


Article

The Role of Sports Facilities in the Regeneration of Green Areas of Cities in Historical View: The Case Study of Great Forest Stadium in Debrecen, Hungary

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Abstract: Within the framework of the increasing importance of sports in the last few decades, researchers are focusing more and more on the role of sports facilities in the regeneration of urban areas. The existing studies, however, mainly concentrate on the effects of the investments on the built-up areas, and less attention is paid to the analysis of the relationship between these facilities and the green areas. The primary objective of our—in this context pioneer—research is to analyse the role of the new stadium in the regeneration of one of the most important green areas in Debrecen (Hungary), in Central Europe. We explore the historical influences, the need to foster development and the most significant effects of the investment. Finally, we point out the relationship between the theoretical approaches and our case study in Debrecen.

Keywords: sports facilities; regeneration of cities; green areas; Hungary



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1. Introduction

As a result of the increasing importance of sports in the last few decades, researchers are paying more and more attention to the study of the connections between sports and urban development [1–3]. In the framework of the above, one of the main areas of the research consisted of studies examining the impact of sports facilities on urban development [4–7]. Firstly, studies have revealed the characteristics of the location of facilities within the city. Thornley [8] distinguished between three types of stadium location within the city (city centre, edge city, inner-city), while Smith [9] compared the most important characteristics of four Sport-City Zones located in Manchester, Cardiff, Dubai, and Doha. Liao [10] differentiated six theoretical models of Olympic site integration to the host city (decentralized, inner-city mono-clustering, inner-city poly-clustering, periphery clustering, satellite clustering, and joint clustering), and Kozma et al. [11] examined the spatial development of sports facilities in Hungarian cities of county rank, observed three main periods of construction and pointed out that the location of available lands played the most important role in their site selection process.

Secondly, they analysed the relationship between sports facility development and local actors. Panten and Walters [12] showed the impact of austerity on sports-led regeneration schemes (increased privatization and marketization), while Georgantas and Lekakis [13] proved that US-based urban politics theories and specifically growth machines remain alive in the UK.

Thirdly studies revealed the positive and negative experiences of after-use, particularly for the Olympics. Yu [14] indicated that utilization of Olympic venues in Beijing varied significantly (the most important factors were their ownership, locations, structural scale, management, and operational mode). Boukas et al. [15] showed that the Olympic Games in Athens contributed to the multifaceted representation and reconstruction of the city's

identity and cultural heritage. Still, the lack of strategic planning/management hindered the use of this potential, while Lee [16] pointed to the significant negative impact of sports facilities serving winter sports on the urban environment.

Based on the findings of these studies, sports facilities—depending on their location—may have more profound impacts on urban development in two different ways [17–19]. On the one hand, if located on the outskirts of cities, they can facilitate the development of the area concerned or attract new functions (e.g., exhibition and convention centre) there [20,21]. On the other hand, in inner-city areas, they play an important role in the regeneration of these areas [22,23].

The former location was characteristic in the United States of America between the early 1960s and the mid-1980s (Table 1), and the same can be observed in the case of European countries in the past two decades (Table 2). In the former country, downtown locations have played an increasingly important role since the mid-1980s.

Table 1. Changes in the locations of the home stadiums of the teams in the four most important North American sports (NBA, NHL, MLB, NFL) between 1965 and 1997 (with percentages in brackets).

	1965	1985	1997
City centre (downtown)	24 (42.1)	38 (38.8)	58 (51.3)
Within the city	28 (49.1)	31 (31.6)	26 (23.0)
Edge of the city/Suburbs	5 (8.8)	29 (29.6)	29 (25.7)
Total	57 (100.0)	98 (100.0)	113 (100.0)

Source: after [24].

Table 2. The spatial location of stadiums constructed between 1990 and 2010 in a new location with a seating capacity of at least 30,000 (the table does not include facilities constructed on the sites of demolished old stadiums).

	City Centre	Within the City	Suburbs/Edge of the City
Germany	0	2	5
Great Britain	1	6	1
Spain	0	1	3
Italy	0	1	2
Portugal	0	0	3
Other countries	1	1	6
Total	2	11	20

Source: after www.fussballtempel.net/uefa/listeuefa.html and the websites of stadiums. (accessed on 12 January 2022)

Relying on experiences gathered in Great Britain, Davies [25] differentiated between three types of sport-related urban regeneration. In the case of what he called “sport and regeneration”, there are only investments on a smaller scale, which are implemented later during the development of a given area, as a supplementary element. Developments in the framework of “sports regeneration” are incorporated in the development concepts of the given area from its inception and often constitute an important element of these concepts (e.g., the regeneration of East Manchester in connection with the 2002 Commonwealth Games).

The third type is called “sport-led regeneration”, in which case the investments represent the key element or catalyst of the regeneration of the given area; they are unique and are often of symbolic significance (e.g., the renovation of Wembley Stadium). This last type of investment is often called “flagship developments” in urban policy [26–30], and they play an important role, especially in the regeneration of former industrial cities suffering from the negative impact of deindustrialisation (e.g., Bilbao—Guggenheim Museum, Rotterdam—Kop van Zuid). These projects could be the catalyst for further regeneration and could contribute to the development of cities in several ways. For example, they can revitalise an attractive image for the city and boost civic pride among inhabitants (the population of settlements feel more or less proud of the developments). Additionally, they can encourage private investments (economic actors feel more confident to invest in the

area), catalyse regeneration in adjacent neighbourhoods, and attract tourists, jobs, and investments

In the spirit of the above, the present study attempts to analyse the role of a sport-related project, the construction of the Great Forest Stadium (“Nagyerdei Stadion”) of Debrecen (Figure 1), in the regeneration of this part of the settlements. In this context, we want to explore the differences between the different periods, the characteristics of the related investments, and the population’s attitude towards development. At a theoretical level, two main questions have arisen: which of the three types of sport-related urban regeneration is the development, and to what extent are the characteristics of the flagship projects observed.



Figure 1. Location of Debrecen in Central Europe. Source: own work.

The significance/importance of the project is shown in the fact that at the time of construction, it counted as the 3rd largest sports-related development in Hungary (and the first biggest one outside of the capital city). In the course of the planning and implementation of investment, special attention was devoted to the effects exercised on the wider green environment of the project. This was particularly emphasised as the stadium is located in a nature protection area, the Great Forest, and this part of Debrecen is considered Hungary’s first nature reserve, having been given this title in 1939).

2. Materials and Methods

In the preparation of this paper, we have relied on various sources of information and applied different methods. On the one hand, we reviewed academic works on the history of the town and, on the other hand, we conducted interviews with people who have played an important role in the town’s development over the last 15–20 years. Six interviews were conducted, and the interviewees can be divided into three groups. One of them includes the managers of urban planning (e.g., chief architect of the city, head of urban development of the Local Authority), and the other includes professionals who are well acquainted with the history and architecture of the city. The third includes representatives of local sports life (e.g., managers of sports clubs and operators of facilities). These two sources were very important because they provided us with information on the factors behind the decisions taken. Thirdly, we studied the development and urban planning plans for the city as a

whole and for the neighbourhood in question, with particular attention to the parts of these plans relating to the Great Forest Stadium. In this context, we analyzed 8 development documents from the past 90 years and compared the goals and principles for the area around the Great Forest Stadium. Fourthly, in 2019, in the framework of a questionnaire survey covering the whole of Debrecen, we also surveyed the city's population to explore perceptions of stadium development. The survey included 500 people, whose composition was representative of the population of Debrecen.

3. Results

3.1. Developments in the 20th Century

The Great Forest (Hungarian name: "Nagyerdő") park is located to the north of the centre of Debrecen (Figure 2). The development of the area started in the first half of the 19th century, but the first two decades of the 20th century saw a major resurgence in the development of the area (it was supported by the completion of the tram line connecting this area with the city centre in 1910). This period witnessed the opening of the water park and the baths, the water tower, the city's first football pitch, and several shooting ranges in the eastern part of the area. These developments, however, could only be regarded as isolated, as they did not constitute a system of interrelated parts.



Figure 2. Location of Great Forest in Debrecen Source: own work.

By the end of the 1920s, however, it was increasingly necessary to draw up a coherent plan consisting of interconnected component parts, which was realized in 1930 by József Borsos, the municipal engineer of the city at the time. The development plan (Figure 3) he drew up regarded recreation and entertainment as the most important park functions in the Great Forest, and sports received a central role in this. This was reflected by the fact that in various documents, one could frequently encounter the expressions "sports park" and "sporting city" [31].

The Great Forest Stadium, inaugurated in the summer of 1934 (Figure 4), was unique and modern from various points of view (Figure 4). First, in this period, stadiums were primarily wooden structures, whereas in Debrecen they predominantly used concrete elements, and regarding the above, the city leaders often emphasised that this can be regarded as the country's first real stadium. Second, the capacity of the facility (approximately 15,000 to 20,000 persons) was very high relative to the population of Debrecen at the time (116,013 in 1930), which would indicate that they also counted on the population of the nearby settlements, as well as supporters who accompanied the visiting teams.

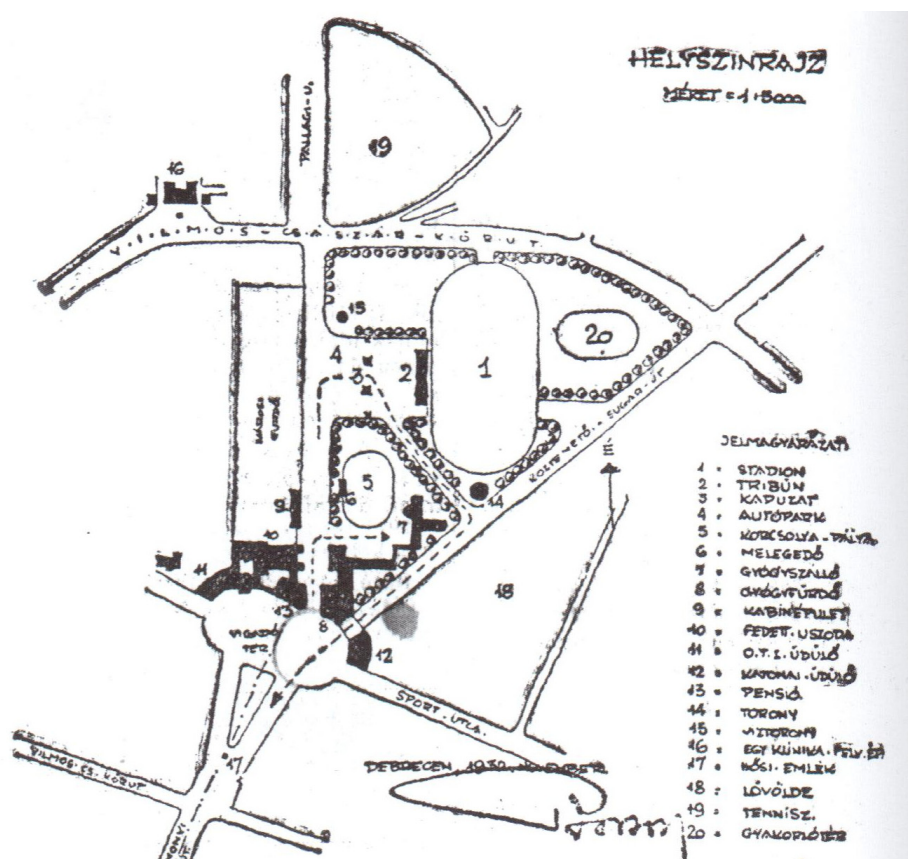


Figure 3. Development plan of Great Forest drawn up by József Boros in 1930 Source: [33] p. 144. (1—stadium, 2—tribune, 3—gate for stadium, 4—parking space, 5—ice skating rink, 6—warming space, 7—spa hotel, 8—thermal bath, 9—bath cabin, 10—indoor swimming pool, 11—resort building, 12—resort building, 13—pension, 14 tower, 15 water tower, 16—hospital, 17—heroic monument, 18—shooting gallery, 19—tennis court, 20—Military training ground).

Closely related to the construction of the stadium was the formation of the Boating Pond (the soil extracted from the area of the pond was used to create the stadium), which was used in the winter months as a skating rink [32]. Part of the character of the Great Forest as being related to sports was the 33-metre indoor swimming pool erected within the area of the outdoor water park (the success of which is indicated by the fact that as early as 1934, the city was already planning to build a swimming pool also for outdoor competitions), as well as the sledge and ski courses and the tennis courts, all located north of the stadium (these were destroyed in World War II).

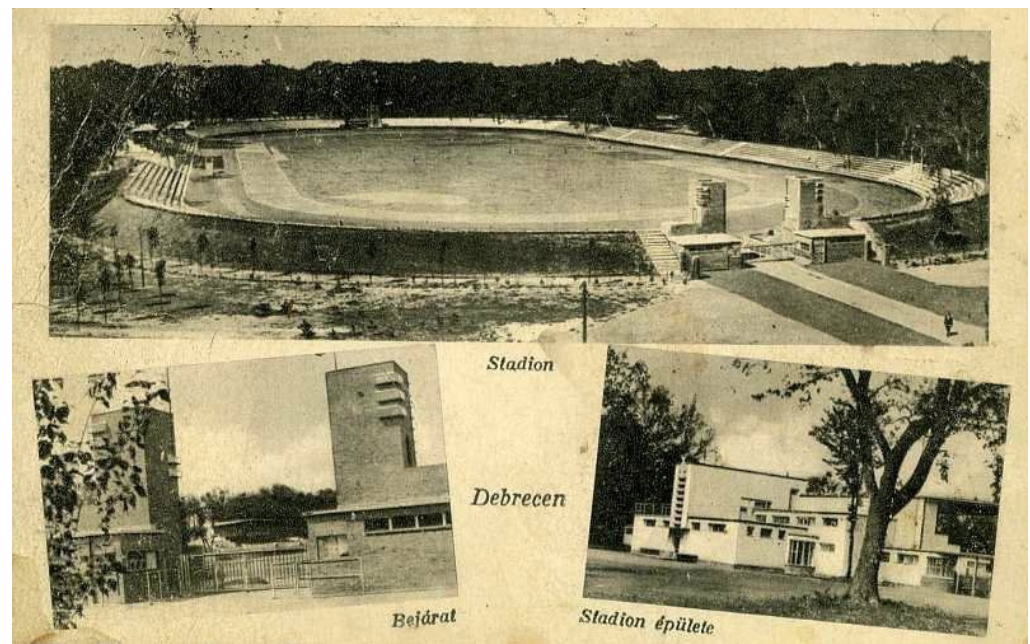


Figure 4. Great Forest Stadium in the 1930s Source: own photo collection.

In the period after World War II, initially, it was investments related to tourism and entertainment that dominated (Figure 5). In the spirit of the above, according to the urban development plan accepted in 1960 [34] in the 1960s and 1970s, the services of the outdoor water park were developed, as well as several entertainment facilities (outdoor theatre, amusement park and zoo, and thermal bath), new restaurants (e.g., “Új Vigadó) and hotels were built. Sport-related developments started in the 1970s and were concentrated in the eastern part of the area. A new sports park (e.g., skating rink, athletic track, indoor sports hall, football stadium, and sports hotel) was realized due to three large local companies joining forces. The Great Forest Stadium, as a sports facility, however, gradually lost its significance. The speedway races using external tracks moved to another location in the early 1970s, and from the second half of the 1980s, the local football teams played less and less frequently in the Great Forest Stadium.

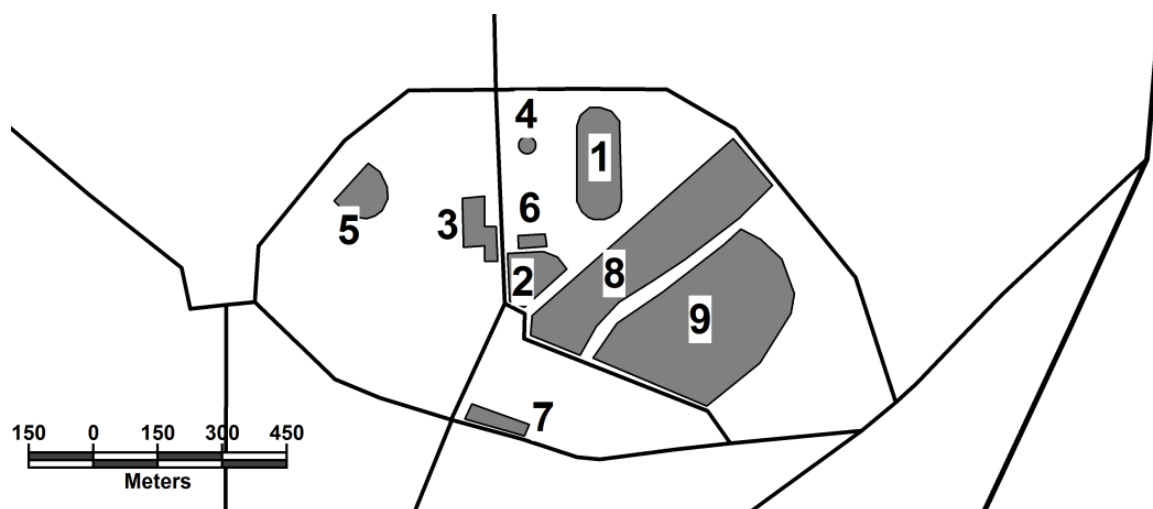


Figure 5. The most important buildings in Great Forest in the second half of the 1980s Source: own work. (1—stadium, 2—boating pond, 3—bath, 4—water tower, 5—outdoor theatre, 6—new restaurants (Új Vigadó), 7- new hotel, 8—amusement park and zoo, 9—sports park).

3.2. Most Important Factors of Necessity of Regeneration

In the period after the democratic transformation, and especially from the first decade of the 21st century, there were more and more problems emerging in connection with the Great Forest. Due to the lack of renovations, the condition of some of the facilities built earlier (e.g., Great Forest Stadium, the Open Air Theatre, “Új Vigadó” restaurant, the boating pond, and the ice skating rink), the green areas deteriorated as well. This part of the city was increasingly considered as blemishes on the face of Debrecen (Figures 6 and 7).



Figure 6. Great Forest Stadium in 2000s Source: own collection.



Figure 7. Open-air theatre in 2000s Source: own collection.

The necessity of implementing some changes was also realized by the local government. The development plan [35] prepared for this part of the city in the mid-1990s formulated some very ambitious concepts (Figure 8): it included the reconstruction of the Great Forest Stadium (S in Figure 8), the construction of an indoor swimming pool (G in Figure 8), thermal wellness and a conference hotel (É in Figure 8), the comprehensive renovation of the athletic center (S in Figure 8), the expansion of the existing sports hotel (T in Figure 8). At the same time, the financial resources necessary for the realization of these plans were rather scarce, and as a result, for a long time, very few of the plans were realized.

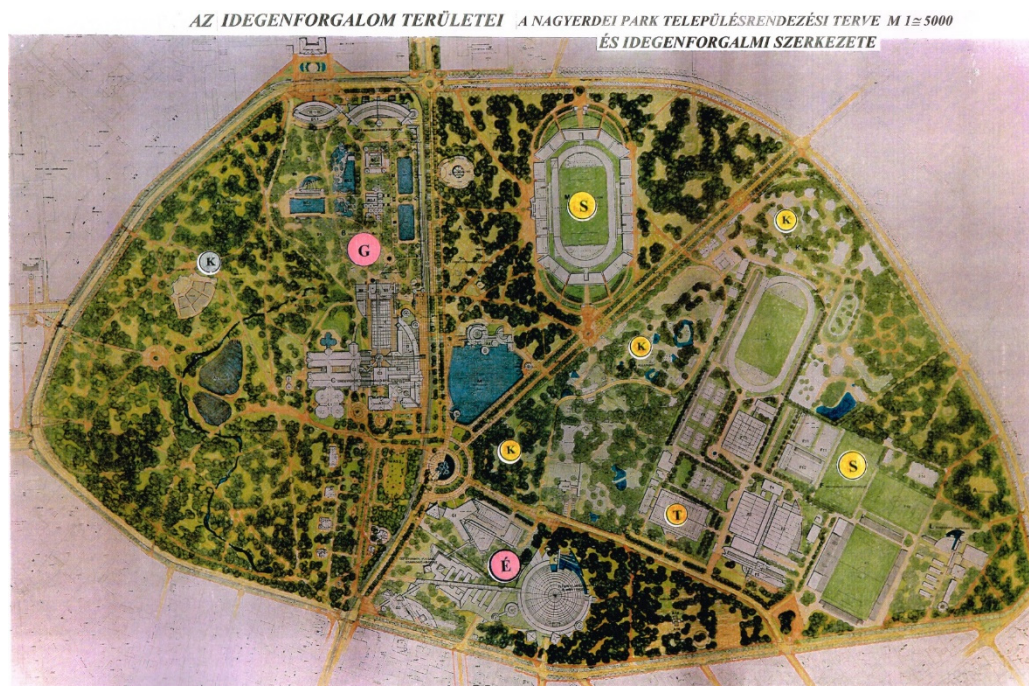


Figure 8. Development plan of Great Forest in 1996 (The meaning of numbers is found in the text.)
Source: [35].

3.3. Investment of Great Forest Stadium and Its Impacts in the 2010s

After the parliamentary elections of 2010, the external conditions changed favourably from the point of view of the city: the new government made the development of sports facilities a priority from the beginning, and within this, they paid special attention to Debrecen, committing to realising the stadium using funding from the central budget. As far as the location of the stadium within Debrecen is concerned, there were two possibilities: the area of the airport in the southern part of the city (where an entirely new facility would have been built) and the Great Forest area, which meant the reconstruction of the stadium built in 1934. Having studied Western European examples, the leaders of the city, however, eventually chose the Great Forest as the location, which decision—in addition to the historical traditions and the excellent public transportation links—was also influenced by the fact that the stadium was considered to be the flagship project of the regeneration of this entire part of the city.

In the spirit of the above, in the course of designing the facility, the plan was to build a “fourth-generation” stadium (the first one of its kind in Hungary) with functions beyond those of a stadium, which would create, by way of the facility itself and its surroundings, such spaces that provide experiences and venues for programmes for the larger public [36,37]. In addition, attention also had to be paid to the protected natural area (the Great Forest park is a NATURA 2000 site), and efforts had to be made to increase the number of parking spots available.

The new facility, which opened (number 1 and 2 in Figures 9 and 10) in the spring of 2014, fundamentally satisfies the expectations. The stadium fits into its environment, hardly reaching over the canopy level of the trees (which may be the reason why people at UEFA nicknamed it “Robin Hood” Stadium), and in keeping the memory of the old Great Forest Stadium, the stalls were built in such a way that a slice of the forest can be seen from any spot.

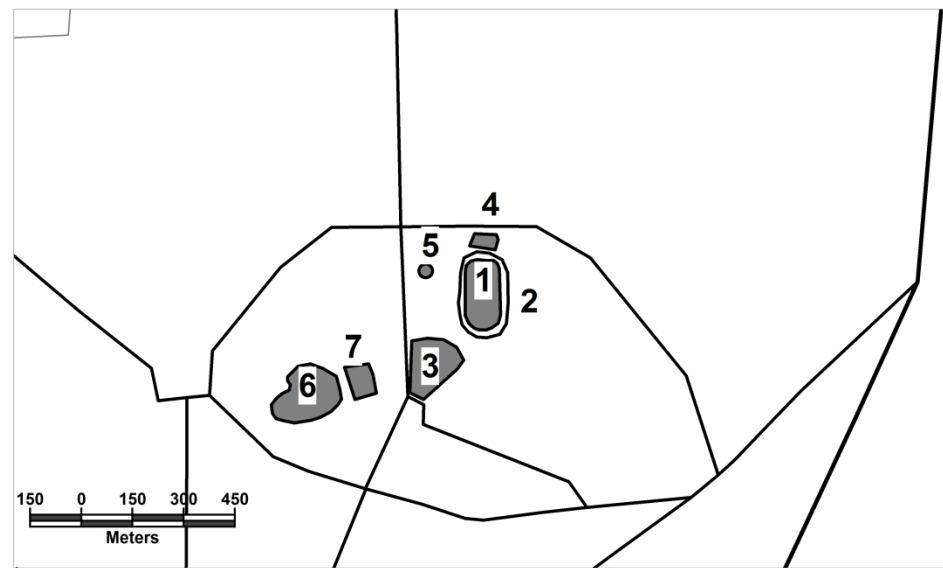


Figure 9. Most important elements of investments in Great Forest in 2010s. (The meaning of numbers is found in the text.) Source: own work.



Figure 10. Great Forest Stadium and its vicinity Source: own work.

Related to the investment in the stadium, both the medium part of the Great Forest, which is directly adjacent to the stadium, and the western part of the park will undergo a major renovation. South of the stadium (number 3 in Figure 9), where the boating pond was once located, a complex consisting of fountains and several smaller basins, as well as bridges over them, are being built (Figure 11). The chief attraction here will be a periodically operating fountain with a water jet spurting up to 60 metres and a fog theatre (where in the evening, colour films about Debrecen are projected onto the water spray). This facility can be regarded as the main point of access to the stadium, and in addition, the parking garage built underneath is designed to address the parking problems in this part of the city.



Figure 11. Fog theatre in the southern part of Great Forest Park Source: own collection.

Immediately to the north of the stadium (number 4 in Figure 9), a communal and events area has been formed, suitable as a venue for concerts and other events, as well as serving as the location for a mobile ice rink in winter (Figure 12). Along the eastern and western edges of the stadium, the forest park character continues to dominate, with an educational path across the forest and a cross-country adventure course also formed along the eastern boundaries of the facility. As a final step in the development project of the middle part of the Great Forest, the renovation of the Water Tower (number 5 in Figure 9), located in the immediate vicinity of the stadium, was completed in 2018. Now it functions as a café/grill terrace and observation tower, and provides a venue for various cultural events (Figure 13).



Figure 12. Event area on the northern side Source: own collection.



Figure 13. Renovated Water Tower Source: own collection.

The projects realized in the second part of the 2010s in the western part of the Great Forest Park are also related to the stadium's development. The elimination of the earlier Boating Pond reduced the surface of the waters, and to compensate for that, the area of the "Békás" pond, located in the middle of this section of the forest, was increased to one and a half times its former size. The water supply was also made more secure (Figure 14, number 6 in Figure 9). The nearby open-air theatre, which was in disrepair, was also renovated (Figure 15); an outdoor gym, educational paths, playgrounds (Figure 16, number 7 in Figure 9), and new promenades were added, and the plants in the park were also renewed.



Figure 14. Increased water surface in the western part of the Great Forest Park Source: own collection.



Figure 15. Renovated Open-air theatre Source: own collection.



Figure 16. Playground for children in the western part of the Great Forest Park Source: own collection.

The development was evaluated favourably by local residents, and both the stadium and its immediate green environment have become a favorite destination of the local population as well as tourists visiting the city. Furthermore, based on the findings of a survey conducted among citizens of Debrecen in 2019, the majority of the respondents had a positive opinion of the development. A significant number of them found that the stadium has become an important element of the city's image (Table 3).

Table 3. Opinions of local residents on the Great Forest Stadium development (%).

Importance of the Stadium		Success of the Renovation	
one of the most important elements of the development of the Great Forest	34.5	a successful project, which has become one of the key symbols of the city	42.2
should be mentioned as an important element of the development of the Great Forest, but not the most important one	49.1	a successful project, but only one among several elements contributing to the city's image	42.2
an average element of the development of the Great Forest	12.0	a project of average quality	6.0
did not play a role in the development of the Great Forest	4.4	a fundamentally faulty project	9.6

Source: own survey.

4. Discussion

As mentioned in the Introduction chapter of the study, there are two main theoretical questions to be answered regarding the impact of the regeneration of the Nagyerdei Stadium on its neighbourhoods. Which of the types identified by Davies can be considered the most appropriate, and to what extent can the general characteristics of flagship developments be identified.

On the one hand, in our opinion, from among the categories established by Davies, the project belongs to the group of “sport-led regeneration”. It represented the key element or catalyst of the regeneration of the given area, it was unique, and it has become one of the symbolic elements of the city.

On the other hand, our research shows that the regeneration of the stadium and related developments, which would have been inconceivable without it, have significantly improved the perception of the district among the local population. New recreational opportunities (e.g., cultural programmes, playgrounds) have been created that are attractive to both adults and children, and the renewed green space and increased water surface have improved the sense of well-being of visitors to the district, overall confirming the community benefits of sports facility development already identified by other researchers [36]. All these facts are reflected in the positive opinions expressed in the questionnaire survey.

The renewed stadium is mainly attractive to sports tourists who visit the venue for various sporting events (predominantly football matches), while the fog theatre and the performances of the Open-air theater are also a recreational opportunity for tourists who spend 2–3 nights in the city during the summer.

In addition, however, certain trends typical of flagship developments cannot be identified in the case of the Great Forest Stadium. Firstly, the investment has played a minimal role in attracting private capital to the area, and secondly, there has been no increase in land prices. In our opinion, this is because, as mentioned above, the area is a nature protection area predominantly owned by the local authority, which has reduced the interest of economic operators.

5. Conclusions

The most important findings of the study could be summarised as follows:

- Regeneration of Great Forest Stadium has played an important role in the development of the district in two periods, but with some differences. On the one hand, the construction of a stadium in the 1930s was the flagship project for the development of an essentially undeveloped area. This was followed by subsequent developments which, in line with the urban plan, were to some extent linked to sport. On the other hand, in the 21st century the new stadium was built on an already developed site and played a very important role in the renewal of the entire neighbourhood of the city, but in this case, more emphasis has been placed on creating conditions for general recreation/entertainment.
- In terms of the characteristics of the investments triggered by the construction of the stadium, the predominance of public development is discernible. The whole regeneration project was financed by the state budget, while most of the related investments were financed by the European Union.
- Residents were generally positive about the improvements made and considered that the investment has become an important element of the city's image.
- If we look at further directions of the research, two areas can be mentioned: analysis of the multifunctional nature of the Great Forest Stadium as a sports facility; what other activities can be offered in addition to sports.
- Analysis of the impact of sports-related developments on neighbourhoods in other Hungarian/Central European cities: are there any effects? If not, what are the reasons for them; and if so, what are they?

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