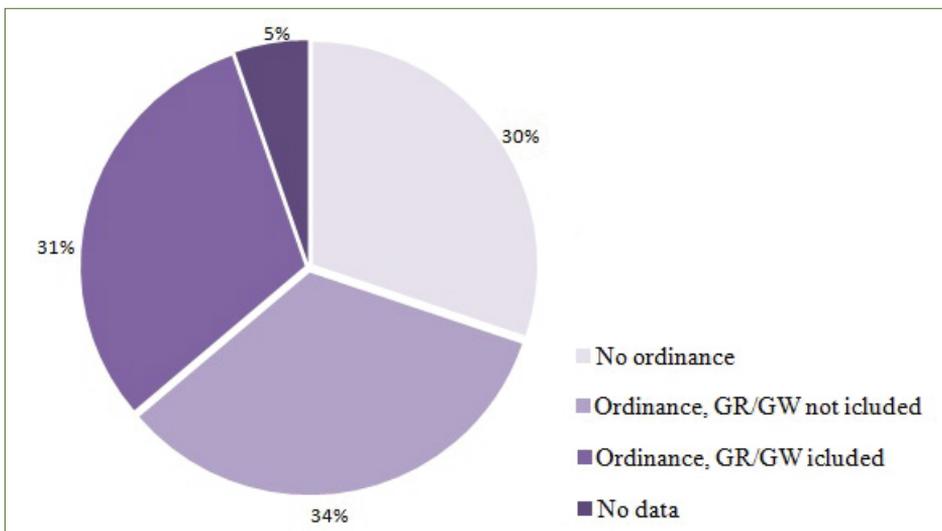


Figure 1. Municipalities in Bulgaria according to the local ordinances regarding green roofs (GR) and green walls (GW)

a population of over 40,000 people. In 53 of the municipalities with no ordinance there is one city, in four there are two cities and in the rest, there are no cities. For 14 municipalities there is no information if such an ordinance has been adopted, or we were unable to access the ordinance. The analysis in the article is made based on the ordinances of the other 171 municipalities.

The ordinances of 89 municipalities do not mention green roofs nor green walls. These municipalities are with a population of up to 130,000. Most of them are small and only three municipalities with a population of over 100,000 fall in this group. 75 of the municipalities, which ordinances do not mention green roofs nor green walls are with less than 40,000 inhabitants, ten – with a population of 40,000-100,000. Most of the municipalities (66) are with one city, six – with two, two – with three cities. In one of the municipalities, there are no cities.

Stipulations regarding green roofs and green walls are included in the ordinances of 82 municipalities, i.e. 30.9% of the municipalities in the country. In four municipalities, the area of green roofs and green walls is considered a green space. These are small municipalities with a population of between 5,000 and 17,000 inhabitants. There are three municipalities whose ordinances state that green roofs and green walls are not considered a green space under any circumstances. They are also small municipalities with a population of 6,000 to 12,000 inhabitants. For the other 75 municipalities, the ordinances set out certain conditions under which the area of green roofs and/ or green walls can be included in the total green space of the respective property.

In most municipalities from this group, the requirements regarding green roofs and green walls coincide. According to the ordinances of 62 of them, the green roofs are included in the total green space of the property when according to the structural design and the vertical planning project a soil layer of more than 0.60 m is provided. If the soil layer is between 0.60 m and 0.30 m the area of the green roof is multiplied by a factor of 0.8 (i.e. 80% of its area is considered green space). Fifty-four of these municipalities have a population below 40,000 inhabitants, seven municipalities have a population of between 40,000 and 100,000 inhabitants and only one municipality has more than 100,000 inhabitants. In 56 of these municipalities, green walls are included in the green space multiplied by a factor of 0.5 to 0.8. In the other six, green walls are not mentioned.

The ordinances of six other municipalities also stipulate that the green roofs should be included in the total green space of the property when the soil layer is more than 0.60 m and for a layer between 0.60 and 0.30 m their area has to be multiplied by a factor of 0.8, but this applies only to development zones with a building density of more than 60%. The ordinances of these municipalities do not mention green walls. Three of these municipalities have a population of less than 40,000 inhabitants. Among these municipalities is the municipality with the largest population – Sofia.

In five municipalities, the area of the green roofs is fully included in the green space of the property when the soil layer is over 0.60 m, with the smaller layer being multiplied by a factor between 0.3 and 0.8. Green walls are not mentioned in the ordinances of these municipalities.

In one municipality with a population of more than 300,000 inhabitants, green walls and green roofs are considered a green space only in the cases of article 38 of Ordinance No 7, i.e. to provide the necessary green space in regulated properties for residential, public or mixed use in the “mixed central zone” in the settlements.

There is one municipality (with a population of more than 200,000 inhabitants), which ordinance stipulates compulsory landscaping under certain conditions. The requirement is compulsory landscaping of at least 10% on the terrain, roof terraces and specific landscaping for angular regulated property under article 27, p. 3 of the Spatial Development Act (i.e. property in which the maximum intensity and density of construction may be exceeded under certain conditions provided for with a general or detailed spatial plan).

The analysis of the ordinances shows that the construction of green roofs and green walls is not sufficiently addressed in the local legislation at the municipal level in Bulgaria. Ordinances for the construction and protection of the green system are in force for 64.5% of the municipalities in the country. The construction of green walls and green roofs is regulated in less than half of the existing ordinances. In most of the ordinances, the requirements for substrate depth are unreasonably high. According to Kouneva et al. (2014), many different plant species can be successfully grown on green roofs with smaller substrate depths – herbaceous species can be grown on roofs with substrate depth 0.06–0.12 m and shrubs can be grown on substrates starting from 0.20 m, etc. A substrate depth higher than 0.60 m is necessary for big shrubs and small trees.

It is necessary to analyse the existing research and methods for building green roofs and to comply the ordinances with the available good practices. Substrate depths vary depending on the type of roof. They can be from 0.02 to 0.15 m for extensive green roofs, from 0.15 m to 1.25 m for intensive roofs and from 0.10 to 0.20 m for semi-extensive green roofs (Ampim et al. 2010). According to the provisions of the existing Ordinances for the construction and protection of the green system, the extensive and semi-extensive green roofs are not considered green spaces in the majority of the municipalities.

Currently, the main motivation for investors to build a green roof or green wall originating from the legislation is to reduce the area occupied by green space in a property. Changes in the legislation are necessary in order to motivate the investors to construct green roofs and green walls. International experience and good practices offer different incentives applicable in Bulgaria as well. Examples include co-financing the construction of green roofs, tax allowance, etc. (Burszta-Adamiak, Fialkiewicz, 2019).

Conclusion

Almost one third or 30.2% of the municipalities in Bulgaria do not have an Ordinance for the development, maintenance and protection of the green system, 33.6% of the municipalities have such an ordinance but it does not mention green roofs

nor green walls and 30.9% have an ordinance and it regulates the construction of green roofs and/ or green walls. Due to the lack of data, 5.3% of the municipalities were not included in our analysis.

Regulations need to be developed in all municipalities, especially in larger and densely- populated ones. It is necessary to amend the ordinances that do not address the construction of green walls nor roofs and to add relevant regulatory requirements.

Our analysis showed that the construction of green roofs and green walls is not sufficiently addressed in the local legislation at the municipal level in Bulgaria. Most of the existing Ordinances for development, maintenance and protection of the green system have unreasonably high requirements regarding the depth of the soil layer. It is necessary to review the existing technologies for the building of green roofs and the available good practices and to reflect them in the legislation. Different incentives need to be sought and to be incorporated into the legislation. At present, the motivation for investors to build a green roof or green wall originating from the legislation is to reduce the area occupied by landscaping in a property.

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