

Article

A Prefeasibility Study for the Adaptive Reuse of Cultural Historical Landscapes as Drivers and Enablers of Sustainable Development

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Abstract: The international scientific debate on the growing concern over land consumption has gained prominence in recent years. The awareness of the link between cultural heritage and sustainable development has become increasingly evident, leading to a greater focus on the Adaptive Reuse (AR) of cultural assets as a conscious process of creating new values. This trend has prompted a reflection on urban planning practices and the promotion of AR and valorization policies for heritage, which can contribute to environmental sustainability, social cohesion, and cultural identity, thereby providing fertile ground for innovation and local economic development. However, decisions regarding AR interventions pose significant complexity due to the multiple interests at stake, as well as high costs that discourage investments. For these reasons, this paper proposes a multi-methodological approach—applied to a project for the AR of a cluster of mountain huts located in the Sila National Park (SNP)—aimed at effectively supporting decisions related to the evaluation of feasibility and economic sustainability of cultural heritage landscapes that have not yet been adequately valorized. This approach was applied to a pilot project of AR, allowing for the discussion of the proposed evaluation methodological framework. The final step involved verifying the economic feasibility and financial sustainability of the methodology based on a Financial Feasibility Plan (FFP) of the proposed of the new destination to ‘Rifugio Diffuso’ (RD). The assessment aimed to evaluate the intervention’s ability to create value, generate a level of profitability that meets private investment expectations, and promote sustainable development of the local economy.

Keywords: cultural historic heritage; circular economy; historic centers; integrated adaptive reuse projects; ‘Rifugio Diffuso’



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1. Introduction

The concept of achieving closed cycles [1] is a fundamental principle within the ecological paradigm, but its complete implementation remains unrealized thus far. Addressing the challenges of our time involves adopting observable models from natural systems, offering efficient approaches to management, production, and consumption [2].

The traditional economy, often referred to as the “conventional” economy, has had detrimental effects on cultural landscapes and individual cultural assets/sites. It has caused environmental damage, health issues, and disruptions to social systems, ultimately contributing to high entropy [3,4]. On the contrary, the emerging concept of the Circular Economy (CE) has the potential to enhance cultural heritage and landscapes while simultaneously fostering economic prosperity. This necessitates the development of organizational and entrepreneurial processes that promote symbiotic relationships and generate new bonds. CE not only reduces entropy across various levels but also enhances efficiency and resilience [5]. Additionally, CE is founded upon principles of cooperation, solidarity, co-evolution, and long-term thinking. It relies on the management practices of common

goods, which, in turn, require cooperation, collaboration, and coordination among various stakeholders. This approach embraces relational values, intrinsic values, and the co-production of economic values for both use and the market [6].

Considering landscapes and cultural heritage as common goods encourages the formation of a “community of relationships”. This community plays a crucial role in determining quality of life while also giving rise to new chains of economic value [7]. To shape a progressive future rooted in a “new humanism” [5] inspiration must be found in a journey of modernization that embraces the symbiotic relationship between society and nature: “Noi, il soggettivo ed il collettivo, il soggettivo ed il naturale, riconfigurando i valori della modernità in una prospettiva di ‘razionalità relazionale’ che rappresenta il fondamento stesso della prospettiva di un nuovo Umanesimo . . . fondato sulla simbiosi società/natura, innanzitutto attraverso la valorizzazione di tutti i ‘beni comuni’ presenti nel sistema urbano territoriale a partire dal patrimonio culturale, dagli ecosistemi naturali, dalla biodiversità, dal paesaggio, capaci a loro volta di promuovere la decentralizzazione, l’autorganizzazione, l’autogestione” [5]. This involves prioritizing the enrichment of “common goods” [5] within the urban territorial system, including cultural heritage, natural ecosystems, biodiversity, and the landscape. Elevating these assets can foster decentralization, empowering local communities to self-organize and self-manage. This holistic approach promotes sustainability, resilience, and equitable resource distribution, establishing a harmonious coexistence between society and the natural world guided by the principles of a “new humanism” [5].

Embracing this viewpoint entails presenting regeneration initiatives according to the “circular city model” [8–12]. This model embodies an urban economy that emphasizes circularization in production and consumption. It focuses on strategies that aim to alleviate the strain on finite natural resources, reducing their consumption while promoting sustainable practices [8–12]. In this perspective, the awareness of the link between cultural heritage and sustainable development has become increasingly evident, leading to a greater focus on the Adaptive Reuse (AR) of cultural assets as a conscious process of creating new values [13]. This trend has prompted a reflection on urban planning practices and the promotion of AR and valorization policies for heritage, which can contribute to environmental sustainability, social cohesion, and cultural identity, thereby providing fertile ground for innovation and local economic development. However, decisions regarding AD interventions pose significant complexity due to the multiple interests at stake, as well as the high costs that discourage investments [14,15].

Within these decision-making contexts, the objective of the research is to set up a multidisciplinary evaluation model that supports public and private investors in effectively planning underutilized cultural heritage reuse projects. For these reasons, this paper proposes a multi-methodological approach applied to a pilot project for the AR of a cluster of mountain huts located in the Sila National Park (SNP), which is aimed at effectively supporting decisions related to the evaluation of feasibility and economic sustainability of this cultural heritage that has not yet been adequately valorized. This case study application enables a discussion of the proposed evaluation framework and, in the final phase, verifies the economic feasibility and financial sustainability through the Financial Feasibility Plan (FFP) of the proposed of the new destination to the ‘Rifugio Diffuso’. In essence, the evaluation aims to assess the intervention’s ability to create value, generate a level of profitability that meets private investment expectations, and promote sustainable development of the local economy.

Based on these premises, this paper is organized as follows: after introducing the research objectives in Section 2, a literature analysis on open issues related to project evaluation in the field of cultural heritage is discussed in Section 3. Section 4 presents a case study of cultural heritage reuse for the “Rifugio Diffuso” project, while the proposed methodological framework is described in Section 5. Section 6 illustrates the applications of the case study. Finally, Sections 7 and 8 are dedicated to the results obtained from the application and to the conclusions that highlight the significant role that the proposed

methodological framework can play in promoting and supporting the reuse of cultural heritage landscapes, respectively.

2. Objectives

In the outlined perspective, an awareness of the connection between cultural heritage and sustainable development has become increasingly evident, leading to a greater focus on the reuse of cultural assets as a conscious process of creating new values. This trend has prompted a reflection on urban practices and the promotion of policies for the reuse and enhancement of heritage, which can contribute to environmental sustainability, social cohesion, and cultural identity, thus providing a fertile ground for innovation and local economic development. However, decisions regarding reuse interventions pose significant complexities due to the multiple interests at stake as well as the high costs that discourage investments. In the dynamic context described, the adoption of integrated methodologies plays a strategic role in addressing every phase of the decision-making process, from its initial conception to the selection of the most suitable scenario, taking into account the context and the stakeholders involved.

This study develops a multidisciplinary evaluation model that supports the decision-making process of both public and private investors for the effective planning of underutilized cultural heritage reuse projects. Given market uncertainty and the ongoing financial crisis, it has become crucial to define effective evaluation tools that identify the optimal utilization of limited economic resources and develop sustainable strategies at the local level, maximizing societal and territorial benefits while minimizing costs [15].

To illustrate this methodology, a pilot project has been chosen as a case study for the redevelopment and reuse of a group of shelters located in the Sila National Park (PNS) in Italy. As in many regeneration and valorization processes involving cultural assets, key decision-makers are primarily represented by the Public Administration, political decision-makers, public entities, communities, associations, businesses, and investors. These actors work with a global and sustainable vision for the transformation of the park, which includes environmental protection, social cooperation, technological progress, and cultural preservation.

Although the individual frameworks and methodologies used in this research are already known, their combination in a multi-level, multi-scale, and multi-stakeholder approach represents an innovative element. This combination of conceptual frameworks and methodologies allows for integrated and informed decision-making, enabling a comprehensive exploration of strategic urban issues. Their implications can be further explored through a rich knowledge framework developed by analyzing the social, infrastructural, and environmental layout of the case study under consideration. The proposed integrated method can be seen as a systematic scheme that supports both research and practice in the scenario analysis, addressing the complexity and uncertainty associated with defining urban strategies [16]. Furthermore, this approach ensures that the knowledge development is relevant and credible, providing a solid foundation for the decision-making process.

In conclusion, the adoption of integrated methodologies represents a key to addressing the challenge of valorizing cultural heritage, aimed at effectively supporting decisions related to the assessment of feasibility and economic sustainability of underutilized cultural assets. Through the application of a multi-level, multi-scale, and multi-stakeholder approach, decision-makers can make informed decisions, supported by a solid knowledge base and oriented towards promoting sustainable development for the benefit of the local economy.

3. Literature Review

The scarcity of resources, rapid urbanization, and climate change pose threats to ecosystems and human well-being [1,2]. To address these challenges, sustainable development [3] and the transition to a CE are considered crucial [4,5]. A CE involves production and consumption processes that minimize environmental impacts and waste generation,

extending the lifespan of products and materials while reducing consumption and waste [6]. The built environment, which consumes a significant amount of resources and produces carbon dioxide emissions, is a key sector to focus on [4,8].

Cultural heritage, a driving force for sustainable development and urban livability, consists of non-renewable resources that express the values, knowledge, and traditions of people [17,18]. The management of cultural heritage has evolved to be understood as “change management”, involving a variety of stakeholders and disciplines [19–23]. The Adaptive Reuse (AR) of cultural heritage, which preserves the heritage by providing a new function to the site/building, extends the life cycle of the heritage and can implement circular models in its management [13,24–29]. This approach contributes to achieving sustainable development and circular cities [8–13,29,30].

AR, a central element of the CE concept which is in line with sustainable architecture [28], has emerged as a rapidly growing practice that promotes the three pillars of sustainability [21]. In fact, it offers numerous social, environmental, and economic benefits.

From a social perspective, the process of conserving and adaptively reusing built heritage requires widespread awareness of its material and immaterial values [21,27,29] within society. Governments, tourism businesses, cultural associations, and individuals must be actively involved in this process, and informative campaigns can increase the social awareness necessary for a transition towards a CE model [31,32]. Additionally, it is essential for decision-makers to invest more in education about heritage management and the values of historic buildings for younger generations [33]. The knowledge and collaboration of all stakeholders are crucial for the application of a CE to build heritage. Only through the engagement and cooperation of all parties involved will it be possible to successfully implement adaptive reuse projects in the tourism sector.

The restoration of cultural and historical heritage (such as ancient buildings, historic villages, industrial complexes, etc.) is not only a crucial model for envisioning tourism development within a circular economic framework, but it also holds significant value for the local community. It becomes a source of pride that effectively protects the heritage. As a result, the local community benefits from an improved living environment, the quality of life in a particular area is enhanced, and regional development is facilitated. Furthermore, Foster and Saleh (2021) [34] state that “culture and buildings of cultural heritage are established drivers of socioeconomic development, urban landscape, and identity strategies”. In this regard, positive mutual cooperation and communication among stakeholders involved in restoration are necessary, as development objectives can only be achieved through the engagement and cooperation of all stakeholders. The recovery of cultural and historical heritage, including ancient buildings, historic villages, and industrial complexes, is not only a crucial model for tourism development but also holds value for the local community. The community itself protects the heritage it takes pride in, resulting in an improved living environment and a better quality of life in the surrounding area, thereby promoting regional development. According to Foster and Saleh (2021) [34], “culture and cultural heritage are established drivers of socioeconomic development, urban landscape, and identity strategies”. In this perspective, mutual cooperation and positive communication among stakeholders involved in restoration are necessary, as development objectives can only be achieved through the engagement and cooperation of all stakeholders.

Regarding environmental sustainability, reuse primarily results in lower consumption of energy and new materials, thus reducing emissions and land sealing [35–37]. Finally, from an economic perspective, two main advantages are evident: the cost-effectiveness of reuse compared to the demolition and construction of a new building [38–42], and the positive impact it has on the property value of the building itself and surrounding properties, generating social and economic flows [43]. The development of heritage tourism involves not only identifying, managing, and protecting the value of the heritage itself but also engaging local communities through economic and social benefits, ensuring the security of financial resources and promoting the marketing and promotion of the tourism destination [44]. Heritage tourism contributes to the economic sustainability of the tourism

sector by increasing visitor numbers and the income generated by tourists as well as stimulating positive effects across various sectors and creating employment opportunities. In this perspective, cultural heritage must be considered as a resource for present and future generations, to be utilized in accordance with the principles of the CE to achieve sustainable development goals [44].

New or underutilized existing buildings, if kept efficient, can be reused for over a century, adapted, and reconfigured for new purposes and functions, contributing to the development of a prosperous and resilient built environment. Therefore, the importance of the AR approach for economic growth, social well-being, and environmental conservation is widely recognized. The reuse of underutilized or abandoned heritage provides new opportunities for these assets, decoupling growth from resource consumption [45,46].

Similar to new buildings, AR projects have a lifecycle consisting of various stages, including planning, design, construction, management, and maintenance [13,38,45,46]. These projects involve different public and private stakeholders. Therefore, a standardized methodology is necessary that considers all perspectives and helps “speak the same language” [47]. Scientific studies demonstrate that assessment tools such as sustainability protocols are relevant for this analysis, considering the importance of responsible approaches in the built environment to develop sustainability assessment tools [6,17,19,21,24,25,27,28,38,42,45,48].

In this context, research in the field of decision-making assessments has increasingly highlighted the importance of adopting and promoting responsible practices that carefully consider the implications of cultural heritage reuse. The crucial challenge lies in finding suitable evaluation methodologies that ensure feasibility and sustainability while preserving the integrity of the heritage [49–51] without compromising its authenticity and value while also enabling effective and mindful management. Achieving an appropriate balance between development and conservation is a complex challenge, especially in a country like Italy, which is characterized by the highest density and distribution of cultural heritage in the world.

In this perspective, it becomes crucial to promote a culture of assessment that carefully considers all aspects, including financial considerations, while placing special emphasis on conservation. Cultural heritage is a valuable asset that needs to be safeguarded for future generations, and this requires a responsible and mindful approach to the implications of the decisions made.

There is an increasing need for tools and methodologies that can assess the financial impact of reuse in the preliminary stages while also considering the importance of preserving the historical and cultural integrity of the heritage. This delicate balance requires a continuous commitment to improving evaluation practices and promoting awareness of the importance of a responsible approach to cultural heritage.

4. Projects and Specific Actions for a “Circular” Urban–Rural Development

Recovery and Redevelopment of Historic Villages and Promotion of ‘Rifugio Diffuso’

In line with recent research on the role of the AR and regeneration of cultural and landscape heritage in the transition towards a CE [14,17], the existence of integrated projects for the recovery and re-functionalization of historic centers can become a catalyst for private investments and contribute to the AR of resources that today represent a waste because they are unused.

In line with the principles of a circular perspective, the revitalization of historic centers in small municipalities aligns with a “systemic” and synergistic approach inherent to the CE. These centers are valuable economic, social, cultural, and environmental resources that can be leveraged, for instance, as hubs for new social entrepreneurship and as “Rifugio Diffuso” (RD) for promoting sustainable and slow-paced tourism. Embracing such initiatives is entirely consistent with circular development principles, as it emphasizes the utilization and regeneration of existing resources within a circular framework.

The RD is a model of innovative hospitality structure ('network') capable of generating cultural and economic wealth at the same time. As is known, it is a business for hospitality purposes located in the historic center of a single urban center that is made up of several properties close to each other and is able to provide hotel services.

The RD model aligns seamlessly with the principles of sustainable tourism by prioritizing the recovery, preservation, and promotion of an area's distinct traditions and peculiarities. It stands out by avoiding additional environmental impacts, as it revitalizes and repurposes existing historic buildings without requiring further land usage. Unlike traditional hotels, the RD model fosters a stronger sense of community and a deeper immersion of tourists in the local environment, enhancing the unique characteristics of the area. The RD model emphasizes the enrichment of the territory and the promotion of locally sourced products, making it a hallmark of sustainable tourism.

The promotion and enhancement of the short agri-food chain and of so-called "zero kilometer" products represent an effective "circular" territorial development strategy, especially if combined with forms of traditional multifunctional agriculture and "circular" agriculture [8–10]. Several recent studies have confirmed the data on Italy's attractiveness for food and wine resources. In addition to being the first country in Europe for the number of Protected Designation of Origin (PDO), Protected Geographical Indication (PGI), and GGS (Guaranteed Geographical Specialty) awards, "food and wine tourism, in 2017 counted 110 million presences in accommodation facilities (double compared to 2016), 43% of which due to Italian tourism (47 million visitors), while 57% to international tourism (63 million visitors)" [18]. It is therefore evident that the short supply chain can be identified as a strategic element for a "circular" territorial development, building both productive and tourist relations between the entire territory of the park and the surrounding historic centers and rural villages.

Considering the multifaceted value of cultural landscape assets and their potential integration into the local economic system, this contribution suggests a comprehensive multi-methodological framework. The framework aims to evaluate the technical, managerial, and economic-financial feasibility of integrated AR projects. Such projects have the capacity to attract private investments and stimulate local economic development by leveraging underutilized resources.

The proposed framework acknowledges the need to assess the viability of these projects from various angles, encompassing technical aspects, management strategies, and economic-financial considerations. By doing so, it provides a robust evaluation process that can effectively identify and capitalize on opportunities for AR. The ultimate goal is to incentivize the efficient utilization of resources that may not yet be adequately valued. By catalyzing private investments and promoting the integration of cultural landscape assets into the local economy, these projects can unlock their potential and contribute to sustainable and inclusive economic development.

Therefore, the aim of this pilot project is to foster the integration of the plurality of policies to respect and enhance the complex local reality and to seize the set of economic, social, and cultural opportunities that the dynamics of this context can trigger. This multi-methodological framework is discussed using a pilot project, represented by a project for the renovation and AR of a group of chalets inserted in the landscape context of Sila National Park (SNP) registered as the 10th Italian Biosphere reserve in the World Network of Sites of Excellence by UNESCO [7].

5. A Methodological Framework: Management and Economic-Financial Prefeasibility for the AR of Cultural Heritage

To effectively support decisions for the AR of cultural heritage, a methodological framework based on the integration of different methodologies has been set up (Figure 1). In particular, the development of a Financial Feasibility Plan (FFP) for verifying the economic convenience and financial sustainability of the RD will be described in a more analytical way, in line with the provisions of the EU guide for the 2014 cost-benefit analysis [52].



Figure 1. Methodological framework.

As a pilot case, the village of Lorica (province of Cosenza) located in the Sila National Park (Italy) has been chosen because it offers a diverse territory, areas of high natural value, deep historical and cultural roots, and a strong tourist vocation compared to other provinces in Calabria. Hence, the choice of Lorica as a pilot case is particularly interesting for the initial application of more complex interventions, with high potential for the area, as they can attract a large number of hikers.

It is important to emphasize that the implementation of the methodology represents a real decision support system for more effective management of assets and the associated environmental and economic impacts, in favor of the local economy.

However, in the context of tourism development, the implementation of the proposed methodology is just the first step towards possible future applications. A future research objective is to build a comprehensive framework of the territory and classify the immense heritage of shelters in the park in a more detailed and transparent manner, making it easier for decision-makers to understand their strengths and weaknesses and decide how to orient management strategies at a central level for more balanced development.

The following subsections provide a brief description of the phases that constitute the proposed methodological framework.

5.1. Decision Context Analysis

Analyzing the decision-making context marks the initial stage of a methodological framework that assesses the managerial and economic financial prefeasibility of an RD project within the SNP. The process of recognizing cultural heritage values for the valorization of the AR project in the prefeasibility phase [13,24,26–28] is based on the integration of different cognitive approaches, including historical research, interviews with local experts in the field of conservation, and surveys on the field [17,21,24–28,34,35,42,45,46,50].

The evaluation process employs adaptive and synergistic approaches to assess the decision-making context. These approaches consider the unique characteristics of the study context, beginning with specific needs and examining potential conflicts. Rather than predetermined solutions, they emerge from the comparison of multiple interests, opportunities, and resources involved. By combining techniques like soft systems analysis and hard systems analysis [19], typical of systems thinking approaches [21], the evaluation unfolds as a learning process. It seeks to comprehend local specificities and the perspectives of various stakeholders [25,27,28], identified using the institutional analysis technique. This enables the identification of pertinent issues for decision-making. The development of intervention alternatives relies on informed knowledge, encompassing both expert and common knowledge. Moreover, it incorporates the “complex values” recognized and

shared by the community. The methodological structure of the evaluation process is thus contextualized, integrating relevant methods and tools in a multi-methodological approach.

The results of the application of the system thinking approach were organized in a SWOT matrix (strengths, weaknesses, opportunities, and threats), thus providing a starting point for the design of context-aware AR strategies [6,25,27,47,51].

5.2. Definition and Study of Adaptive Reuse Alternatives

The alternative intervention scenarios [13,25] were developed using the scenario buildings technique [26], which systematizes the potential and development drivers of the park for sustainable tourism and the promotion of traditional culture [5,18,27,31,32]. These scenarios were built by integrating the heritage value system and local development trajectories, in line with the SWOT analysis and the knowledge of the complex values recognized and shared by the community.

5.3. Choose the Most Favorable Adaptive Reuse Alternative

The multidimensional nature of choosing the most favorable adaptive reuse alternative option requires the use of Multi-Criteria Analysis (MCA) as the best methodology to support the evaluation of alternative scenarios [16,26,47]. The robustness of the results from the MCA was tested through a sensitivity analysis, while the degree of consensus on the most favorable alternative was evaluated through the implementation of a social multi-criteria approach [28–30].

5.4. Evaluation of the Economic Financial Feasibility

The financial analysis was based on the setting up and development of an economic-financial model which makes it possible to correctly evaluate, based on the project data of the alternatives, the economic convenience and financial sustainability of a specific intervention for a private investor [53–55].

Economic convenience refers to the project's capacity to generate value and deliver a satisfactory return on the invested capital, meeting the expectations of private investors. Financial sustainability, on the other hand, pertains to the project's ability to generate cash flows that are adequate for repaying any loans obtained while also ensuring a suitable compensation for the private investors involved in the project's execution and management. On a methodological level, the process of setting up and elaborating the model developed according to the flow chart indicated in Figure 2, to which an iterative logic must be applied to take into account subsequent improvements and adjustments [53–55].

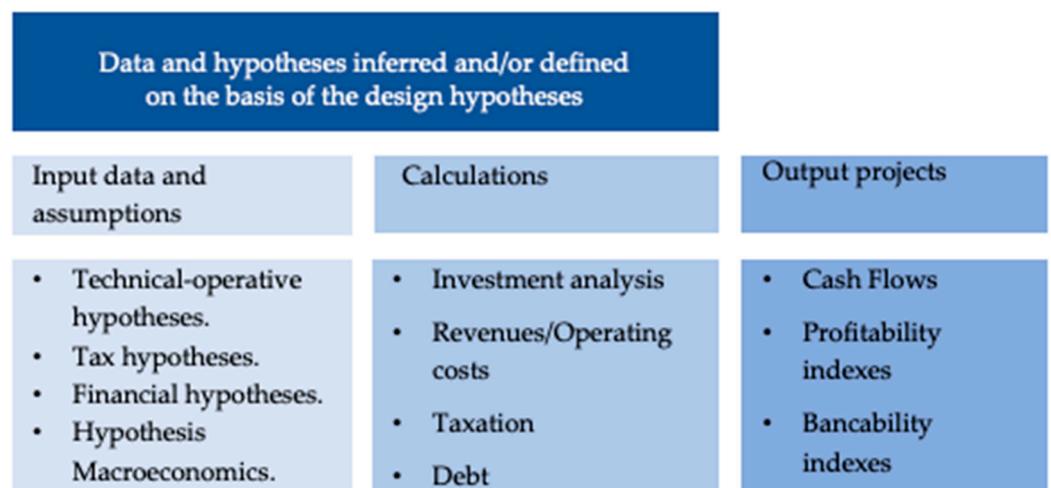


Figure 2. Financial Feasibility Plan (FFP) flow chart [56–58]. Source: data, evaluation, and estimates conducted by the authors up to 2023.

The objective was to develop, through the identification of the main economic and financial parameters typical of the investment project under consideration, an estimation for 2023 (revenue system, investments, management costs, etc.). The definition of revenue was based on a market analysis of similar activities in the national and local context and on real estate prices from the Osservatorio del Mercato Immobiliare (OMI) [56]. The assessment of investment costs [57] was based on the price lists for the public and private works currently used in the Calabria region as well as data provided in the DEI—Prezzi Tipologie Edilizie [58]. These costs were also validated by consulting local operators and construction companies. The management costs were determined by considering the costs typically incurred by operators in the local market.

The Financial Feasibility Plan (FFP) aim to preliminarily identify the following:

- The income capacity of the activities to be managed with the implementation of the project (provision of services or production of goods).
- The financial requirements related to the execution of the works and the investment.
- The economic–financial sustainability was identified by comparing the level of profitability of the project with the average deemed acceptable by private investors and financial institutions, with reference to similar initiatives carried out in the same sector to which the project belonged. In relation to this comparison, with the aim of bringing the profitability of the project closer to that expected and/or required by private investors, the assumptions for structuring the revenue were subsequently modified.

5.4.1. Preparation of the Financial Feasibility Plan

The Financial Feasibility Plan (FFP) represents the moment of systematization of all the data and hypotheses concerning the reality examined (investment project). Its development through a system of interdependent accounts makes it possible to determine the economic feasibility of the initiative and the project's ability to repay the debt and remunerate the risk capital [53–55].

Based on the data collected and the results of the analyses conducted, the first part of this work was developed, which was connected to the operational management of the project based on the cash flow analysis [53]. In this first phase, the construction of the FFP made it possible to identify some items of particular importance for carrying out the subsequent assessments concerning the economic convenience of the project, including:

- The Gross Operating Surplus (GOS), given by the difference between the revenue and operating cost, and the operating income, which includes the sum of depreciation realized during the year deducted from the GOS.
- To calculate the cash flow, the amount corresponding to the cash flow generated by management, the Free Cash Flow from Operations (FCFO) for each period is equal to the operating result attributable to the initiative itself and net taxes, plus depreciation and minus the positive change in trade capital attributable to the project.

The analysis of the economic convenience linked to an investment can be set up by referring to different valuation methodologies. Among these, the most commonly used are those based on the calculation of specific indicators suitable for providing a summary judgment on the investment's ability to create value and generate adequate profitability. In this regard, it intends to refer to the criteria of the IRR (Internal Rate of Return) and the NPV (Net Present Value).

Evaluation Criterion Based on the NPV

The evaluation criterion based on the NPV represents the incremental wealth generated by the investment, expressed as if it were immediately available at the instant in which the evaluation is made. Analytically, it is determined as the algebraic sum of the operating cash flows expected from the implementation of the intervention, discounted at the rate corresponding to the estimated cost of invested capital.

A positive NPV essentially testifies to the project's ability to free up sufficient monetary flows to repay the initial costs, remunerate the capital employed in the operation, and possibly leave resources available for further destinations.

The general formula for calculating the NPV [53] can be expressed by Equation (1):

$$NVP = \sum_{t=1}^n \frac{F_t}{(1+i)^t} = \sum_{t=1}^n \frac{(R-C)}{(1+i)^t} \quad (1)$$

where:

F_t = Cash flows at time t (with t varying from 1 to n)

R = Revenues (rentals or sales)

C = investment and management costs

i = interest rate or discount rate, equivalent to the opportunity cost of capital

n = duration of the investment

The NPV criterion is an evaluation method that fully considers the three factors based on a correct judgment of economic convenience, including the integral series of expected differential cash flows, their temporal distribution, and the financial value of time.

In the specific case in the equation of the NPV, the cost of the invested capital " i " is calculated as the weighted average of the cost of its own capital and the cost of the debt capital (WACC—Weighted Average Cost of Capital) [53]. Therefore, Equation (1) can be written in the following form shown in Equation (2):

$$NVP = \sum_{t=1}^n \frac{F_t}{(1+WACC)^t} \quad (2)$$

Evaluation Criterion Based on the IRR

The evaluation criterion based on the Internal Rate of Return (IRR) is defined as the discount rate for which an investment has an NPV equal to zero [53] at which the economic result of an operation is zero, as shown in Equation (3).

$$IRR = i \quad \text{where : } NVP = 0 \quad (3)$$

The evaluation criterion in question provides for the comparison between the IRR calculated for the project and a threshold rate which, consistent with what was declared in relation to the NPV, will correspond to the estimated cost of the invested capital. Therefore, when an investment has an IRR return greater than the opportunity cost of capital, the project is economically sustainable [53–55].

Not all economically viable investments are financially feasible. The expression "financial sustainability" refers to the project's ability to generate a cash flow that is sufficient to guarantee the repayment of loans and adequate profitability for shareholders. This can be represented by the simple condition according to which the cumulative net cash flow, determined as the sum of the annual net cash flows, always assumes a positive value at a limit equal to zero for each period of analysis considered.

The financial sustainability of a project can also be expressed in terms of bankability, with reference to particular indicators capable of assessing the margin of safety with which the lenders can be guaranteed timely payment of the debt service.

There are two main coverage ratios considered:

- Debt Service Cover Ratio (DSCR)
- Loan Life Cover Ratio (LLCR)

Evaluation Criterion Based on the Debt Service Cover Ratio

The Debt Service Cover Ratio (DSCR) is a valuation criterion that compares the operating cash flow, including both the repayment of the principal amount and the interest. This ratio is calculated for each period within the envisioned time horizon of the loans. The

DSCR serves as a measure of the project's ability to generate sufficient cash flow to cover its debt obligations, considering both the capital share and the interest share.

The Debt Service Cover Ratio (DSCR) has a straightforward interpretation: a value equal to or exceeding one signifies that the investment generates ample resources to meet the debt repayments owed to the lenders. However, for the ratio to be considered acceptable, the minimum value should not be precisely equal to one. This is because the ability to distribute dividends to shareholders would be jeopardized until the entire debt is repaid. Furthermore, when calculating the DSCR in a forward-facing manner, it is reasonable to assume that lenders would require an appropriate margin of security.

However, there is no universal benchmark for debt coverage ratios. The acceptable limit is subject to negotiation and depends on factors such as the project risk, provided guarantees, and contractual strength. The specific level will vary based on the unique circumstances of each project and the parties involved in the agreement.

Evaluation Criterion Based on the Loan Life Cover Ratio

The Loan Life Cover Ratio (LLCR) is defined as the ratio between the discounted sum of cash flows available for Debt Service, which are between the valuation instant and the last projected year for loan repayment, and the residual debt considered at the same instant of valuation. The numerator of the ratio represents the present value of project-generated cash flows on which the financiers can rely for future repayment of the amounts still owed (expressed in the denominator). Based on the above, it is evident that the higher the considered coverage index assumes values above unity (equilibrium point), the greater the financial soundness of the investment and the repayment guarantee obtained from financiers.

6. Application to the Case Study

6.1. An Adaptive Reuse Project of "Rifugio Diffuso" in Sila National Park

The illustrated methodological framework was applied to a case study relating to a "Rifugio Diffuso" project in Sila National Park (Italy) (Figure 3). The SNP, a national park in Calabria, Italy, was founded in 1997, spanning approximately 74,000 hectares. It safeguards a remarkable biodiverse landscape and scenic beauty, earning recognition as the 10th Italian biosphere reserve in UNESCO's prestigious network of outstanding sites in 2014 [7].



Figure 3. The study area. Source: elaboration by the author.

Despite the centuries-old interactions between men and nature, the landscape has maintained a harmonious relationship between human activities, the natural environment, and urban settlements. Approximately 386,000 inhabitants live in the territory of the reserve, mainly dedicated to agriculture, forestry, and breeding (transhumance of livestock is still practiced, from the mountains to the coastal plains in winter and vice versa). Calabria is the fourth Italian region in terms of the number of protected products, with 36 denominations, especially in the wine and cured meats sectors [7].

The settlement system is structured on the network of historic centers, inserted in the landscape and often well preserved. In addition to the system of historic centers, the numerous small rural villages have landscape value, functional to the maintenance of rural activities and secular rites and traditions and functional to the pursuit of enhancement strategies centered on visitors.

In the context of the study, the distribution of the population was influenced over time by both natural and historical factors. The population that currently lives in the park's territories is rather scarce. The most densely populated areas were found at the confluence of the valleys, while the towns/hamlets that, due to their position, had difficulty accessing them, have undergone a progressive depopulation in the last sixty years. To preserve the local cultural identity and stop this phenomenon, numerous regional and community projects have been launched in recent years, bearing witness to the importance of safeguarding and enhancing this common heritage through the promotion of sustainable and integrated intervention policies with respect to different cultural, historical, social, and economic contexts. To date, the territory of the park is undergoing a demographic collapse that began in the last century. The causes of depopulation can be identified in changes in the standard of living, as well as in the increasingly limited availability of primary services. In fact, it is no longer possible to lead a life in the mountains except for short holiday periods.

If the infrastructural network is lacking from a purely functional point of view, it should be pointed out that the presence of a secondary road network, which often offers extraordinary perspective opportunities, would deserve a detailed analysis aimed at identifying the most panoramic stretches for designing viewpoints and explanatory signs of the observable landscape peculiarities.

The historic-cultural system is made up of sets of punctual assets within four main categories: industrial archeology (spinning mills, kilns, production plants); historical and cultural assets (archaeological areas, castles, fortified settlements, museums, necropolises); religious properties (abbeys, chapels, churches, convents, monasteries, sanctuaries); and rural assets (farms, mills).

6.2. Decision Context Analysis

The initial phase of the methodological path explores the decision-making context of the study for the project of 'Rifugio Diffuso' in the SNP. All relevant information on the project area, collected through the integration of Hard System Analysis, Soft System Analysis, and Institutional Analysis, was structured in a SWOT matrix (Strengths, Weaknesses, Opportunities, and Threats): a valid reference for planning adaptive reuse strategies [59]. The Hard System Analysis enabled the development of a comprehensive cognitive framework encompassing the physical, morphological, social, and economic aspects of the study area. This framework served as a valuable reference for constructing the SWOT matrix. Additionally, the Institutional Analysis technique [19] was employed to identify and map the relevant stakeholders in the local community. Their interests were explored through online questionnaires and interviews with key individuals. The outcome was a place-specific SWOT matrix that incorporated both expert perspectives and insights from the local communities. This matrix effectively captured the factors that were best-recognized by those who resided in the area.

Strengths and Weaknesses of the Socio-Economic Context

The current state of affairs was analyzed and the intervention needs were identified for the purpose of reaching the definition of the strong points of the territory and its criticalities, dynamics and evolutionary prospects, and threats to which it is subjected. According to the criteria of the SWOT analysis, the following points were identified:

- The Strengths were represented by the resources that were present and usable and by the ability of local actors to self-organize and cooperate.

- The Weaknesses were represented by the elements to be removed, such as the irrational exploitation of the soil, the difficulties in maintaining the landscape, the cultural and infrastructural heritage, and the fragility of the social and economic system.
- The Opportunities that emerged were for the recovery and mending of areas of naturalistic interest and the historical–cultural heritage, for the sustainable development and consolidation of activities (such as tourism), and for the development of the local economic and social fabric;
- The Threats of concern were the economic, social, and cultural processes on which development prospects were based, considering both internal and exogenous dynamics.

On the one hand, the comparative analysis of the Strengths and Weaknesses of the territory made it possible to identify the areas, objectives, and actions on which to “leverage” to promote the triggering of sustainable development models and remove/mitigate the processes/elements of degradation. On the other hand, the examination of the Opportunities and Threats made it possible to define strategic hypotheses with which to orient the objectives, axes, and actions. In general, from a demographic point of view, the park presented an overall situation characterized by a significant decline in the resident population, as well as an evident aging trend. This was accompanied by a low level of per capita income, below the national average, and poor endowments of social structures. This socio–demographic situation was accompanied by an economic and entrepreneurial context that was not oriented towards the agricultural sector, which represents a vital sector for the protection and control of the territory. In particular, the problems and criticalities within the socio–economic context of the park could be traced back to the following factors: depopulation in the municipalities, population aging, fragility of the social and economic context, low endowment of structures and infrastructures serving the production system, high fragmentation of supply and production, difficulties related to logistics and freight transport, poor training of economic operators, low propensity of economic operators to associate and collaborate, and little consideration of the park authority as an interlocutor, both at an institutional level and as private operators. Alongside the weaknesses, the following strengths were highlighted: good institutional organization of the park authority, a variety of typical products and a good quality of most of the dairy and agricultural products, and the availability of cultural resources and “ancient trades” linked to ancient production techniques. Table 1 schematically outlines the results of the SWOT analysis.

Table 1. SWOT analysis of the socio–economic context.

Strengths	Weaknesses
<ul style="list-style-type: none"> ● Good availability of second homes to be used as accommodations. ● Presence of significant cultural typicalities. ● Diversification of sports activities. ● High naturalistic value. ● Presence of historical and religious values to be valorized. ● Presence of chalet and villages to be restructured and dedicated to hospitality and services for tourism. ● Presence of mountain pastures and structures to be consolidated and valorized. ● Presence of demonstrations and events linked to local tradition and culture, rooted in history and identity. ● Presence of events of regional and national appeal in neighboring territories ● Presence of a varied and deep-rooted heritage of ancient crafts. ● Strong local identity. ● Rooting of the artisan tradition in the collective imagination. 	<ul style="list-style-type: none"> ● Poor recognition of local products to be used for tourist consumption. ● Poor associative capacity of tourism operators. ● Presence of second-home tourism that does not generate related activities. ● Poor basic services (bank, transport, health facilities, youth meeting places, etc.). ● Absence of an organization and overall coordination of an offer that is highly competitive and recognizable. ● Aging of the repositories of ancient wisdom. ● Dispersion of agricultural production and reduced farm size. ● Scarce diversification of the present productions. ● Poor diversification of agricultural production. ● High average age of farmers.

Table 1. Cont.

Opportunities	Threats
<ul style="list-style-type: none"> • Increased demand for high-quality nature tourism, especially from abroad. • Existence of projects for the development and promotion of alternative and sustainable accommodation at national and international level. • Enhancement of typical products also through certification. • Connection of the park with national and international circuits or events. • Protection and enhancement of traditions and local identity as an element of attractiveness and competitiveness for the area. • Integration and coordination between the offer of events and exhibitions and the accommodation offer (winter and summer sports, nature tourism, etc.). • Creation of a collective brand for all the Park's products. • Driving force for the creation of an endogenous and integrated rural development model based on the enhancement of the agriculture-environment-territory relationship. • Community and regional programming for the territory development. 	<ul style="list-style-type: none"> • Competition from tourist offers from nearby natural areas and from those better equipped for winter and summer sports and those equipped with basic services. • Persistent under-utilization of accommodation capacities resulting in a low employment capacity. • Social fabric not inclined to entrepreneurial activities. • Lack of connection between existing initiatives. • Absence of a recognizable and competitive image of the cultural identity of the territory. • Failure to use modern production techniques. • Scarce use of regional incentives. • Exodus of the workforce from agriculture with the consequent abandonment of the territory and impoverishment of the economic-social fabric. • Abandonment of traditional techniques of cultivation and land management, with consequent problems related to land and landscape maintenance.

Based on the analyses carried out, three fundamental strategic axes emerged to pursue the conservation, enhancement, and promotion of the SNP territory:

- Conservation of natural resources: (i) fauna, flora, forest heritage, and water resources; (ii) integrated organization of the social use of the park and promotion of its image at an international level.
- Sustainable development of local populations: (i) improvement in accessibility to services; (ii) strengthening of the endogenous factors of development, in particular human capital, through training and support activities.
- Sustainable development of tourism and the territory: (i) enhancement of the historical, cultural, and landscape heritage; (ii) enhancement of agro-pastoral activities and crafts; (iii) qualification and enhancement of accommodation facilities.

6.3. Definition and Study of Adaptive Reuse Hypotheses

The results of the analysis of the decision-making context systematized in the SWOT matrix (Table 1), together with the process of recognizing cultural heritage values, allowed the project to become compatible with the value system of the project area and to design development and alternative reuse development. In more detail, as mentioned above, the SWOT analysis highlighted three fundamental strategic axes, which were useful references for developing a project aimed at seeking the conservation, enhancement, and promotion of the park territory, leveraging local potential and addressing existing critical issues.

The SNP falls within a rather complex socio-cultural system. In fact, it includes areas in which opposite and contradictory characters coexist: an endowment of environmental, natural, anthropic, and historical resources that is underexploited in the sense of valorization and overexploited with respect to its carrying capacity.

A fundamental role of the pilot project was to favor the integration of the plurality of policies, to respect and enhance the complex local reality, and seize the set of economic, social, and cultural opportunities that the dynamics of the context can trigger. For this reason, the method of "concerted programming" assumed particular importance, which was launched with the subjects involved: the local administration, park authority, state forestry corps, and private owners.

The bottom-up logic requires consensus and sharing within the limits and in compliance with current legislation, seeking the support of the institutional subjects and local actors involved to enhance the synergies between the various interest groups (stakeholders) and the complementation of skills, reducing the reasons for conflict. The moments of dialogue put in place by the research group ensured an effective comparison based on the explicit evaluation of the expected results and the risks of the design hypotheses.

Engaging the local community through questionnaires and interviews helped in identifying sustainable adaptive reuse strategies aligned with their expectations. It also revealed the community's social perception of cultural values, highlighting key elements for preserving and enhancing a collectively supported adaptive reuse project. The alternative scenarios of the adaptive reuse project are defined by applying the scenario building methodology [26], exploiting the potential and development drivers of the areas through sustainable tourism and the promotion of traditional cultures [5,25,31].

Through an in-depth analysis with the stakeholders allowed us to analyze and verify a series of aspects necessary to move from the generic identification of possible lines of development to the definition of the local development plan. The details of the path subsequently followed in the context of the analysis phase are described below:

- Analysis of the hypotheses of intervention that emerged following the initial reading of the scenario data.
- Degree of sharing at the local level of the intervention hypotheses that have emerged and their consequent refinement.
- Analysis of similar experiences already in place and the reasons for their functioning (good or bad) and their capacity to respond to local needs.
- Shared description of the supply and demand of the good or service intended to be developed and analysis of market functioning.
- Identification of the actors (both public and private) to involve for the project to work.
- Analysis of the resistances to overcome.
- Identification of the strengths and weaknesses of the project.
- Construction of the local plan: definition of operational steps, specification of development guidelines, possible review of data or acquisition of new data, gathering additional approvals, and drafting and sharing of the feasibility study.

As mentioned, once the project guidelines were defined, they were shared with the local partners to define the actions to be undertaken in a participatory manner and clarify the methods and actors for implementation (Table 2). An important moment in defining the preferred intervention alternative was represented by the continuous exchanges with the local actors who actively participated in the planning of the idea. In fact, after the analyses conducted on the existing structure, their participation in all the verification phases contained in the prefeasibility study was considered essential for sharing the analyses and intervention hypotheses. Thus, one of the development possibilities was clarified, which was identified in the connection between the tourist and agricultural sectors; more precisely in the creation of activities aimed at linking tourism with the agro-forestry-pastoral and artisanal activities connected with or attributable to it.

Table 2. Analysis of intervention and adaptive reuse alternatives.

	Alternatives	Strengths	Weaknesses
A1	Building recovery of properties with residential use ("second home") in accordance with current legislation	<ul style="list-style-type: none"> • Ease of the transformation process 	<ul style="list-style-type: none"> • Disparity of the intervention • Absence of an impact on the socio-economic context
A2	Refurbishment of buildings with a new accommodation destination and sale of products from the milk supply chain	<ul style="list-style-type: none"> • Sustainable destination • Enhancement of local traditions • Driving force for local development 	<ul style="list-style-type: none"> • High fractionation of ownership • Complexity of management of the transformation process

A fundamental prerequisite for implementing the hypothesized actions, in line with the analyses carried out, is the involvement of all local actors (public and private). The advanced hypotheses were then shared with the local actors through the scenario building technique [26]: a technique developed by the U.E. for involvement in a perspective of governance and democratic deliberative participation [21,24,26–28]. The participants were called upon to engage in structured discussions to reach a consensus on the path forward, including planning and defining the tasks and actions to be undertaken.

The scenario building, in addition to providing the basis for consensus on the actions to be undertaken (and on the methods for implementing them), should lead to the definition of the premises for the establishment of a collaboration network, which will subsequently have to be institutionalized and publicly supported. The development of new type of offer, accommodation or otherwise, is a problem that concerns private entrepreneurs, the local socio-economic conditions, and the understanding and collaboration of tourist entrepreneurs with local public administrators. By planning resources and interventions together, the public and private actors will be able to move towards an advanced tourism which has the fundamental and innovative objective of providing the means and equipment, in harmony with the development of local peculiarities. It is evident that it is not enough to prepare “positive” interventions top-down. The objective must be pursued in a participatory process which, by identifying specific organizational references, is able to combine the equipment, services, and methods of use with real needs so that they can be managed over time using valid methods and criteria.

Table 2 summarizes the two operational development alternatives that emerged from the re-elaboration of the analyses conducted and from the comparison with local actors.

6.4. Choosing the Most Favorable Adaptive Reuse Alternative

The development of the adaptive reuse project, coherent with the local development trajectories of the SNP and its high cultural value, requires a careful evaluation of the alternatives to identify the favorable one. The evaluation is based on a Multi-Criteria Analysis (MCA) using the Electre method [47,60]. Consistent with the chosen methodology, the two alternatives were evaluated in terms of performance according to a series of defined criteria and a weighting system linked to the strategic objectives of the adaptive reuse project. Based on the application of the Electre method, the alternative A2, the redevelopment of the buildings with a new accommodation destination and sale of products from the milk supply chain was the most favorable adaptive reuse alternative for the implementation of the project for the adaptive reuse.

Given the decision’s complexity and uncertainty [61], a sensitivity analysis was conducted. To assess the result’s robustness [62], the ‘Monte Carlo’ method was employed, involving varying input values used in the analysis. This approach helps gauge the impact of different scenarios on the outcome [63].

Having verified the solidity of the final result, an Equity analysis was applied using the NAIDE method [64], in which the possible conflicts between the different groups of stakeholders involved in the evaluation were analyzed, and the level of consensus on the two alternatives was defined [65].

The implementation of the equity analysis revealed that alternative A2 demonstrated the highest level of alliance between the different stakeholders, whereas alternative A1 was less convincing and weaker in terms of socio-economic development of the PNS, enhancement of mountain pastures, and promotion of local development. In particular, regarding the accommodation destination, it became evident that alternative A2. it more conducive to “sustainable tourism” in harmony with the natural context of the village and park, as it preserves the overall vision of the PNS. Therefore, alternative A2 is confirmed as the most favorable option for the adaptive reuse project to be implemented and evaluated, also in terms of economic sustainability.

6.5. Feasibility Checks for the Adaptive Reuse Project

Once the preliminary fact-finding analyses were carried out and the most favorable alternative was identified, the technical and economic financial feasibility of the project was verified. Initially, some preliminary indications were provided based on the technical feasibility and the pre-project checks, both for the recovery of the chalets (identified as a start-up nucleus) and for the farmhouses in the mountain pastures.

6.5.1. Technical Feasibility

The Recovery of Chalets: Critical Ideas for the Transformation

With regard to the transformation of the chalets, in full compliance with the regulations envisaged for the work to be carried out in park areas, the re-functionalization of the chalets would have to maintain the characteristics of the local architecture and the use of typical local materials, providing for a recovery based on traditional techniques so as not to impact the surrounding environment. Particular attention will be paid to the external arrangement of the areas and specifically to the restoration and new construction of the paths inside the village, as well as to the arrangement of the access mule tracks. As far as energy saving is concerned, all necessary measures must be taken to content consumption, also using new technologies and systems to control heat loss. The project could include the use of renewable energy sources. The social value of the intervention is linked, in addition to the global recovery action of the nucleus with conservative criteria, to the fact that the sale of the real estate units is not envisaged, but rather a unitary management that maintains the original character of the village. As mentioned, one of the recovered chalets (or part of it) could host a point of sale of typical products, and the remaining part of the start-up nucleus would be destined to accommodate premises for widespread hospitality and a refreshment point for the non-exclusive use of the users of the structure.

Recovery of the Pastures

As far as the recovery of the mountain pastures is concerned, the difficulties usually concerned the adaptations to health regulations (in particular with regard to the potability of water) and inconveniences due to isolation. While respecting the fundamental rules of hygiene, the local architecture and the choice of construction materials must be safeguarded as far as possible in the cheese-making premises already existing in the mountain pastures. To this end, the minimum structural and hygienic requirements for the cheese-making rooms in the mountain pastures were provided.

6.5.2. Economic Financial Feasibility of the 'Rifugio Diffuso'

Once the technical feasibility had been explored, it was essential to verify the economic financial feasibility. First of all, it is necessary to examine in detail the functions of the intervention, investigate the potential and residual housing demand, and define the input data of the financial plan of the accommodation facility.

Potential Demand and the Existing Accommodation Offer

The tourist flows of the SNP show that over the last decade, there has been an increase of approximately 9.6% [66,67], mainly recorded in the post-pandemic period. This value was mainly determined by Italian tourists (+104.8%), who had shown a growing interest and appreciation for the Sila area. Foreign tourists also arrived in greater numbers than in the past and tended to stay longer. On the other hand, Italian tourists reduced the duration of their vacation, in line with the behavior observed at the national level. The average length of stay of tourists inside the Park was 4.79 days [66]. In terms of usage patterns, it emerged that the green holiday was mainly chosen by couples (44.4%), families with children (20.9%), and single individuals (13.5%).

The accommodation system of the area was characterized by a general lack of structures and beds and by an uneven distribution throughout the territory. Approximately 30% of the structures present in the entire area consisted of shelters and bivouacs, which accom-

modated to the needs of a specific segment of tourists who enjoy trekking to reach areas only available by foot. In most cases, they do not lend themselves to satisfying a potential “light and widespread tourism” capable of causing positive economic effects directly on the local tourism system. The accommodation offer was predominantly made up of medium, small-sized, and medium-category hotels. The higher standard hotels are concentrated in Lorica, while there was no consolidated offer of non-hotel structures such as farmhouses, B&Bs, guest houses, and holiday homes. It is a tourist offer still linked to traditional models and poorly integrated with the valorization of the territory’s own resources.

Currently, the park is characterized by short-break users, who stay for a short time, usually on weekends, in the months of July and August. It is a heterogeneous type of tourism, whose consumers are mainly families. Tourism in the area is oriented towards nature, is respectful of the environment and local communities, and expresses diversified benefits (relaxation, sporting activities, socio-cultural entertainment), lending itself well to the environmental context of the park, which is characterized not only by significant naturalistic elements but also various folkloric curiosities.

Dimensional Hypothesis of the Start-Up Nucleus

A start-up nucleus of RD was identified in the village of Lorica. This nucleus consists of five units: those marked with numbers from 1 to 4 will be located the 40 rooms, and the common services will be located in block 5 (Figure 4). The covered area is approximately 500 sqm.



Figure 4. The nucleus of start-ups of the “Rifugio Diffuso”. (Google Earth Lorica: 39°15′01.26″ N 16°30′42.59″ E). Source: elaboration by the author. Legend: Rooms blocks 1, 2, 3, 4; Common services block 5.

Total Investment Cost

The recovery of the chalets, in compliance with the specific regulations envisaged in park areas and with the typical characteristics of traditional mountain architecture, involves a parametric cost of 1500 euros/sqm. The start-up nucleus of the widespread shelter, consisting of 500 square meters, will therefore cost approximately 750,000.00 euros. The total amount envisaged for the recovery of the widespread refuge chalets and for the arrangement of the access roads to the village, as per the technical-economic framework, pursuant to national legislation, developed based on the project hypotheses put forward, was 1,149,608.00 euros (Appendix A). Among the sums available to the contracting station were the total cost of the purchase of the barracks by the administration (start-up group), equal to 40,000.00 euros. This cost was derived from a synthetic estimate and elaborated based on direct surveys of local real estate operators: $500 \text{ sqm} \times 80.00 \text{ euros/sqm} = 40,000.00 \text{ euros}$. It should be noted that this total cost does not include the costs for the purchase of furnishings and equipment for the rooms, the common areas, and the bar/restaurant area of the

widespread refuge, which was assumed to be borne by the manager of the accommodation business.

Management Model Hypothesis

Based on the comparative information of best practices, two main types of management can be hypothesized:

- Direct management of the municipal administration.
- Management entrusted to third parties (private, service cooperative, social cooperative, etc.).

Table 3 displays the advantages and disadvantages of the two hypothesized solutions.

Table 3. Advantages and disadvantages of the management hypotheses.

Direct Management	Management Entrusted to Third Parties
Advantages	Disadvantages
<ul style="list-style-type: none"> • Possible saving of resources in finding the manager within the administration. • Possible triggering of economies of scale in the integrated management of other existing public accommodation facilities. • Creation of employment opportunities • Presence of personnel suitable for carrying out the activity • Greater motivation to develop and grow the business 	<ul style="list-style-type: none"> • Excessive workload for the administrative structure. • Difficulty in finding the available resources. • Less propensity to organize events and launch activities for the accommodation facility. • 'Enterprise risk' in management imbalance.

The primary objective of the municipal administration is the return in terms of positive effects and benefits that the initiative can trigger on the territory. Among these benefits, the first is the increase in tourist attractiveness of the municipality of the township, which is reflected in many facets:

- improvement in employment and the local economy
- diversification and cultural growth of the territory
- containment of labor emigration factors

Based on these assumptions and the result of the comparison between the management alternatives, it was considered more advantageous to entrust the management to third parties in order not to further burden the administration with an onerous task that can be carried out with greater ability by entrepreneurs in the receptive field [24,25,27,30]. In fact, direct management by the administration is almost always an inadvisable path, as the public body may experience difficulty in internally obtaining the resources and professionalism necessary for the promotion and development of side-initiatives to its core business.

Finally, the possible future synergy of the structure with other functions aimed at the development and enhancement of local and tourist attractions should be highlighted, such as the promotion and resale of products from the milk supply chain and the organization of guided visits to the mountain pastures.

Finally, the possible future synergy of the structure with other functions aimed at the development and enhancement of local and tourist attractions, such as the promotion and resale of products from the milk supply chain and the organization of guided visits to the mountain pastures should be highlighted.

Below are the main possible stages of implementation of the intervention:

The Municipal Administration:

1. Purchase cabins from private owners
2. Renovate buildings
3. Recover the existing internal road system

4. Entrust the management of the RD to private individuals
5. Receive rent from the private manager

The Financial Feasibility Plan of the Accommodation Facility—Input Data

The hypotheses formulated for the preparation of the Financial Feasibility Plan (FFP) of the RD, based on the functions that could be established (10 rooms for a total of 40 beds; common areas; bar/restaurant), concern the duration of the lease, initial investment, financial structure of the investment, amortization of the initial investment, management costs, ordinary maintenance costs, rental fee, income from room occupation, and bar/restaurant service, as indicated below:

- The duration of the 20-year lease.
- An initial investment cost, which includes the amount necessary to purchase the furnishings and equipment of the rooms, the common areas, and the bar and restaurant (Table 4).
- For the financial structure of the investment, it has been estimated that the most suitable mix of financial resources to finance the investment is made up of 30% risk capital (financing supported by the manager) and 70% debt capital (financing supported by taking out a mortgage with a credit institution). The loan term was assumed to be 10 years.
- The amortization of the total initial investment was spread over 20 years, with an annual rate of 5%, equal to 3000.00 euros. Furthermore, a further investment was assumed in the 11th year for the partial replacement of the furnishings (equal to 30% of the initial investment, i.e., 18,000.00 euros), the depreciation of which, distributed over 10 years starting from the 11th, provides for an annual rate of 10% and equal to €1800.00.

Table 4. Investment costs for management.

Furnishings	U.M.	Unit Amount Euros	Total Amount Euros
Quadruple rooms	n. 10	4000.00	40,000.00
Common areas, Bar, Restaurant, etc.	lum sum	20,000.00	20,000.00
Total investment			60,000.00

The framework of overall management costs, calculated based on a period of activity of the established functions equal to six months/year (150 days), includes:

- The costs of operating personnel (two managers and one resource); in this way, it is foreseen that the structure can remain open for 16 h a day (from 7.00 to 23.00).
- Promotion and advertising expenses: these activities must be traced back to a general strategy, which will concern the communication of the new accommodation facility.
- Expenses relating to utilities: electricity supply, water supply, and heating (estimates relating to consumption must be considered approximate and based on the data available in the design hypotheses, referring to the total area of the chalets equal to 550 sqm). In particular, the electricity requirement was assumed to be a cost of 5.00 euro/sqm, equal to €2500.00/year; for heating 6.00 euros/sqm, equal to €3000.00/year; and for the water supply of 1.30 euro/sqm, equal to €650.00/year.
- Regarding expenses for various materials (supply of sheets, blankets, soaps, etc., as well as the pantry of bars and restaurants), the cost was estimated equal to approximately 20% of the revenue, according to the occupancy percentage of the rooms for the year).
- The amount relating to maintenance costs was estimated to be 0.20% of the investment costs (750,000.00 euros, excluding furnishings): 1500.00 euros per year for the first five

- years. From the 6th to the 10th year, the rate was set at 0.40% (3000.00 euro/year) and from the 11th to the 20th year at 0.60% (4500.00 euro/year).
- Regarding the rental fee, in drafting the FFP, it was assumed that the manager would start paying the rent from the fifth year. The amount of the annual rent was estimated to be 9000.00 euros based on the following assumptions:
 - initial investment = 750,000.00 euros
 - economic duration of the asset = 80 years
 - initial investment depreciation charge = 9375.00 euros/year
 - rounding down the initial investment depreciation charge = 9000.00 euros/year.
 - The revenue analysis evaluated, based on a hypothesis of user flows, all the possible revenue sources in relation to the different types of profit that the overall range of services produces (Table 5). These types consist of:
 - Sale of beds in quadruple rooms (school groups, young people, etc.).
 - Sale of double/triple/quadruple rooms for families.
 - Drinks in the bar/restaurant area (breakfasts, lunches, and dinners) ordered by the users of the shelter.
 - Drinks in the bar/restaurant area ordered by passing users.

Table 5. Revenue from occupation of the rooms and bar/restaurant service.

Typology	n. Nights— Rooms/Year	Rate Euros	Annual Revenues Euros	Occupation 1st Year %	Occupation 2st Anno %	Occupation 3st Anno %	Occupation 4st Anno %
Quadruple rooms school groups (€12.50/child)	150	50.00	7500.00	100	100	100	100
Double rooms	450	40.00	18,000.00	50	55	60	65
Triple rooms	450	50.00	22,500.00	50	55	60	65
Quadruple rooms	450	60.00	27,500.00	50	55	60	65

Based on the hypothesis of opening the accommodation business for 150 days/year, a percentage of occupancy of the beds/rooms increasing from the first to the fourth year was very prudently evaluated, keeping the user tariff unchanged (including VAT, without considering the changes relating to the adjustment due to the ISTAT index of consumer prices on an annual basis for families of workers and employees) (Table 5).

As mentioned in the previous sections, the potential offer of the planned structure was equal to 1500 rooms/year (i.e., 40 beds × 150 days/year = 6000 room nights/year).

Considering that there are an average of 3000 school children on trips to the SNP per year and assuming that 20% could use the new accommodation facility, the occupation of the refuge by this specific user demographic represents 10% of the offer potential: 20% of 3000 children/year = 600 children/year = 150 rooms/year occupied by school groups (rooms with 4 beds each). This hypothesis remains unchanged for all the years of management, representing 100% of the occupancy of the rooms for school groups.

With regard to the residual supply of rooms per year, it was estimated that it could satisfy the demand represented by families. In particular, it was prudently assumed that the remaining 1350 rooms/year could be occupied by two, three, or four people, up to a maximum of 65%.

Therefore, the occupation of the structure varied from a minimum of 55% in the first year of management to a maximum of 68.50% from the fourth to the twentieth year.

With regard to the bar/restaurant service, it was assumed that:

- 90% of guests would consume breakfast in the structure, for an average cost of 2.00 euros each.

- 50% of guests would eat a full meal (lunch or dinner) for an average cost of 12.00 euros each.
- 50% of guests would spend an average of 5.00 euros each at the bar (sandwiches, drinks, etc.).

An 'independent' attendance at the bar/restaurant equal to 400 passing users was also evaluated, which was represented by a percentage of 50% of potential consumers, for a cost of 3.00 euros each, guaranteeing a total annual income of 6000.00 euros.

It should be noted that the total number of transit users was estimated based on data relating to the presence of tourists (school groups and excursionists) in the SNP and its surroundings.

- The direct taxes considered were IRPEG, with an annual rate of 32% and IRAP, with an annual rate of 4.25%

Development of the Financial Feasibility Plan

Appendix B shows the development of the FFP based on the user flow hypotheses and possible revenues in relation to the different types of profit that the overall offer of services produces.

It should be noted that a WACC of 8.98% was used to discount the cash flows, obtained with the following equation [53,54]:

$$\text{WACC} = K_E \frac{E}{D + E} + K_D \frac{D}{D + E} (1 - t) \quad (4)$$

where:

E = equity capital

D = debt

K_E = rate of return on equity capital

K_D = rate of return on debt

t = tax rate used to calculate the tax benefit resulting from the deductibility, for direct taxes purposes, of financial charges (so-called tax shield)

7. Discussion of the Results

This paper presents the development of a technical and economic-financial prefeasibility study related to a project aimed at reusing underutilized cultural assets for "Rifugio Diffuso". Firstly, the study examined and compared various examples at the national and international level to a hypothesized a management model [29,31,33–44,46,65,68–70]. This model envisioned entrusting the management of the para-accommodation structure to third parties (private individuals). The purpose of this approach was to promote a management style driven by entrepreneurial incentive and ability.

The investment of the public administration in the purchase, renovation of the chalets, and recovery of the existing road network was approximately 1.15 million euros. In particular, for the "private" function of the widespread shelter, the potential annual demand was defined, and a concise financial plan was developed based on the functions that could be settled: 10 rooms for a total of 40 beds, common areas, and a bar/restaurant. The analysis of the demand revealed that the potential users of the structure were mainly school children (currently amounting to approximately 3000 visitors/year) along with nature-loving families and trekking tourists.

In summary, the manager's initial investment of 60,000.00 euros, consisting of 30% equity and 70% debt, covered the purchase of furnishings and equipment for rooms, common areas, and bar/restaurant premises. During the 20-year management phase, the cash flows became positive, starting from the second year, indicating a profitable investment.

In the FFP drafting, it was assumed that the manager started paying a rent of 9000.00 euros from the fifth year. In this way, the initial public investment was partially amortized.

The financial sustainability of the project, measured in terms of bankability, focuses on the project's ability to generate sufficient cash flows to guarantee the repayment of the acquired loans. This analysis involves two critical coverage ratios: the Debt Service Cover Ratio (DSCR) and the Loan Life Cover Ratio (LLCR). These ratios offer valuable insights into the project's capacity to meet its financial obligations and ensure long-term repayment of the loans.

In the specific case of the 'Rifugio Diffuso' project, both indices assume values well above unity (equilibrium point), indicating a strong financial position and sustainability:

- The DSCR was equal to 3.54 in the first period considered and increased to 4.39 in the last year of the loan (the 10th). This signifies that the project's cash flow was more than sufficient to cover its debt service obligations, providing a comfortable margin of safety.
- The LLCR was equal to 4.72 at the instant of evaluation and becomes 28.80 in the last year planned for the repayment of the loans. This indicates that the project's cash flow over its entire loan life was substantial, ensuring a robust ability to repay the loans in the long-term.

These high values for both the DSCR and LLCR demonstrate the project's strong financial health and its capacity to manage its financial obligations effectively throughout the duration of the loan.

8. Conclusions

Any plan for the physical reuse and functional adaptation of cultural heritage must necessarily find a balance between market demands, the cultural and social significance of the heritage to be revitalized, and the community's aspirations, respecting the identity of the asset and its urban context. In this decision-making context, this research presented a multi-level integrated methodology that supports the preliminary assessment of complex decisions [71] according to a multi-methodological approach aimed to facilitate a more informed decision-making process. The methodology was applied to a pilot project for the adaptive reuse of cultural heritage, specifically a group of mountain huts in the village of Lorica located in the Sila National Park (Italy).

The methodology, used in the preliminary stages of the project, integrated different tools and utilized various techniques from the field of economic estimation. The combination of integrated, qualitative, and quantitative methodologies, according a multi-phase approach [71], provided effective support to the Decision-Makers (DMs), guaranteeing objectivity in choices and transparent negotiation among the various stakeholders involved in the valorization and reuse of the cultural heritage [72] according to a transparent and rational framework for identifying shared solutions and intervention priorities.

The methodological framework provided support to DMs in defining priorities for intervention and actions based on a multidimensional and multi-criteria assessment for the definition of the most favorable alternative scenario, which was also verified from the point of view of its feasibility and sustainability. The adoption of this structured multi-methodological and integrated evaluation process offers valuable opportunities, particularly in economically vulnerable contexts such as the case study, where effective allocation of scarce resource is fundamental for the conservation of places and communities.

Integrated multi-methodological approaches are widely utilized in addressing complex decision-making problems across various domains of knowledge in accordance with the 2030 SDGs and European quality principles [73,74]. Their application proves particularly beneficial when making decisions regarding the adaptive reuse of cultural heritage, whether in the public or private sectors. These decisions involve a complex interplay between values and diverse, often conflicting interests, necessitating the establishment of a shared platform among Decision Makers (DMs), stakeholders, and the community [75,76] to define reuse projects conceived with the perspective of economic development in the relevant territory [76–79].

The model applied to the pilot project demonstrates the effectiveness of a transparent and comprehensible evaluative process that allows for a rapid assessment of the financial feasibility of the project using a Financial Feasibility Plan (FFP) and performance indicators based on the Discounted Cash Flow Analysis (DCFA). The evaluation process is thus an integral part of the project development process, serving as a support in the initial stages of assessing investment feasibility, optimizing investment choices, and facilitating the efficient allocation of public resources. The developed model focuses on “steady-state” cash flows. This simplification allows for the early identification of collective needs and any potential technical, procedural, and economic-management obstacles.

On the basis of the developed management hypotheses developed in the FFP, it is evident that the preliminary assessments of the economic and financial feasibility of the RD accommodation activity planned within the renovated cabins were thoroughly verified. The municipal administration, with this investment of general interest, committed to revitalize an abandoned hamlet with positive benefits for the entire community [80].

The results obtained from the application to the pilot project highlight the potential of a user-friendly and easily replicable model, even for less-experienced users. This model can be implemented as an additional verification of the evaluation criteria generated from more complex financial analyses.

Based on this application, it is possible to outline some future research paths. Firstly, the implementation of the model will be replicated in other pilot areas to increase its reliability. Secondly, a dynamic SWOT analysis [81] will be utilized in the model to provide more efficient support in structuring the decision problem with guidelines and strategic recommendations. Thirdly, through a more in-depth stakeholder analysis and sensitivity analysis for criteria elicitation, it will be possible to visualize different scenarios to test the robustness of the results in selecting the most favorable alternative.

In conclusion, it can be stated that the combination of different evaluation tools is highly promising in defining a framework that assists DMs in both the public and private sectors involved in the redevelopment and reuse of cultural heritage. This combination is also promising in the strategic evaluation of procedures to renew the vision of plans, programs, and projects for the enhancement of unused cultural heritage landscapes [82–84].

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Appendix A. The Technical Economic Framework for the Estimation of Investment Costs

(a1) Construction costs (architectural, plant, road, etc.)		€	800,000.00
(a2) Safety charges included in the works and not subject to a discount (2%)		€	16,000.00
(a3) Additional security charges (not subject to discount: 1%)		€	8000.00
(a4) Total auction-based works		€	784,000.00
(a5) Total contract amount		€	808,000.00
(b) Sums available to the contracting station			
(b1) Economical construction costs		€	-
(b1bis) Furnishings		€	-
(b2) Surveys and investigations		€	10,000.00
(b3) Connections to public services and urbanization works		€	40,400.00
(b4) Unexpected costs (% of a5)	5.0%	€	40,000.00
(b5) Acquisition of areas or properties		€	40,000.00
(b6) Provision for costs referred to to current regulations	1.0%	€	8080.00
(b6bis) Provision pursuant to procurement regulations	3.0%	€	24,240.00
(b7) Technical expenses for design and construction management	10.0%	€	80,800.00
(b7bis) Incentive fund pursuant to current regulations		€	12,120.00
(b8) Expenses for consultancy activities, etc.	1.5%	€	-
(b9–b10) Expenses for advertising, tenders, commissions, etc.		€	5000.00
(b11) Testing	1.5%	€	12,120.00
(b12) VAT on a5	10.0%	€	80,800.00
VAT on b4	10.0%	€	4040.00
VAT on b1bis	21.0%	€	-
VAT on b2	22.0%	€	2000.00
VAT on b7	22.0%	€	16,160.00
VAT on b7bis	22.0%	€	2424.00
VAT on b8	22.0%	€	-
VAT on b9–10	20.0%	€	1000.00
VAT on b11	22.0%	€	2424.00
		total €	<u>341,608.00</u>
Total investment cost		€	1,149,608.00

Appendix B

Years	0	1	2	3	4	5	6	7	8	...	10	15	16	17	18	19	20
Rooms school groups	0	7.500	7.500	7.500	7.500	7.500	7.500	7.500	7.500	7.500	7.500	7.500	7.500	7.500	7.500	7.500	7.500
Double family rooms	0	9.000	9.900	10.800	11.700	11.700	11.700	11.700	11.700	11.700	11.700	11.700	11.700	11.700	11.700	11.700	11.700
Triple family rooms	0	11.250	12.375	13.500	14.625	14.625	14.625	14.625	14.625	14.625	14.625	14.625	14.625	14.625	14.625	14.625	14.625
Quadruple family rooms	0	13.500	14.850	16.200	17.550	17.550	17.550	17.550	17.550	17.550	17.550	17.550	17.550	17.550	17.550	17.550	17.550
Breakfasts	0	4.185	4.604	5.022	5.441	5.441	5.441	5.441	5.441	5.441	5.441	5.441	5.441	5.441	5.441	5.441	5.441
Lunches/dinners	0	13.950	15.345	16.740	18.135	18.135	18.135	18.135	18.135	18.135	18.135	18.135	18.135	18.135	18.135	18.135	18.135
User bar consumption	0	5.813	6.394	6.975	7.556	7.556	7.556	7.556	7.556	7.556	7.556	7.556	7.556	7.556	7.556	7.556	7.556
Bar drinks for passing users	0	6.000	6.000	6.000	6.000	6.000	6.000	6.000	6.000	6.000	6.000	6.000	6.000	6.000	6.000	6.000	6.000
Total REVENUE	0	71.198	76.967	82.737	88.507												
Investment costs	60.000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Management costs:																	
- Personal	0	28.000	28.000	28.000	28.000	28.000	28.000	28.000	28.000	28.000	28.000	28.000	28.000	28.000	28.000	28.000	28.000
- Rental fee	0	0	0	0	0	9.000	9.000	9.000	9.000	9.000	9.000	9.000	9.000	9.000	9.000	9.000	9.000
- Electric energy	0	2.500	2.500	2.500	2.500	2.500	2.500	2.500	2.500	...	2.500	2.500	2.500	2.500	2.500	2.500	2.500
- Waterfall	0	650	650	650	650	650	650	650	650	650	650	650	650	650	650	650	650
- Heating	0	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000
- Advertising	0	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000
- Pantry-refreshment raw materials	0	8.984	9.703	10.421	11.140	11.140	11.140	11.140	11.140	11.140	11.140	11.140	11.140	11.140	11.140	11.140	11.140
Ordinary maintenance costs	0	1.500	1.500	1.500	1.500	1.500	3.000	3.000	3.000	3.000	3.000	4.500	4.500	4.500	4.500	4.500	4.500
Total COSTS	0	49.634	50.353	51.071	51.790	60.790	62.290	62.290	62.290	62.290	62.290	63.790	63.790	63.790	63.790	63.790	63.790
Provision for severance indemnity fund	0	2.333	2.333	2.333	2.333	2.333	2.333	2.333	2.333	2.333	2.333	2.333	2.333	2.333	2.333	2.333	2.333
Gross Operating Margin	0	19.230	24.281	29.333	34.384	25.384	23.884	23.884	23.884	23.884	23.884	22.384	22.384	22.384	22.384	22.384	22.384
Depreciation	0	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	4.800	4.800	4.800	4.800	4.800	4.800
OPERATING INCOME	0	16.230	21.281	26.333	31.384	22.384	20.884	20.884	20.884	20.884	20.884	17.584	17.584	17.584	17.584	17.584	17.584
Net financial charges	0	149	151	153	155	182	187	187	187	187	187	191	191	191	191	191	191
Interest expense on investment	0	2.100	1.933	1.758	1.574	1.380	1.177	964	741	259	0	0	0	0	0	0	0
Interest expense on shareholder loans	0	1.260	1.134	1.008	882	756	630	504	378	126							

Years	0	1	2	3	4	5	6	7	8	...	10	15	16	17	18	19	20
PROFIT BEFORE TAXES	0	13.981	19.197	24.422	29.655	20.821	19.520	19.733	19.956		20.438	17.393	17.393	17.393	17.393	17.393	17.393
Taxes	0	6.023	7.916	9.812	11.710	8.616	8.155	8.223	8.294		8.449	7.429	7.429	7.429	7.429	7.429	7.429
VAT recovery	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0
NET INCOME	0	7.958	11.281	14.610	17.945	12.205	11.365	11.510	11.662		11.989	9.963	9.963	9.963	9.963	9.963	9.963
depreciation (+)	0	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000		3.000	4.800	4.800	4.800	4.800	4.800	4.800
MOL NETTO	−60.000	10.958	14.281	17.610	20.945	15.205	14.365	14.510	14.662		14.989	14.763	14.763	14.763	14.763	14.763	14.763
Ordinary management income																	
Ordinary management exits		71.198	76.967	82.737	88.507	88.507	88.507	88.507	88.507		88.507	88.507	88.507	88.507	88.507	88.507	88.507
Mortgage principal repayment		55.476	55.904	56.323	56.734	65.442	66.617	66.278	65.928		65.195	66.314	66.314	66.314	66.314	66.314	66.314
Repayment of member loans (number of years)		3.339	3.506	3.681	3.866	4.059	4.262	4.475	4.699		5.180						
Cash flow (after tax)	10	1.800	1.800	1.800	1.800	1.800	1.800	1.800	1.800		1.800						
Ordinary management income		4.559	7.841	11.120	14.397	8.591	7.673	7.731	7.785		7.883	14.763	14.763	14.763	14.763	14.763	14.763
VAN	90.413																
TIR	6.10%																
WACC	8.98%																
DSCR		3.54	4.46	5.39	6.32	4.67	4.39	4.39	4.39	4.39	4.39						
LLCR	4.72	5.59	6.15	6.71	7.28	7.84	9.11	11.32	15.7	28.8	-						

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