Reliable Evaluation Methods for Effective Urban Planning Initiatives: The Case Study of the Agro-Food Center of Rome (Italy)

Francesco Tajani[1], Pierluigi Morano[2], Debora Anelli[1], Giuseppe Cerullo[1(✉)], and Melania Arenas Morente[3]

[1] Department of Architecture and Design, "Sapienza" University of Rome, 00196 Rome, Italy
giuseppe.cerullo@uniroma1.it
[2] Department of Civil, Environmental, Land, Building Engineering and Chemistry (DICATECh), Polytechnic University of Bari, 70126 Bari, Italy
[3] School of Engineering, University of Basilicata, 85100 Potenza, Italy

Abstract. The extraordinary urbanization contribution (EUC) constitutes a mechanism for urban equalization between private stakeholders and the Public Administration, designed to redistribute a portion of the land surplus value generated by territorial initiatives. This study introduces an evaluation approach applied to the case study of the Rome Agro-Food Centre (Italy), that, rather than relying on the static formula traditionally prescribed by local regulations, employs a dynamic method based on the implementation of the Discounted Cash Flow Analysis (DCFA). This method enables a more accurate assessment of the value increase arising from the urban planning amendment, thereby improving the effectiveness of the calculation of the EUC. The analysis demonstrates the potential of the DCFA in Public-Private Partnership initiatives, providing a replicable model for the economic-financial assessment of urban transformation processes.

Keywords: Urban Transformation Feasibility · Extraordinary Urbanization Contribution · Public-private Partnership · Public Compensation

1 Introduction

In the context of contemporary urban transformation processes, the implementation of value recapture mechanisms has become increasingly relevant, particularly in light of the financial constraints facing Public Administrations and the global push towards sustainable development [1, 2]. The Extraordinary Urbanization Contribution (EUC) is one of the most significant instruments introduced in Italy to regulate the redistribution of the capital gains generated by planning derogations and urban variants, established by Law No. 164/2014 and later amended by Law No. 76/2020. According to Article 16, paragraph 4, letter d-ter) of Presidential Decree No. 380/2001, private developers requesting urban planning variants are required to pay to the Public Administration (PA) a share of no less than 50% of the additional value generated by such interventions. This surplus value must be calculated by the municipal authority and is "tied to a specific

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cost center for the construction of public works and services to be carried out in the context in which the intervention is located" [3]. The municipal authority is responsible for calculating this surplus value, which is intended to finance public works and services within the intervention area, including infrastructure, public facilities, and social housing.

EUC represents a pivotal tool for regulating private benefits arising from urban transformation initiatives, aligning with overarching international principles of value recapture and value sharing [4, 5]. The overarching objective of these principles is to ensure that a proportion of the surplus value generated by planning decisions and infrastructure investments is redistributed to the community, thereby mitigating speculative behaviors and promoting more equitable urban development [6]. In light of the expanding budgetary constraints of public financial resources in many countries, including Italy, and the increasing urban infrastructure needs that have arisen in the aftermath of the 2008 financial crisis, the COVD-19 pandemic, and recent geopolitical instability, the EUC could constitute an essential instrument for many nations [7, 8]. Despite its strategic importance, implementing EUC has revealed significant challenges in the development of standardized and effective procedures for calculating the surplus value and determining the appropriate share to be transferred to the PA. The regulatory framework has been interpreted and implemented inconsistently across Italian regions, leading to fragmented practices and uncertainty in the application of the contribution. This has resulted in difficulties for both the public and private sectors in assessing the financial feasibility of transformation interventions and in ensuring a balanced distribution of costs and benefits.

Recent studies have proposed rational and replicable procedures for assessing the EUC, grounded in robust valuation methods and supported by mathematical optimization models. These models seek to delineate the pivotal urban parameters – including gross floor areas, land use allocations, and urban planning indices – that exert influence on the transformation value prior to and following the implementation of the planning variant [9]. The use of these models facilitates the identification of solutions that ensure the financial viability of private investment, while ensuring the availability of adequate resources for public urban development. Furthermore, these procedures incorporate real estate market data and regulatory constraints, allowing public authorities to adopt evidence-based criteria in the negotiation and the definition of urban planning agreements [10, 11]. Hence, although the present study is focused on a specific case, the proposed methodological framework lends itself to broader applicability, offering a flexible tool for supporting public decision-making in diverse contexts involving urban redevelopment, infrastructure planning, and value-sharing negotiations.

In the determination of the EUC, a significant development has been represented by the incorporation of temporal and risk-related dimensions, through the utilization of the Discounted Cash Flow Analysis (DCFA). This method enhances the ability of the Public Administrations to evaluate the sustainability of the proposed interventions over time, adjusting the EUC accordingly to reflect varying market conditions and ensuring that the redistribution of benefits remains fair and economically sound.

However, in many Italian municipalities the urban planning regulations for the determination of the EUC provide a conventional method based on a *static* analysis, i.e. the difference between the revenues and the costs of the urban variant without taking into

account their actual temporal distribution over time: this situation could generate an inappropriate assessment of the EUC, that can determine economic - especially in public-private partnership initiatives - damages for the (public and private) parties involved in the transformation process.

With reference to a public property located in the Italian territory, for which an urban variant is provided, this study aims to verify the application of a *dynamic* model, through the implementation of a DCFA, for determining the market value of the property to be used in the EUC assessment, and to compare the obtained outputs with those generated by the application of the *static* method provided by the urban planning regulations. The proposed methodology aims to enhance transparency, equity, and replicability in the economic-financial assessment of urban transformation initiatives.

The research is organized as follows. In Sect. 2, a framework of the DCFA as a relevant method for public-private partnerships initiative is drawn. In Sect. 3, the case study represented by the public Agro-Food Center of Rome (Italy) is illustrated. In Sect. 4, the DCFA for the assessment of the post variant market value of the property is applied, the EUC is determined and the differences with a static assessment according to the current urban planning regulations are highlighted. Finally, the conclusions of the work are discussed.

2 The Role of Public-Private Partnerships

The development of a territory does not depend solely on the availability of natural resources or capital accumulation but is closely tied to the ability of both public and private actors to promote targeted investment strategies capable of generating economic and social progress. In this perspective, urban transformations represent a key element for ensuring a sustainable evolution of cities, through interventions that are adapted to meet the emerging needs of the community [12].

The current economic and urban context is characterized by a growing demand for modern and efficient initiatives, necessary to support strategic productive sectors and improve territorial competitiveness [13]. However, in a context of limited public resources, it is essential to rely on urban planning aimed at identifying fair mechanisms for the distribution of costs and benefits generated by transformations [14–16], avoiding the sole burden falling on the public sector or, conversely, the privatization of benefits without adequate returns for the community. In this context, the EUC plays a central role, representing a fundamental tool to ensure that the advantages generated by transformation operations are not concentrated solely in the private sector but are redistributed for the benefit of the entire community [17].

In this regard, the adoption of Public-Private Partnerships (PPPs) [18] has found wide application in urban transformation projects for reasons related to improving urban quality despite the scarcity of public financial resources. Involving private entities in this type of operation allows public administrations to leverage private managerial and entrepreneurial expertise, as well as financial resources [19]. In order for PPPs to generate benefits for the entire community, it is essential to ensure a fair distribution of the value created by the interventions, ensuring that the benefits generated are not exclusively captured by the private sector, while the costs do not fall entirely on the community

[20]. For interventions carried out under PPPs, it is therefore essential, in addition to a regulatory recovery of the value, to ensure a fair distribution of such value, also known as the land surplus value. In this context, the negotiating activity of the PA must allow the regulation of the privatization of the generated value by creating equitable conditions for its distribution, identifying win-win solutions between the public and private sectors [21].

In this context, the analysis of cash flows through the DCFA emerges as a fundamental approach for evaluating the economic sustainability of urban interventions carried out within the framework of a PPPs. This method allows for the examination of the financial feasibility of investments, forecasting transformation and management costs, and estimating expected revenues. Key performance indicators, such as Net Present Value (NPV) and Payback Period (PbP), provide crucial information to understand the long-term sustainability of the intervention, both from a financial and economic perspective [22].

3 Case Study

The Rome Agro-Food Centre (CAR) is a public property that represents one of the most important European facilities dedicated to the commercialization, distribution, and processing of fruit, vegetable, fish, and agro-food products in general.

Located in the municipality of Guidonia Montecelio, with a population of 89,153 inhabitants [23], within the Metropolitan City of Rome (Italy), the CAR plays a key role not only locally but also regionally and nationally, acting as a strategic hub for the agro-food supply chain. Currently, given the growing demand for services, in line with the expansion dynamics of major European markets, the CAR is facing the saturation of available spaces, both in terms of built volumes and deployable areas within the original site.

In this context, the area under analysis is represented by the *"Comparto B"* (62.5 ha), which represents an expansion and completion of the original CAR areas (140 ha). This development is seen as a strategic integration with the existing productive zones, aiming to create multifaceted systems that are efficiently integrated with the surrounding areas. The goal is to promote the establishment of new innovative functions internally—such as production, sales, and logistics—and externally—covering social and service areas.

The expansion of CAR (*Comparto B*) complies with the urban planning provisions, by transforming an agricultural area enclosed between *Via Tiburtina*, and the CAR itself. The aim is to integrate the existing industrial system into a single productive area.

Comparto B is divided into several sub-compartments (Fig. 1.), each serving specific functions:

- The *"Sub-Comparto 1"* encompasses areas adjacent to *Via Tiburtina*, where the construction of a large roundabout has been planned. This roundabout facilitates the inclusion of additional functions, which have been further identified within a specific sub-compartment (*Sub-Comparto 2*), serving both CAR and the surrounding area.
- The large roundabout containing *"Sub-Comparto 2"* also provides access, at multiple points, to *"Sub-Comparto 3"*, which, as part of the new Food Hub, may have been developed further to meet the demand for additional specific functions.

– The *"Sub-Comparto 4"* comprises available land areas for the potential establishment of functions that may have become necessary to complete the services offered by the CAR.
– In direct connection with the administrative and accomodation facilities of the existing CAR, *"Sub-Comparto 5"* is situated, which may also enable the establishment of functions aimed at integrating and complementing the existing industrial structures, directional buildings and accomodation facilities.

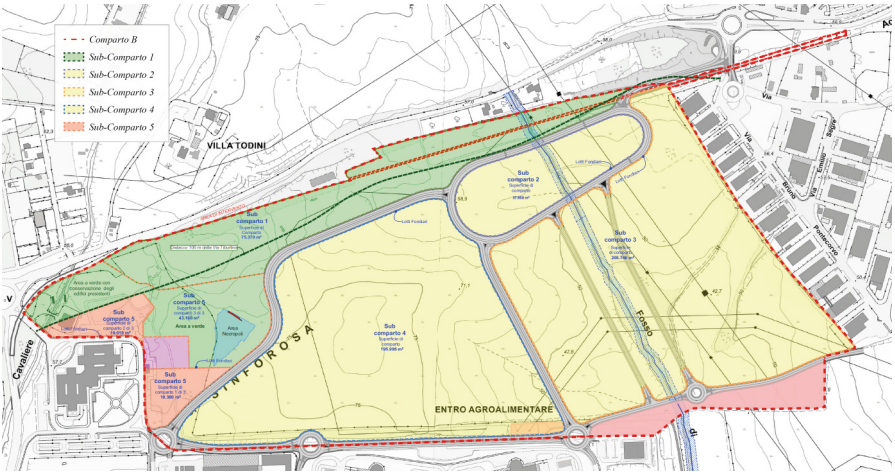

Fig. 1. Delimitation of *Comparto B* and its associated functional areas.

4 Method

4.1 Application of the DCFA

This study aims to verify the application of a *dynamic* model - through the implementation of a DCFA - for determining the real estate value to be used in calculating the EUC, with specific reference to the regulatory framework established by the municipality of Guidonia Montecelio (Rome).

Currently, the applicable legislation prescribes the exclusive adoption of a *static* analysis, an approach that proves inadequate when the intervention extends beyond a single year and instead takes the form of a transformation process unfolding over time. It is therefore essential to explore the possibility of adopting a procedure that fully integrates the time factor as a fundamental component of the appraisal process. In this regard, the present work proposes the adoption of a dynamic method, such as the DCFA, which can more accurately represent the evolutionary nature of the intervention.

With reference to the calculation of the EUC, the Italian legislation delegates urban planning competencies to the Regional Authorities (D.P.R. no. 616/1977). Specifically,

considering that the contribution is calculated for the municipality of Guidonia Montecelio, the regulatory framework refers to the Regional Law no. 21/2009, which in turn refers to the provisions of D.P.R. no. 380/2001. The latter decree stipulates that the determination of the contribution's amount, the application methods, and related guarantees are defined by the competent municipality.

Consequently, the municipality of Guidonia Montecelio has established – pursuant to Art. 16, paragraph 4, letter d-ter of D.P.R. no. 380/2001, and as provided for in Art. 14, paragraph 16, letter f) of Decree-Law no. 78 of 31 May 2010, converted into Law no. 122 of 30 July 2010 – an EUC equal to a minimum percentage of 50%. This percentage is applied to the higher value generated by interventions on land or buildings undergoing an urban planning variant, derogation, or change of use, for which a percentage increase is expected equal to:

– Increase from 1.3 to 1.50 = partial compliance with higher-level and/or sectoral planning instruments in the presence/absence of landscape/environmental constraints, with the following specifications.

The highest value generated by the urban planning variant, on which the EUC is calculated, is obtained by determining the difference (Δ) between the "post" variant market value (Vm_{post}) and the "ante" variant market value (Vm_{ante}) of the property (Eq. 1). Formally:

$$D = Vm_{post} - Vm_{ante} \tag{1}$$

Taking into account that the application of the DCFA is performed for the determination of the market value of the property in the "post" variant condition (Vm_{post}), an analysis period of seven years has been considered for the allocation of costs and the revenues over a time horizon, subdivided into fourteen semesters. The construction of the financial cash flows has been performed by taking into account the following cost and revenue items.

Costs. The costs considered for the evaluation of the intervention include the following items:

– K_{constr}: construction cost of the building units;
– K_{duty}: legal expenses;
– K_{tech}: technical fees for the professional works;
– K_{urb}: urbanization charges (primary, secondary and of construction);
– K_{contr}: contribution to the construction cost;
– K_{adapt}: land adaptation costs and connections;
– $K_{management}$: management expenses of the intended uses;
– $K_{marketing}$: commercialization costs of the building units;
– K_{prof}: profit of the entrepreneur.

Construction Cost of the Building Units (K_{constr}): This is the sum of the costs related to the three different intended uses (Table 1) identified in the urban variant: industrial structures ($K_{industrial}$), directional buildings ($K_{directional}$), and accomodation facilities ($K_{accomodation}$). This cost has been determined on a parametric basis, or in €/m^2,

derived from the price list of the Milan Engineers and Architects Association (DEI) [24], appropriately adjusted using adjustment coefficients derived from market analysis.

- *Industrial structures ($K_{industrial}$)*: With regard to industrial structures, reference has been made to category E5 [25]. Following percentage adjustments derived from market analysis, a unitary value of 400 €/m^2 has been established. Given the total surface area of 203,975.00 m^2, the total construction cost for this category of work amounts to 81,590,000.00 €.
- *Directional buildings ($K_{directional}$)*: For the determination of the construction cost of office buildings, the reference value of category D16 [25] has been considered. Following percentage adjustments based on market dynamics, the unitary construction cost has been estimated at 1,500 €/m^2. Given a total surface area of 5,000 m^2, the total construction cost for the office buildings amounts to 7,459,202.90 €.
- *Accomodation facilities ($K_{accomodation}$)*: For the evaluation of accomodation structures, characterized by features similar to office buildings but with higher quality finishes, a unitary value of 1,600 €/m^2 has been adopted following a market analysis. Given a total surface area of 5,000 m^2, the total construction cost for this category of work has been calculated at 8,000,000 €.

Legal Expenses (K_{duty}): These include registration taxes and notary fees. They have been calculated based on an incidence of 13% of the market value (Vm_{post}) of the property, for a total amount of 1,012,582 €. The payment has been expected to be made during the third semester (start of construction) and will have been completed by the fourth semester.

$$K_{duty} = 13\% \cdot V_m = 1{,}012{,}582\ € \tag{2}$$

Technical Fees (K_{tech}): This item includes the costs related to the technical commitments (design, construction management, etc.) required for the transformation intervention. In this case study, these costs have been determined by applying a rate of 10% to the sum of the construction costs (K_{constr}) and the land adaptation costs (K_{adapt}), totaling 10,044,593.00 €. The time distribution of this cost item has been based on an incidence of 5% in the first two semesters, followed by a share of 10% for each subsequent semester until the twelfth semester, which has coincided with the completion of the works. Therefore, the technical costs amount to:

$$K_{tech} = 10\% \cdot \left(K_{constr} + K_{adapt}\right) = 10{,}044{,}593\ € \tag{3}$$

Total Urbanization Fees (K_{fees}): This item includes the primary and secondary urbanization charges (K_{urb}), calculated as 8% of the total construction cost, and the contribution to the construction cost (K_{contr}), amounting to 5% of the construction cost. The total amount is 12,616,396.00 €. The expenditure begins with the commencement of the works – in the second year – and continues until the completion of the intervention – in the sixth year – with annual payments distributed in equal installments, each amounting to 20% of the total amount.

$$K_{fees} = (K_{urb} + K_{contr}) = (8\% \cdot K_{constr}) + (5\% \cdot K_{constr}) = 12{,}616{,}396\ € \tag{4}$$

Land Adaptation Costs and Connections (K_{adapt}): This item includes all remediation works, site preparation, connections, and the related archaeological and geological surveys. In this case, it is calculated by applying an incidence of 3.5% of the total construction cost, for a total amount of 3,396,722.00 €. Similarly, the disbursement of this amount begins with the commencement of the works – in the second year – and is evenly distributed until the completion of the intervention – in the sixth year – with an annual expenditure equal to 20% of the total amount.

$$K_{adapt} = 3.5\ \% \cdot k_{constr} = 3{,}396{,}722\ € \tag{5}$$

Management Costs ($K_{management}$): This is the cost of managing the entire operation. This item has been calculated as a percentage – fixed at 2% – of the total construction costs, for a total amount of 1,940,984.00 €. The disbursement has been spread evenly over the entire duration of the intervention, from the first semester to the thirteenth semester, corresponding to the completion of the works.

$$K_m = 2\ \% \cdot k_{constr} = 1{,}940{,}984\ € \tag{6}$$

Commercialization Costs ($K_{marketing}$): These are the costs representing the amounts necessary for the advertising and marketing the buildings of the intervention, amounting to 2.5% of the estimated and obtainable revenues (V_{mt}). The total amount has been calculated at 4,132,063.00 €.

$$K_{marketing} = 2.5\ \% \cdot V_{mt} = 4{,}132{,}063\ € \tag{7}$$

Profit of the Entrepreneur (K_{prof}): This represents the total profit obtained by the promoter from the use of the capital invested in the real estate operation. In accordance with current regulations, the profit margin ranges from a minimum of 15% to a maximum of 25% of the market value of the property units obtained by the transformation (V_{mt}). In this case, by applying the lower limit of 15%, the profit has been calculated at 24,792,375.00 €.

$$K_{prof} = 15\ \% \cdot V_{mt} = 24{,}792{,}375\ € \tag{8}$$

The total construction cost (Eq. 9) of the buildings has been calculated at 97,049,203.00 €.

$$K_{constr} = k_{industrial} + k_{directional} + k_{accomodation} = 97{,}049{,}203\ € \tag{9}$$

In Table 1 the Costs of the transformation initiative have been reported and temporally distributed over the analysis period. The profit of the entrepreneur has not been indicated, as it will constitute a boundary for the determination of the market value of the property.

Revenues. Regarding the determination of revenues, in accordance with current regulations, reference is made to the most up-to-date quotations provided by the Real Estate Market Observatory (OMI) of the Italian Revenue Agency [25]. The analysis of the relevant OMI area has allowed for the identification of the following parameters:

Table 1. Temporal distribution (for semesters) of the costs.

Semesters	1	2	3	12	13	14
Industrial structures [€]	0	0	12,238,500	4,079,500	0	0
Directional buildings [€]	0	0	1,118,880	372,960	0	0
Accomodation facilities [€]	0	0	1,200,000	400,000	0	0
Legal expenses [€]	0	0	202,516	0	0	0
Technical fees [€]	0	502,230	502,230	1,004,459	0	0
Urbanization charges [€]	0	0	1,552,787	0	0	0
Contribution to the construction cost [€]	0	0	970,492	0	0	0
Land adaptation costs and connections [€]	0	0	679,344	0	0	0
Management expenses [€]	0	161,749	161,749	161,749	0	0
Commercialization costs [€]	0	82,641	123,962	619,809	82,641	82,641

– *Industrial structures ($R_{industrial}$)*: a market value of 700 €/m^2 has been assessed. By applying this value to the surface area under consideration, a total value of 142,782,500 € is obtained.
– *Directional structures ($R_{directional}$)*: a market value of 2,000 €/m^2 has been assessed, corresponding to a total value of 10,000,000 €.
– *Accomodation structures ($R_{accomodation}$)*: From the market analysis, a unitary value of 2,500 €/m^2 has been derived, which, when applied to the reference surface area, results in a total value of 12,500,000 €.

The total revenues (Eq. 10) obtainable from the real estate units amount to 165,282,500 €.

$$R_{tot} = R_{industrial} + R_{directional} + R_{accomodation} = 165{,}282{,}500€ \tag{10}$$

The total revenues (Table 2) have been spread over a 14-semester period, in line with the project's construction and commercialization timelines, assuming a sales hypothesis characterized by a 15% peak in the first and second years, followed by a gradual reduction until the final year of the analysis. This distribution is based on a market analysis that highlights how, in similar contexts, the initial phase of commercialization is supported by strong initial demand, stimulated by more favourable conditions. Subsequently, the market absorption rate tends to decrease gradually, due to the contraction of the pool of interested buyers and the increased selectivity remaining in the available offer.

Table 2. Revenues.

Semesters	1	2	3	12	13	14
Industrial structures [€]	2,855,650	4,283,475	21,417,375	2,855,650	2,855,650	2,855,650
Directional buildings [€]	200,000	300,000	1,500,000	200,000	200,000	200,000
Accomodation facilities [€]	250,000	375,000	1,875,000	250,000	250,000	250,000

4.2 Results

The main indicator of the project's financial profitability is represented by the Net Present Value (NPV), using a discount rate of 4.5% which excludes the compensation for the entrepreneur's risk and takes into account the financial charges related to the cost of money for a loan. Moreover, the financial statements carefully consider the tax liabilities of the private promoter, such as the corporate income tax (IRES), set at 24%, and the regional tax on productive activities (IRAP), equal to 4.82% of net revenues. In order to guarantee a profit for the entrepreneur equal to 24,792,375 € (i.e. 15% of the market value of the units to be realized), an iterative process has been carried out for determining the market value of the property (Vm_{post}) able to ensure the equalization of the NPV and the profit expected by the entrepreneur as the ordinary compensation for the risk assumed in the transformation initiative.

Therefore, the implementation of the DCFA and the iterative process described above have allowed to determine a post variant market value of the property (Vm_{post}) equal to 7,789,094 € (Table 3).

Table 3. Implementation of the DCFA.

Semesters		1	2	3	12	13	14
Post variant market value	**7,789,094 €**						
Total costs [€]		1,802,209	2,345,759	20,804,127	6,101,309	82,641	82,641
Total revenues [€]		3,305,650	4,958,475	24,792,375	3,305,650	3,305,650	3,305,650
Cash Flow [€]		1,503,441	2,612,716	3,988,248	-2,795,659	3,223,009	3,223,009
Discount rate	4,50%						
Discounted cash flow [€]		1,470,714	2,500,207	3,733,428	-2,146,775	2,421,060	2,368,359
NPV	**24,792,375 €**						

For the determination of the value of the area "ante intervention" (Vm_{ante}), it should be considered that, in its current condition, the property is classified as agricultural land. Through a market analysis, a unitary value of 33,00 €/ha has been assessed. Therefore, the market value of the property "ante intervention" by relating this value to the size of the area under study, a "pre-intervention" is equal to 2,062,500 €.

Therefore, according to Eq. (1), the highest value generated by the urban planning variant (Δ) can be obtained through Eq. (11):

$$\Delta = 7{,}789{,}094\ € - 2{,}062{,}500\ € = 5{,}726{,}594\ € \tag{11}$$

Determination of the EUC. For the calculation of the EUC, in accordance with the regulatory provisions, a 1.3 multiplier is applied to the minimum percentage of 50%. This increase is justified by the fact that the intervention concerns undeveloped or not yet urbanized areas and involves an area larger than 40 ha. Consequently, the percentage to be applied to the added value is 65%. Applying this percentage to the value obtained in Eq. (11), the EUC amounts to:

$$\text{EUC} = 5{,}726{,}594 \cdot 65\% = \mathbf{3{,}722{,}286\ €} \tag{12}$$

Table 4. Determination of the EUC.

Post variant market value of the property (Vm_{post})	7,789,094 €
Ante variant market value of the property (Vm_{ante})	2,062,500 €
Reference value for the assessment of the EUC ($\Delta = Vm_{post} - Vm_{ante}$)	5,726,594 €
Percentage to be considered for the assessment of the EUC	50% · 1.3 = 65%
EUC	**3,722,286 €**

In Table 4 the items for the determination of the EUC have been reported.

By comparing the post variant market value of the property obtained through the dynamic analysis (i.e. the implementation of the DCFA) with the market value generated from a static analysis (as provided the current urban planning regulations), a significant differential can be observed. Specifically, the dynamic method, based on the DCFA, returned a value of 7,789,093.68 €, while the static approach - i.e. by performing the difference between the revenues and the costs without considering the temporal distribution of these items over time - assesses a post variant market value equal to 8,226,336.56 €, with a differential amount between the two methods equal to 437,242.56 € (i.e. in percentage, about 5.61%). This output points out that the static analysis tends to overestimate the market value of the intervention: a contingence that could lead to the application of an unfair EUC, that is based on an unrealistically higher value than the market one. In practice, this would result in disproportionate financial burdens, potentially reducing the intervention's profitability or even compromising its viability for a private investor initially interested in performing the initiative.

From the public operator's perspective, the 5.61% deviation between the static and dynamic methods highlights the importance of the implementation of an evaluation model that realistically reflects the market dynamics. An assessment based on the DCFA allows for the definition of sustainable and consistent urban planning charges, promoting the realization of economically viable interventions for the private investors, while ensuring reliable public incomes for the planning and the realization of public works. Additionally, the dynamic method can reduce the risk of disputes and encourages a virtuous negotiation between the public and private subjects, fostering competitive and sustainable urban development. It is, however, not to be overlooked that the dynamic analysis also entails limitations, such as the uncertainty and potential inaccuracy of input variables under unforeseeable market conditions.

5 Conclusions

In a context where the need to mobilize resources for the achievement of the Sustainable Development Goals – particularly Goal 11, which aims to promote inclusive, safe, resilient, and sustainable cities – is becoming increasingly urgent, the Extraordinary Urbanization Contribution (EUC) emerges as an indispensable tool for ensuring equity in the redistribution of the economic benefits generated by urban transformations. However, the effectiveness of this tool lies in the ability of Public Administrations to effectively manage negotiation processes with private actors, enhancing public-private partnership models that are transparent and oriented towards collective welfare [26].

The analysis conducted on the case of the Rome Agro-Food Centre (Italy) provided a concrete application of the principles of value recovery and sharing, demonstrating how, through a precise determination of the land surplus value resulting from a change of the eligible intended use resulting by the transformation of the property, it is possible to generate resources to be allocated to the improvement of infrastructures and public services. This mechanism, when implemented with accuracy and foresight, initiates a virtuous cycle that integrates public and private interests: the investor benefits from the increase in real estate value, while the community receives additional resources for interventions that can enhance urban life quality and territorial attractiveness.

The contribution of this research goes beyond theoretical elaboration, providing practical guidelines that can steer both administrative practices and negotiation dynamics within public-private partnerships. The proposed method stands out for its ease of application and replicability, responding to the needs for standardization and simplification in the management of complex operations. In particular, the dynamic reinterpretation of the EUC regulation, through the development of the Discounted Cash Flow Analysis (DCFA), introduced updated and adaptable criteria for different territorial contexts. The methodological framework proposed in this study aligns with a broader systemic perspective for integrating evaluation processes within sustainable urban planning strategies [27, 28].

Future insights can concern the verification of the reliability of the dynamic method in other territorial contexts, by comparing the outputs obtained by the implementation of the DCFA with those generated by the use of the conventional method for estimating the EUC provided by the local urban planning regulations: in this way, it will be possible to define a reference framework that can constitute a valid support for Public Administrations in the decisions regarding possible improvements in the evaluation criteria applied for the EUC assessment [29].

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