

Financial Feasibility Assessment of Public Property Assets Valorization: A Case Study in Rome (Italy)

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Abstract. In the present research the financial feasibility assessment of a public-private partnership initiative concerning the valorization of a public property located in the city of Rome (Italy) has been examined. The development of the assessment, which has provided for the implementation of the Discounted Cash-Flow Analysis, has been anticipated by a preliminary phase in which the public and private parties involved in the initiative have been identified, the respective roles have been defined and the costs and the revenues generated by the intervention have been assessed. The work highlights the significant support that, in the initial phases of the definition of an investment in public-private partnership, may result from the disaggregation of the different subjects and by the explanation of their roles in the initiative. The functions mix considered in the valorization process and the different management modalities allow the private investor to transfer the risks of the intervention to subjects most competent in the market sector in which they will be involved. The performance indicators obtained for the case study have pointed out the financial sustainability of the investment for the private operator and therefore the feasibility of a project able to generate significant positive impacts on the local community.

Keywords: Public-Private partnerships · Discounted Cash-Flow Analysis · Financial sustainability · Public property assets valorization

1 Introduction

In the current economic situation, characterized by a persistent scarcity of public resources, the Public-Private Partnership (PPP) constitutes a fundamental tool able to bridge the gap between the limited amount of funding and the need for valorization of public property assets [1, 5, 14].

The progressive involvement of the private investor in the public assets regeneration has been highlighting how this form of collaboration currently represents an effective procedure for the functional reconversion of collective interest properties, considering the current contraction of the public spending capacity. It is therefore

© Springer Nature Switzerland AG 2019
S. Misra et al. (Eds.): ICCSA 2019, LNCS 11620, pp. 82–93, 2019.
https://doi.org/10.1007/978-3-030-24296-1_9

evident that the PPP techniques could be a valid alternative for financing public initiatives, able to give an immediate response to the contingent needs of modernization and improvement of the public architectural and cultural property assets [6].

Furthermore, the use of cooperation procedures between Public Administrations and private investors favors the inclusion of appropriate organizational skills in the transformation and management of the public property assets. From this perspective, the PPP is currently an interesting solution not only to the financial deficit that characterizes the public funds, but also to the frequent lack of entrepreneurial skills in the public sector, which, in this way, entrusts to third parties (private) the realization of activities that are able, on the one hand, to revitalize abandoned assets through appropriate functional re-uses, on the other hand, to satisfy the community needs of collective interest new spaces [2, 7].

The relationships that are established between the different subjects involved in the PPP initiatives are often multiple, and mainly depend on the complexity of the investment. The participation of a private investor, individual or - more frequently - in a corporate form, in a process of recovery and transformation of a public property, presupposes the satisfaction of the financial criterion of the initiative, i.e. its capacity to remunerate the capital initially invested and to generate an adequate profit for the private investor: it is evident that the private entrepreneur will invest his capital and take the risks of the initiative if the feasibility assessment of the initiative attests that the revenues will be higher than the transformation and management costs [9].

Within the wide range of PPP operational tools, in Italy the "enhancement concession" allows the development of public property assets, through the transfer to private operators of the right to use public properties for economic purposes for a fixed period of time, in exchange for their requalification, functional reconversion and ordinary and extra-ordinary maintenance (article 3-bis of Decree Law No. 351/2001, amended and supplemented by Law 228/2012). Taking into account the numerous positive impacts that these modalities of valorization are able to generate, a rigorous and targeted planning action to be carried out on the urban territory, an appropriate assessment of the PPP procedures and a selection of the feasible initiatives are key priority steps.

2 Aim

The topic of the present research concerns the framework outlined. In particular, the assessment of the financial feasibility of a PPP initiative, concerning the re-functionalization of a public property located in the city of Rome (Italy) through the "enhancement concession" procedure has been developed.

The assessment of the convenience for the private parties involved in the valorization process presupposes the preliminary definition of the roles played by each subject that takes part in the initiative and the relationships established between the different figures involved [13]. In view of an effective synergy between the Public Administration and the private investors [12, 14, 15], it is fundamental to clarify the different positions of each subject in order, first of all, to modulate the structure of the financing sources for the success of the initiative and of the respective revenues and,

then, to carry out an assessment of the convenience in the use of the PPP tool. The analysis of the case study highlights the multiplicity and the consequent "cascade" system of the subjects involved in urban regeneration initiatives through PPP procedures [3, 4, 10].

The paper is structured as follows. In Sect. 3 the case study, related to the initiative for the valorization of the former Police Station located in the Ostiense district of Rome, has been described; the roles assumed by each subject involved in the initiative have been specified, the cost (investment and management) and the revenue items necessary for the development of a Discounted Cash-Flow Analysis have been identified, in order to assess the financial sustainability of the initiative for the private subject; therefore, the financial assessment of the initiative has carried out, by determining the relative performance indicators. In Sect. 4, comments on the results obtained and the conclusions of the work have been discussed.

3 Case Study

3.1 Current Use

The case study concerns a hypothesis of enhancement concession of the public complex of the former Police Station, located in the Ostiense district of Rome (Italy).

The building, built in 1918, is a former military warehouse included in the *'Plan of Alienation and Valorization of Military Buildings of the City of Rome'*, approved by the Municipality (public property owner) in 2010, as a building no longer used for the original functions and convertible to new uses. Currently, the entire urban area in which the building is located has significant critical issues, caused by the widespread degradation that characterizes this area of the Ostiense district: presence of illegal and illicitly occupied structures, lack of parking spaces and green areas, high noise pollution index generated from the proximity of the site to the railway and from the high and continuous flow of road transport means, being the property located at the intersection of two important road axes (Ostiense street and Porto Fluviale street). Furthermore, the building has been illegally occupied since 2003 and it is in an advanced state of degradation.

3.2 Description of the Enhancement Initiative

The project proposed provides for, on the one hand, the recovery and redevelopment of the existing property and, on the other hand, the construction of a building adjacent to the existing one, to be used as a hydroponic greenhouse for the production and the sale of vegetables.

With reference to the building to be renovated, on the ground floor, spaces for restaurants, rooms for training activities and language courses and a conference room have been planned. At the first and second levels, residential units of different sizes to be used for short-term lease (e.g. bed & breakfast) and offices have been expected.

In the Figs. 1 and 2 the existing building project plans with an indication of the functions provided for in each space have been reported.

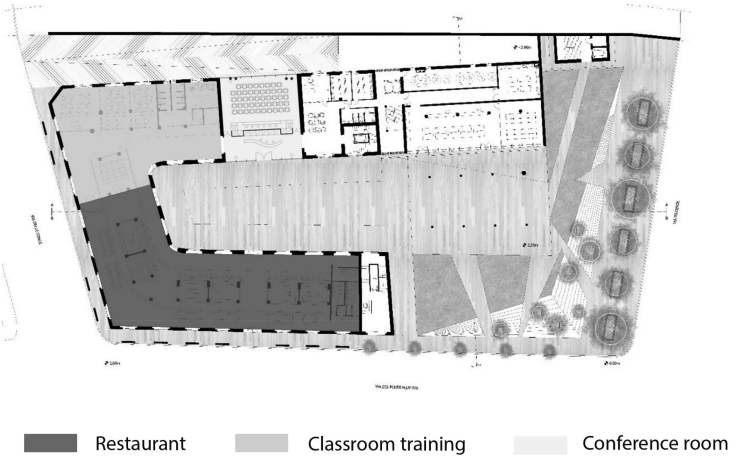


Fig. 1. The existing building project plan (ground floor)



Fig. 2. The existing building project plan (upper floors)

The new building is placed in continuity with the volume of the existing one and it will be the site of a hydroponic greenhouse. In particular, the new construction will be composed of three levels: at the first floor the spaces for crops produced retail will be located, whereas at the next levels the structures for growing vegetables will be put. An underground car park will be on the new building basement. Figure 3 shows the project plan of the new building with the identification of the proposed functions. The rehabilitation of the external public space with the creation of a square in front of the greenhouse building completes the proposed transformation project (Fig. 4).

Each intended use identified in the valorization initiative of the former Police Station takes into account the main needs identified in the urban reference area.

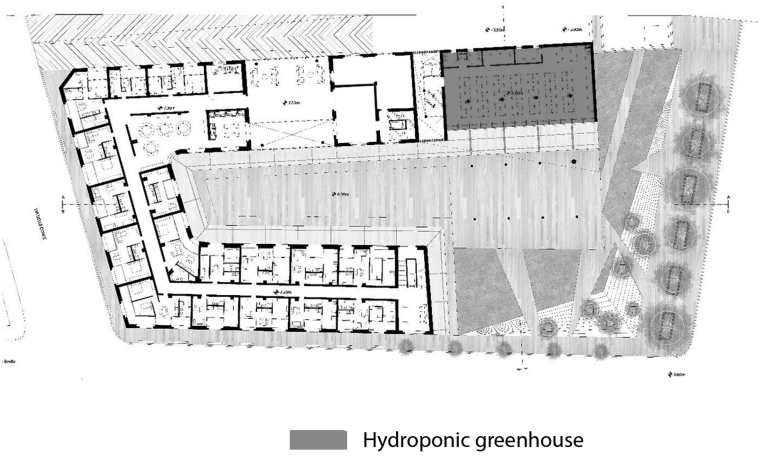


Fig. 3. The new building project plan



Fig. 4. Overall view of the project

The valorization project effects on the Ostiense district entire urban system involve several sectors: *(i) economic*, through the construction of the hydroponic greenhouse, generating important opportunities related to the offer of new employment [4], *(ii) social,* through the redevelopment of an area currently in a state of degradation [3, 12], *(iii) ecological-environmental*, through the production of controlled and quality food, without requiring the exploitation of large agricultural land [8, 11, 13].

3.3 The Subjects Involved in the Enhancement Initiative

The hypothesis assumed in the present research is that the Municipality of Rome, current owner of the building in disuse, chooses, within the range of PPP operational tools, the procedure of "enhancement concession" for the property redevelopment and the structural and functional modernization process for the entire urban district [10, 16, 17].

In particular, it is assumed that the buildings restructuring and construction interventions are carried out by a private investor (*main* subject), in exchange for the temporary use of the building for a period of twenty years. At the end of the concession period, the availability of the property will come back to the public subject, as well as the acquisition of any transformation, improvement, addition and accession realized by the private entrepreneur.

The *main* subject bears the costs *(i)* of modernization and new construction and *(ii)* related to the hydroponic greenhouse management. In addition, the *main* subject will lease the restaurant (subject A), the rooms for language courses and training activities (subject B), the offices (subject C), the conference room (subject D), the housing (subject E) and garages (subject F). Furthermore, the subject B and D do not represent two "fixed" figures, as it is assumed that both the classrooms and the conference room are rented to different subjects who pay a fee for the temporary use of spaces limited to specific activity duration. In the same way, the subject C (the offices lessee subject) and E (the residences lessee subject) synthetically identify the different entities to which the corresponding surfaces will be leased. Figure 5 summarizes the cascade structure of the subjects involved in the redevelopment initiative carried out through the enhancement concession procedure. In Fig. 6 a schematic graph of the subdivision of the costs and the revenues related to each private subject involved in the initiative has been proposed. It should be noted that in the diagram the arrows "->" represent payments, i.e. costs (C) for the relative private subject, whereas the arrows "<-" express earnings, i.e. operating revenues (R) for the relative investor. The leases (L) paid by each lessee subject, for simplicity of representation, are represented by the "incoming" arrows only for the *main* subject.

3.4 Financial Feasibility Assessment of the Initiative for the Private Investor (Main Subject)

The verification of the financial convenience of a PPP initiative has been performed from the exclusive point of view of the "first" private investor, i.e. the *main* subject, in individual or corporate-consortium form. This assessment has been carried out through the development of a Discounted Cash-Flow Analysis (DCFA).

The project feasibility conditions have been verified in terms of Net Present Value (NPV), Internal Rate of Return (IRR) and Revenues/Costs Ratio (R/C). The *main* subject availability to accept the mechanism of cooperation with the Public Administration will depends on the intervention private convenience and, therefore, on the initiative's ability to repay the initial monetary outlay, to remunerate the management costs and to generate a financial surplus.

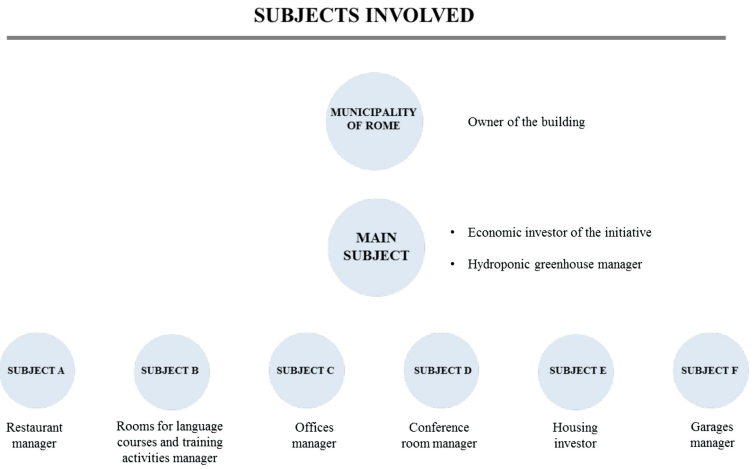


Fig. 5. Subjects involved in the valorization initiative analyzed

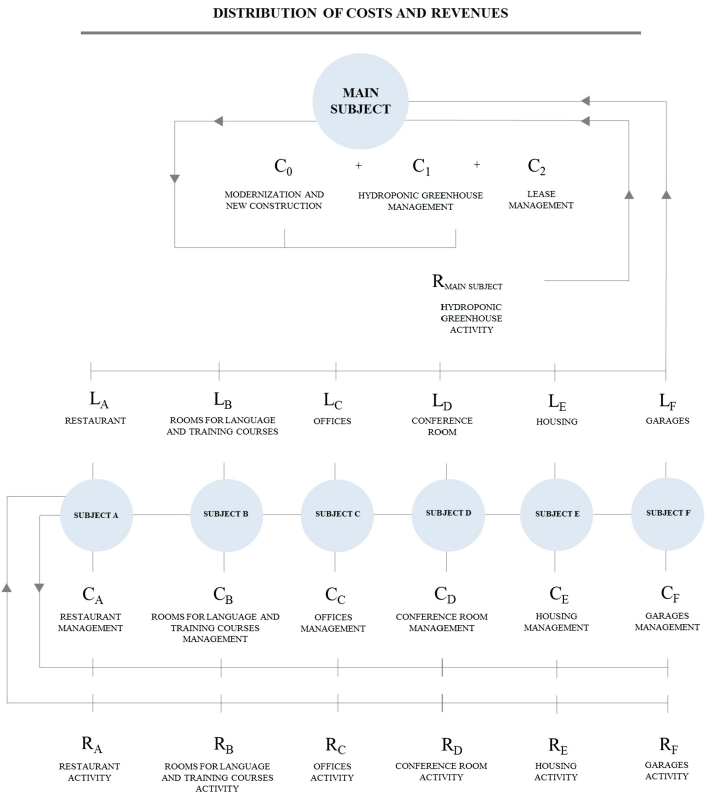


Fig. 6. Cost and revenue items related to each private figure involved in the valorization initiative

3.5 Costs

The costs of the initiative concern *(i)* the *investment* for the restructuring and modernization of the existing building (building and outdoor area) and for the construction of the new building (C_0 in Fig. 6), *(ii)* the *management*, direct for the hydroponic greenhouse (C_1 in Fig. 6), and indirect for the intended uses leased to third parties (C_2 in Fig. 6).

3.6 Investment Costs

Table 1 shows the investment costs, relating to the renovation of the existing building, the construction of the new building, the redevelopment of the outdoor area, the technical costs and the general expenses deriving from them.

Table 1. Investment costs for the main subject

Investment costs	
Renovation of the existing building	3,681,703.32 €
Construction of the new building	1,620,879.22 €
Redevelopment of the outdoor area	139,200.00 €
Technical costs	326,506.95 €
General expenses	163,253.48 €
Total	**5,931,542.986 €**

The analysis of the construction costs has been developed taking into account the price lists of public and private works, currently used in the Lazio Region, and validated through formal surveys carried out among the construction companies operating in the city of Rome. Technical expenses and general expenses are determined as a percentage, respectively equal to +6% and +3% of the construction costs.

3.7 Operating Costs

Assuming that the economic subject of the initiative (*main* subject) will be the direct manager of the hydroponic greenhouse, whereas the management of the remaining areas will be given to third parties (restaurant, classrooms for training, conference room, offices, housing and garages), in exchange for a monetary fee equal to the established rent, the operative costs of the *main* subject are related to the operating phase of the hydroponic greenhouse and to the expenses concerning the leasing of the areas assigned to the different subjects (Table 2).

Table 2. Operating costs for the main subject

Operating costs	
Hydroponic greenhouse	105,270.27 €/year
Existing building (taxes for the lease contracts registration, insurance installments, etc.)	122,099.65 €/year
Total	**227,369.92 €/year**

The direct management of the greenhouse costs - the only activity to remain in full management of the *main* subject - involves the costs of cleaning the building, the costs of wages, electricity and the purchase costs of products for planting and growth of crops, and they amount to a total of 105,270.27 €/year.

The costs related to the annual management of the leased spaces concern the taxes for the lease contracts registration (1% of the annual rents), the vacancy costs (2% of the annual rents), the extra-ordinary expenses (0.75% of the construction costs), the insurance installments (0.10% of the estimated construction costs), the one-off rental commission paid to real estate agents (10% of the rents).

3.8 Revenues

The revenues will come from *(i)* the lease of the existing building spaces, intended to the restaurant, the residences, the offices, the conference room and the training rooms; *(ii)* the lease of the basement of the new building used as a garage; *(iii)* the management of the hydroponic greenhouse.

Table 3 shows the annual revenues estimated during the analysis period, coinciding with the period of the enhancement concession (twenty years). In particular, it should be noted that the rental incomes have been valued starting from the market rents for the homogeneous area of the city of Rome where the building complex is located and relative to each intended use. The annual revenues from hydroponic greenhouse management derive from the sale of crops produced through the hydroponic system. In particular, these revenues have been quantified assuming an average selling price of the products, whereas the total annual production quantity has been determined on the basis of the area for the greenhouse: for each crop, the average annual price at source, the average annual production in greenhouses, the number of plants per m^2, the expected quantity of each cultivated variety (per m^2) and the planned quantity to be produced per kg have been firstly estimated; then, for each crop the production cycles in the year have been evaluated and the revenues for each greenhouse product have been assessed [16, 17].

Table 3. Revenues for the main subject

Revenues	
Lease revenue	
Existing building (restaurant, residences, offices, conference room and training rooms)	593 555 35 6/year
Garages	47,740.99 €/ year
Total	**551,396.35 €/ year**
Management revenue	
Hydroponic greenhouse	334,725.00 €/ year
Total	**886,121.36 e/year**

3.9 Development of the DCFA

The development of the DCFA of the initiative allows to verify the feasibility of the investment from the private economic investor (*main* subject) point of view.

The analysis period has been set in twenty years and it has been divided into three phases: the construction phase (two years) involves the project realization, considering both the existing building renovation and the hydroponic greenhouse building new construction; the development phase (two years), which defines the beginning of the greenhouse production processes. In particular, a first year of the development phase (i.e. the third year of the analysis period), in which revenues are equal to 30% of the annual revenues expected, and a second year (the fourth year of the analysis period) in which the revenues are equal to 70% of the annual revenues expected have been considered; the fully operational phase, in which the greenhouse activity generates 100% of the estimated annual revenues for the private investor (*main* subject).

The situation reflects the ordinary process that characterizes a productive activity: in correspondence of the first years of the analysis period (construction phase), the investment costs have been concentrated; in the following development phase, represented by a shorter or longer time frame, the progressive activity take-off has been highlighted with the consequent revenues growth for the private investor; finally, the full capacity of the investment allows the economic subject to cover the initial capital employed and to obtain a financial surplus. Figure 7 shows the development of the DCFA for the case study analyzed.

	Construction phase		Development phase		Fully operational phase		
	YEAR 1	**YEAR 2**	**YEAR 3**	**YEAR 4**	**YEAR 5**	**….**	**YEAR 20**
Investment costs							
Construction cost	€ 1,779,462.89	€ 1,779,462.89					
Operating costs							
New building + existing			€ 172,230.27	€ 172,230.27	€ 172,230.27	….	€ 172,230.27
Commissions on leasing			€ 55,139.63				
Mortgage payment	€ 206,855.57	€ 206,855.57	€ 206,855.57	€ 206,855.57	€ 206,855.57	….	€ 206,855.57
TOTAL COSTS	**€ 1,986,318.47**	**€ 1,986,318.47**	**€ 434,225.49**	**€ 379,085.85**	**€ 379,085.85**	**….**	**€ 379,085.85**
TOTAL REVENUES			**€ 265,836.40**	**€ 620,284.94**	**€ 886,121.35**	**….**	**€ 886,121.35**
Cash flow	€ - 1,9863,18.47	€ -1,986,318.47	€ -168,389.08	€ 241,199.09	€ 507,035.50	….	€ 507,035.50
Discounted costs	€ 1,873,885.35	€ 1,767,816.36	€ 364,584.09	€ 300,271.50	€ 283,275.00	….	€ 118,200.76
Discounted revenues	€ 0.00	€ 0.00	€ 223,201.37	€ 491,323.77	€ 662,161.42	….	€ 276,296.82
Discounted cash flow	€ -1,873,885.35	€ -1,767,816.36	€ -141,382.72	€ 191,052.27	€ 378,886.421	….	€ 158,096.06

Fig. 7. Development of the DCFA for the case study

Table 4 shows the main performance indicators (NPV, IRR, R/C), considering a discounting rate equal to 6%, that coincides with the acceptability threshold of the investment for the *main* subject, taking into account the risks of the reference market. The results obtained highlight the financial convenience of the initiative for the *main* subject.

Table 4. Performance indicators for the case study

NPV	466,693.52 €
IRR	7.34%
R/C	1.06

4 Conclusions

With reference to the current increasing use of PPP tools for the enhancement of public property assets, in this research the financial assessment of a property valorization initiative of a public building (former Police Station in the Ostiense district of Rome) to be activated through the procedure of the "enhancement concession", has been developed.

The analysis has allowed to identify the different public and private subjects involved in the initiative, specifying the roles of each subject in the PPP mechanism and highlighting the relative costs and revenues [10, 11]. The "cascade" system that triggers among the different operators (Public Administration and private investors) is activated only in the situation in which each individual involved finds a "personal" convenience in taking part in the initiative. The analysis carried out, therefore, has highlighted the significant support that can derive, in the initial phases of definition of a PPP investment, from the disaggregation of the different subjects involved in the project, allowing to explain, to systematize and to clarify the roles of each operator and the related costs to be incurred and the revenues that could be earned.

The implementation of the DCFA and the assessment of the performance indicators have made it possible to verify the capacity of the initiative to adequately offset the risks for the private investor. Furthermore, the combination of functions provided for in the buildings and the different management modalities (direct and indirect) have allowed, on the one hand, to satisfy the financial requirement for the private investor, on the other hand, to transfer a large part of the risks of the initiative to the different operators, that will be more competent for each specific market sector.

Finally, as the new functions respond to the needs of social (e.g. requalification of a territorial area in a state of degradation through the creation of new aggregation spaces) and environmental sustainability (activation of a hydroponic greenhouse, limiting the consumption of agricultural land), further studies may concern the assessment, through a Cost-Benefit Analysis, of the investment convenience for the local communities [12, 13].

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