

THE RETROFITTING OF REGGIO CALABRIA'S STADIUM AND ITS ECONOMIC FEASIBILITY: THE EVALUATION IN SUPPORT OF THE PERSPECTIVES FOR URBAN REGENERATION

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ABSTRACT

The paper shows a study of the economic feasibility of the retrofitting project on the “Oreste Granillo” stadium in Reggio Calabria (Italy), in case of a public-private partnership for the realization of the work and the consequential management.

This work, once illustrated the modern strategies on the European and Italian level, leads to expose the case study.

After the description of the context in which the stadium is collocated and its main features, it follows the analysis of some best practices that drove the planning choices.

Once defined the overall strategy, which provides the retrofitting of the existing stadium rather than the realization of a new stadium out of the city, there's the explanation of the planned measures.

After that, it was possible to define the planning choices and verify the economic feasibility of the entire work, thanks to the Discounted Cash Flow Analysis.

KEYWORDS: economic feasibility; DCFA; public-private partnership; retrofitting; urban regeneration; stadium

INTRODUCTION

Stadiums and their surroundings represent often a border place, with a deep lack of services and attractive compared to the rest of the city. The nowadays trend is to build these structures out of the city, making them a new point for an eventual city expansion (Colistra, 1999).

This strategy has an impact on the city itself: in addition to the land consumption and the urbanization cost of the new area, within the necessary infrastructural links, there would be the problem of the old building, for the eventual functional recovery and the management and maintenance costs, if it decided to keep it (Faroldi, 2007).

The project exposed in this paper, according to the always more extended architectural debate, presents itself as a retrofitting opera of the existing stadium, keeping and reconfiguring the existing operas, but also changing its relationship with the surrounding environment and the city (Lynch, 1985).

Other than an overall description of the context, the aims and the main features of the project, the paper focuses on the process of evaluation of the economic feasibility of the work (Barrile, 2021).

STADIUMS REDEVELOPMENT STRATEGIES AND URBAN REGENERATION

In the last years, in Europe, the concept of stadium is changing. From being a simple container of events, the stadium is getting the role of an infrastructure that promotes and gives services, becoming an economic center able to provide for financial, working and location services (Davis, 2017).

On the other hand, the role of infrastructures in urban regeneration processes, in a circular economy perspective, has been highlighted for years in numerous studies, including, by way of example, that of Cerreta (Cerreta et al., 2021).

This process looks being late in Italy, showing the necessity of a new way to manage the structures and their relationship with the territory, so they can meet the needs of an always more dynamic business and the local development policies, solving this way the huge problematics of the relationship between the stadium and the consolidated city (Chierici, 2016).

Especially the topic of the redevelopment and conversion of the Italian stadiums, not very attended and in state of precarious conditions of maintenance, is the central aim of the work in order to provide a better functional layout of the existing buildings, enhance their involvement in the home community and promote new management modalities (Faroldi, 2007).

The building's ownerships turns out to be always public, except for the new projects or big redevelopment operas that lead to the realization of what we call today "new generation plants".

Innovative building like "Allianz Arena" or "Dacia Arena" are going to be detailed in the next paragraphs.

The building period of the 33% of professional football facilities (Serie A and Serie B) begins in 1920 and ends in 1937; 27% is between 1950 and 1970; 33% between 1972 and 1990 (De Martini, 2012).

In the previous years of the World Cup in Italy, plenty of stadiums were built and others were subjected to expensive revaluation processes.

These works went on constantly in the next years to comply with laws, but they're not part of a coherent strategy, so in the long term they will not ensure accessibility, comfort, safety and multifunctionality without supporting, this way, the economic viability of the investments (Massimo, 2021).

The result is a lot of stadiums underused with high management costs, hardly accessible and often in disuse due to binding legislations, bureaucratic complexities and financial difficulties (De Martini, 2012).

THE CASE STUDY: "ORESTE GRANILLO" STADIUM IN REGGIO CALABRIA

The "O. Granillo" stadium is on the southern outskirts of Reggio Calabria, in the district Gebbione, mostly residential, characterized by the irregular development, low architectural quality buildings of six floors at their best.

The area presents some significant emergencies other than the stadium, like the airport, O. ME. CA. garages and the railway station.

The new stadium rises on the ground where once was the communal stadium, an oval-shaped plant within 12'000 spots and a running track, used until half nineties.

"O. Granillo" was realized following a contract-competition in 1996. The new project provides for four detached stands placed on a ring shape, to ensure the spots indicated by the

disciplining of contest, occupying the roadways, up and downstream, reducing this way the safety spaces planned in the initial project. For some non-compliances, the project was not approved, so for several years the city team plays in the stadium thanks to special permissions. This brought a lot of difficulties to both the community and the audience (Fig. 1).

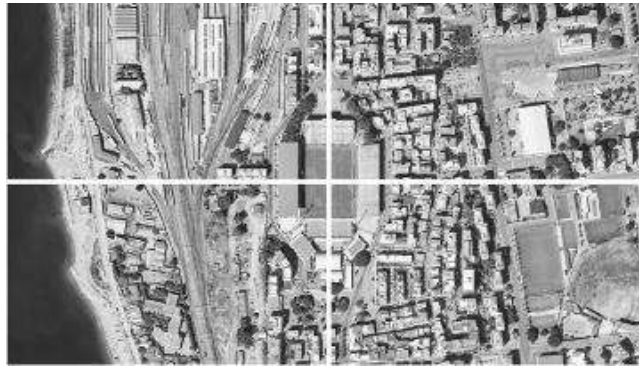


Fig. 1: Plan of the area - Current status (by the authors)

The evaluation of the main factors that can influence on the definition of the functional program is reported in the analysis SWOT that follows (Tab. 1):

STRENGTHS	WEAKNESSES
<ul style="list-style-type: none"> - “A la English” style; - The proximity to the sea and the railway station; - Built in the 90’s; - Presence of sport areas like public swimming pool; - Presence of a building plot; - Renowned between football followers. 	<ul style="list-style-type: none"> - Urban Void; - High-density urban context; - The Stadium built in the city; - High traffic; - Lack of parking lot; - Lack of connection to the sea; - Lack of recreational areas; - Condemned building; - Low attractive capacity beyond the football context; - Lack of connections for bicycles and pedestrians.
OPPORTUNITIES	THREATS
<ul style="list-style-type: none"> - Stadium as a Symbol of the city of Reggio Sud; - Generate a connection to the sea; - Create a social place available every day; - Create a commercial point thanks to the commercial activities; - Make the stadium “of new generation”; - Reduce the surrounding traffic; - Complete the sport center through the incorporation of support benefit, like the medical center; - Getting easier to reach the stadium through light-mobility vehicles. 	<ul style="list-style-type: none"> - Space totally inaccessible due to the Covid19; - Inability to attract national events; - Possibility of increasing the traffic due to the contamination of Covid19 on public vehicles.

Tab. 1: SWOT Analysis

BEST PRACTICES

To develop the functional program for the “Granillo” Stadium’s regeneration, some examples of intervention in Italy were taken as reference (Tab. 2).

Name:	ALLIANZ [®] Arena	GEWISS [®] Stadium	DACIA [®] Arena	MAPEI [®] Stadium	Benito Stirpe Stadium
Location:	Torino (TO)	Bergamo (BG)	Udine (UD)	Reggio Emilia (RE)	Frosinone (FR)
Team/s:	Juventus	Atalanta	Udinese, Pordenone	Sassuolo	Frosinone
Year:	2009/2011	2009/2011	1976	1995	2017
Last Renovation:	-	2019-2021	2013/2016	2015	-
Architectural Firm:	Giugiaro Design	De8 Architetti	Lorenzo Giacomuzzi Moore, Giuliano Parmegiani	Beltrami Studio, Studio tecnico Castelli sas	Enrico Renzi
Maximum Capacity:	41507	24950	25 144 (112 spots for disabled)	21525	16227 (63 postazioni per disabili)
Parking Places:	4000	275 (municipal management)	5000	650	2970
Commercial Activities:	21 bars; 8 catering areas; 2 restaurants; stores merchandising; shopping center (60 stores, ipermarket)	17 commercial activities: fast food, restaurants, bars, little stores e crafts, start ups, stores	Bars (100sqm); fitness areas, pool(4.400sqm); Udinese Calcio Warehouses (1.200sqm); Macron store (400sqm); Territorial Promoting Space (300sqm); Brewery (800sqm); Sport Museum of Friuli (1.000sqm); Restaurants (1.700sqm); Offices (400sqm); CONI Headquarter (700sqm);	Shopping centers; Stores; Restaurants; Fitness Gym; Multiplex Cinema.	Fitness Area; Catering Points; Frosinone store
Services:	Nursery and first aid	Nursery and first aid	Medical Center (1.800sqm) Convention Center (1.100sqm)	Nursery and first aid	Nursery and first aid
Entertainment Services:	Football biliardo; dart football; “The Cage”; baby park; make un over Skybox	Skybox	TV studios (1.200sqm) 18 Skyboxes Disco (1.800sqm) Music School; Intrattenimento per famiglie (500sqm)	Skybox	Skybox
Cost:	155 000 000 €	40 000 000 €	30 000 000 €	12 500 000 €	11 208 597 €

Tab. 2: Best Practices

OPERATIONS DIMENSIONING

Operas' description

The project is an intervention of regeneration on the entire area, not only on the principal structure, and it's articulated in three parts (Fig. 2, 3):

- A. The Stadium**
- B. The Pool**
- C. The Rooftop**

A. The Stadium

Among the operations we mention:

- **Realization of a cover above all the sectors;**
- **Realization of an uniform external coating;**
- **Partial demolition and reconstruction of the east stand to step it back from the near buildings and then including dedicated features for the VIP hospitality like Sky Box and Business Lounge, essential sources of income for the new generation plants;**
- **Realization of 4 connecting corners between the stands to retrieve the spots lost for the VIP area;**
- **Realization of a six meters-tall raised plate in which there'll be 9000 square meters of commercial and catering areas, a VIP guests parking area, an administrative area, a branded shop, a museum, a television studio and a kindergarten with recreation area;**
- **Remodelling of the accesses to the second floor;**
- **Realization of catering points on the second floor and remodelling of the sanitary facilities;**
- **Removal of the old railings in favour of glass balustrades to foster the view from each point;**
- **Demolition of the separation barriers between the field and the stands and their substitution with a raised ring to avoid the segregation strategy.**

B. The Pool

The actions foreseen are:

- **Demolition of all the existing structures;**
- **Realization of a walkable cover that will be an access point;**
- **Remodelling of the internal spaces adding attractive points around the existing pool, like a wellness path;**
- **Realization of a Medical Center within a gym, a rehabilitation clinic and a bio-shop.**

C. The Rooftop

The planned works are:

- **Realization of a rooftop oriented to the sea under which there will be a 200-spots parking area on the street level;**
- **Realization of a connection bridge between the stadium and the "Parco Lineare Sud";**
- **Realization of a tower to align the stadium to the sea's height.**

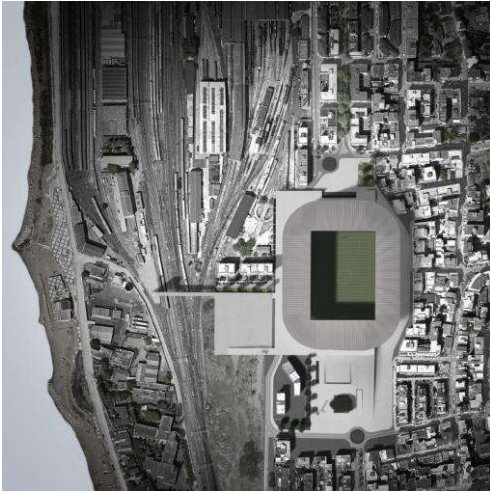


Fig. 2: Plan of the area - Project status (by the authors)



Fig. 3: ending of the project (by the authors)

ESTIMATION OF THE INVESTMENT COSTS AND PROFITS

The criteria to follow to design the “future stadium” was laid down by a study made by Lega Serie B thanks to B FUTURA. It was coordinated by Lorenzo Santoni and it lasted six months, it involves Unioncamere, Anci, Ance, Finmeccanica, Istituto di Credito Sportivo in it and provides a sustainable stadium model for the Serie B (Santoni, 2013).

The project provides for the analysis of the context and a study of feasibility that will provide some financial data about the audience and the maximum capacity that ranges between the 10'000 and the 20'000 spots.

In the case of a redevelopment of an existing plant, the suggested modalities are granting and project financing. Instead, in the case of a new realization on public grounds, it's suggested a process of town planning variation (Piñeira Mantiñán, 2021).

Stadiums will have to be as less expensive as possible, ranging between 1000 and 2000 euros a spot with an option of modular processing that will ensure lower costs and production times, but ensuring at the same time high quality standards (Bellinazzo, 2013).

Analysing investment costs we have to consider two voices:

- The type of work to undertake, whether if it is a new construction or a work on an existing building

- The range of facilities and supporting spaces to incorporate in the principal structure. By calculating the price a spot determined through an arithmetic mean obtained on the basis of the investment costs used for the realization of new generation plants, of which projects and works made were analysed, we can highlight the similarities between these and the new stadium project of Reggina (Tab. 3).

	GEWISS® Stadium	DACIA® Arena	Stadio Benito Stirpe
KIND OF WORK	NEW BUILDING	RESTRUCTURING	RESTRUCTURING
INVESTMENT PRICE	32.174.000	35.000.000	11.208.597
CAPACITY	24.950	25.144	15.227
PARAMETRIC COST	1.289,54	1.391,98	736,10

Tab. 3: Parametric cost

The parametric cost a spot, calculated as an arithmetic mean according to the exposed examples, is 1'140 euros, with a total investment of 21'120'000,00 euros.

Composition of the capital

In the suggested scenario, the total costs of investment, about 21'120'000 euros, are subdivided this way:

1. PUBLIC FUNDING	5.000.000	24 %
2. I.C.S. LOAN	11.900.000	56 %
3. PRIVATE CAPITAL	4.220.000	20 %
INVESTMENT COST	21.120.000	100 %

Tab. 4: Investment cost

Profits estimated

The three parts of the project (The Stadium, the Pool and the Rooftop) contribute in an integrated manner to generate the project revenues.

To establish the economic feasibility of this work we have to consider which are going to be the direct earnings of Reggina, so it can be possible to cover all the costs of the club's sports management, and which of those earnings are going to be useful to amortize the investment in 7 years.

The earnings that will amortize the investment cost are:

- The annual rent of the commercial and catering activities, like shops, pubs, branded shop, kindergarten, Reggina's museum, medical center, bio-shop and restaurants
- The naming rights of the stadium;
- The rent of Sky Boxes;
- Ticket selling for the single matches and season subscriptions;
- Earnings from online merchandising, stores and Reggina's museum;
- Sponsorships.

TYPOLGY	TOTAL (€ a year)	TOTAL (€ in 7 years)	TOTAL (€ in next 8 years)
Commercial Activities	874.800,00	6.123.600,00	6.998.400,00
Naming Right	600.000,00	4.200.000,00	4.800.000,00
Catering Activities	265.440,00	1.858.080,00	2.123.520,00
TOTAL	1.740.240,00	12.181.680,00	13.921.920,00

Tab. 5: Revenues

CONCLUSION

The Discounted Cash Flow Analysis prepared for the case study shows that the private investment will be amortized in 7 years, so to recover the invested capital and pay off the

debt shares to ICS of the first 7 years in the face of the actual situation in which the earnings totally come from the ticket selling and, in addition to this, the club has to pay annual rent to be able to use the stadium.

In the next 8 years, deadline of the debt to ICS, the earnings coming from the rental fees will ensure the recovering of all the capital invested and the stadium will generate several profits from the spaces leased out. The overall VAN of the project is about € 2.353.499,57, with a TIR of the 8,4%.

The simulation demonstrates the economic feasibility of the hypothesis of involving private companies in the investment for the construction of the new Reggio Calabria's stadium.

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