INNOVATIVE MANAGEMENT OF RURAL BUILDINGS

Marzia Morena
Dipartimento ABC, Politecnico di Milano, Milan, Italy
Gian Battista Bischetti
Università Statale, Milan, Italy, and
Maria Luisa Del Gatto and Anna Gornati
Dipartimento ABC, Politecnico di Milano, Milan, Italy

Abstract

Purpose: This study forms part of a larger project funded by Cariplo Foundation. Its focus is on the scope to exploit the full potential and upgrade the functions of abandoned or under-utilized typical highland Alpine pasture systems (made by a complex of grazing fields, buildings for temporal animal and human recovery, and dairy production, identified as Malga-system or Alpeggio), by adopting the property investor's point of view.

Design/methodology/approach: This study has adapted the traditional property development processes to rural buildings, thus generating an analysis model that proves able to define a new destination of use whenever the project considers the reuse of existing facilities.

Findings: The proposed model analyses the technological, functional, and territory features of the building to be upgraded, to assess the technical feasibility of the changeover project, and identify the highest and best use of Malga-systems. The model has been applied to all the Malga-systems in the Orobie Bergamasche Park; it performed a comprehensive assessment of the development potential of the Malga-systems in the same Park.

Research limitations/implications: The design of the model took into consideration the specificities of the Orobie Bergamasche Park; nevertheless, the method can be taken as an example to be applied to any grazing land in the Alps.

Originality/value: This research provides the real estate market with a new analysis tool that is specific for the rural buildings, and suitable to streamline the procedures designed to upgrade these properties and to infuse new life into the territories that are experiencing a period of hardship and/or decay.

Keywords

Rural Building, Malga system, analysis model, innovative management, enhancement of properties.

Introduction

In the Alpine landscape, a fundamental role is played by typical Alpine complex systems where highland pastures, buildings for animals and human recovery and dairy production, roads, social habits, *etc.,* are tightly connected, identified as Malga-systems (Soane et al., 2012) or *Alpeggi* (Scarpa et al., 2011). Such systems are relevant from several perspectives: biodiversity conservation, cultural landscape heritage, typical food production, tourism, etc. (e.g. Väre et al., 2003; Soane et al., 2012; Baur and Binder, 2013).

The focus on the upgrading of Malga-systems is the consequence of several concomitant factors, which can be grouped into three main aspects: the acknowledged value that pastures have in Europe thanks to their ability to preserve biodiversity; the growing esteem for typical food products, which are tightly linked to the specific characteristics of a territory; the growing attention paid to the buildings of Malga-system, as an element of the grazing system and a typical example of local architecture. The local flavour is being more and more appreciated recently following the higher awareness of local traditions.

This interpretation is peculiar to a broader attitude that characterizes Italy and other countries as well: it is one of a deep change, a "return to the land", a true reconciliation with the farming work but from a modern perspective. The growing numbers of employees and new farms, together with the stronger and stronger interest paid by the young to farming are but some signals that witness the leading role played by this sector within the domestic economy in the recent years.

This change is stimulating attention towards the mountain buildings, belonging to Malga-system that had always been devoted to the production activities related to the grazing of livestock but which had been gradually abandoned when the economy based on agriculture and livestock breeding turned into a service-based economy. Today these buildings are usually upgraded to recover their traditional production functions, while some projects plan to assign them to new functions when feasible. Unfortunately, all the interventions made so far were not supported by an adequate comprehensive method able to account for the complexity of the issue. Hence they prove unable to provide decision-makers with data that may identify the highest and best use of such facilities in the medium-long term.

Such is the framework of the research herein described: a research work designed to develop an analysis tool that is called upon to detect the development and changeover potential of Malga-system. The purpose of this tool is to support the decision-makers in starting a property upgrading project that is based on objective elements, fused with the necessary and proper criteria derived from the development policy for the local territories.

The research was carried out within the framework of the Arcorobie project funded by Cariplo Foundation, and it generated several analysis tools that form, altogether, a toolbox to be delivered to the decision-makers in the public administrations.

The output of this activity has been a new analysis model that, by starting from the collection of objective data about the building and its surroundings, identifies the highest and best use of Malga-system. The design of the model took into consideration the specificities of the Orobie Bergamasche Park; nevertheless, the method can be taken as an example to apply to any grazing land in the Alps.

The “return to the land”

For several years now Italy has launched a modernization process that is deeply changing its economy and is based on the rural areas. “In the most developed West some clear signs of disurbanization are emerging together with rural rebirth” (Merlo, 2009, 29). A close analysis of the trends in place in the rural areas shows a true and undeniable ascent to the mountains that involves the small rural and mountain urban centers, where new inhabitants are settling (Corrado, 2010; 2013).

According to a study made by the research centre Censis (Censis, 2014)[1] on behalf of the Italian Farmers Confederation, today Italy ranks as the second agricultural economy in Europe following France, with an added value exceeding 30 billion Euros or 15.2% of the overall value in the European Union. In the past three years, 10.1% of entrepreneurs have started an enterprise in the agricultural or agro-industrial sectors. The young have played a special role; since 2010 an upward trend has been recorded for the farms established by young people under the age of 30, particularly in the agro-industrial business where their shares is are 18.3%.

Therefore the regeneration of the agricultural world is mainly due to the young entrepreneurs who, to counteract the economic crisis, have resolved to understand and meet consumers’ new requirements by expanding the borders of farming activities, and opening up new employment opportunities and entrepreneurial strategies that go beyond the mere production of food. This approach is a precious resource for agriculture, now based on the model of an enterprise specialized in the provision of produce, products and services as well, and the managers of which are fully aware of the potential of the new technologies and aim at the international markets. The young are “bearers of innovative ideas” that may range from organic farming to cyber enterprises, from technological lodgings to green building, *etc*. (Battaglini, 2014).

The increase in young farmers means that the average level of education of operators has risen too, with a consequent stronger drive to test new forms of entrepreneurship (Censis, 2014). As a consequence, the traditional production function of agriculture has widened to provide new elements that may meet the current needs about healthy foodstuff, food safety, entertainment and traditions revival; it is now becoming even richer thanks to new and interesting functions: recreational and tourist, food-and-wine, educational, and agro-energy ones (Velazquez, 2001).

The Leg. Decree no. 228/2001[2] has formally acknowledged this “multi-functional” role of agriculture in Italy within the European reform process of the Common Agricultural Policy. The decree celebrates its potential in providing not only products but also services and environmental peculiarities that may open up further economic opportunities for farming enterprises (Bonari et al., 2009).

The Malga-system: cultural and natural heritage.

The Malga-system is a complex multifunctional system of goods and services that has developed over the millennia.

[1] CENSIS, Centro Studi Investimenti Sociali, 2014.

[2] Legislative Decree of May 18, 2001, no. 228, "Orientamento e modernizzazione del settore agricolo, a norma dell'articolo 7 della legge 5 marzo 2001, n. 57", published on the *Gazzetta Ufficiale* no. 137 of June 15, 2001 - Supplemento Ordinario n. 149.

From a socio-cultural point of view, the Malga-system is a true expression of the culture and the society in the Alps, and as such it has been studied by sociologists, ethnologists and anthropologists. Like many realities with strong roots in the past, its foundations lay in the values and regulatory principles that allow people to live together among themselves and with groups of animals, in a specific physical environment, as the result of a "long and troubled process of forming, conservation and active adaptation" (Sibilla, 1991). The literature shows that these systems have been built around agricultural-forestry-stock rearing activities, while the manifold positive features that are closely linked to production activities are lost when such activities fade.

Today, the Malga-system may be studied as examples of Social-Ecological Systems (SES) (Soane et al., 2012) and are the recipients of growing interest. This concept was introduced by Berkes and Folke (Berkes and Folke, 1998) to emphasize the relationship between man and nature, that places man in the natural system itself and in its dynamics, considering relationship where man is an element of the whole system and not an external influence factor. This system has been further defined as "the integration of ecosystems and human society with reciprocal interactions and interdependencies" (Folke et al, 2010). When considering these systems, it is therefore necessary to deal with environmental and socio-economic aspects simultaneously and on an equal footing, highlighting their links and interactions with each other.

This approach is well suited to the more consolidated themes of cultural heritage and cultural landscape, since it expands their scope further (Soane et al, 2012). Cultural landscapes are landscapes deserving further development and protection, since they match the natural and the human dimensions to evolve organically in response to their natural environment (UNESCO, 2008; Council of Europe, 2000). Here too, the Malga-system is one of the most typical examples of cultural landscapes in Europe (Soane et al., 2012; Viazzo, 1989).

Soane et al. (2012) following the approach by Farina (2000), highlight how the different types of cultural landscape have developed as a consequence of the natural initial conditions and of their cultural and socio-economic contexts. The resulting complexity needs to take into consideration the three main domains: environmental, socio-cultural, and economic domains.

The appreciation of value is required to protect this systems and, first and foremost, to promote conservation and development with the adequate economic resources. This is even more topical nowadays, since resources are limited for the Malga-system which, being strongly linked to the economic and production context, is suffering from the drastic change in the economic and social conditions in the European mountains, and in the Italian mountains in particular.

The new types of farming and breeding enterprises

The concept of multifunctionality in agriculture was introduced in 1992 during the World Conference on the Environment and Development in Rio de Janeiro. In 1998 this principle was adopted and defined by the OECD (Organisation for Economic Co-operation and Development); since then a series of reports and working papers have been produced. Its definition is now of the main references in place, so much so that many scholars have reiterated and integrated it (Belletti 2004; Belletti et al. 2003; Brunori et al. 2005; Casini et al., 2004; Henke 2004; Idda et al. 2002; Velàzquez, 2001).

Multi-functional agriculture requires new forms of entrepreneurship able to manage several activities (Eboli, 1995) and to perform new functions that have added to the mere production function of farms (Casini, 2002, Marinelli et al., 1998). It may, therefore, serve as an opportunity to create an added value supporting its economic, social and environmental sustainability.

Following these considerations, several farmers see multifunctionality as an additional source of income, while also many young people are interested in investing in farming. As a consequence, the recent years have witnessed the thriving of enterprises linked to the rural world which have integrated the production business with other functions, notably recreational and tourist services, education, trade and energy generation.

As of now various, albeit few, farms have been assigned new purposes based on the multifunctionality principle.

Table 1 reports some of the most popular new forms of farming and breeding enterprises that integrate the main production function with other secondary functions: farm accommodation for tourists (agritourism or rural tourism), lodging, B&B, educational farms, biomass production, direct sale of produce or breeding products, accommodation offered in several small facilities on the same territory (identified as “Albergo diffuso”; Confalonieri, 2011; Morena et al, 2017), etc.

For each of these, the main structural and organizational characteristics have been collected with a focus on all the requirements that a facility must meet to accommodate tourists/provide services (size, structure, building systems, general organization, management, etc.).

Table 1: Activities related to the farming and breeding enterprise

Good practice examples of the upgrading of Malga-systems

Among the various instances of changeover of abandoned or under-utilized Malga-system, the research has identified some instances that are good practice examples of changeover to facilities with a new identity and renewed functions. It was a hard task finding such examples, and even more identifying the virtuous experiences among these. Nevertheless, this is a mandatory and unavoidable step if we are to deal with the upgrading of such complex and specific assets.

The experiences described below are considered as good practices in terms of integration of farms' typical production function with the new functions focused on the delivery of services to farming and breeding activities. These experiences may serve to guide any future operation to upgrade abandoned or under-utilized facilities.

More specifically, the chosen examples are representative of a specific type of intervention:

- *Networked Grazing Lands:* "Latteria Carden". It is an example of how new functions may be assigned to the grazing lands in the Alps. Their original production function is preserved while making the most of their resources by creating a network of all the Malga-systems that had been operated independently until that time.
- *Tourist facilities:* Cooperative "La Peta". An old 15th-century farmstead has been upgraded to start a farm operating in several fields: cattle breeding and milk coagulation for dairy production, farm accommodation for tourists with catering and lodging, and an educational farm (Figure 1, 2, 3).
- *Territory development centre*: "Kairos Brembo Emotion". This intervention has generated a centre supporting the development of Malga-system by bestowing it with new functions, namely: the tasting and sale of typical products, the organization of some promotional activities like gastronomic walks.
- *Traditional Malga-system and catering* – "Malga Dignas". This is an example of a traditional Malga-system being developed by preserving the breeding activity and adding an accommodation and catering function to it.
- *Small development interventions:* "Alpe Pojala". This small Alpine grazing land had been left abandoned for several years. It has been activated again.

Figure 2, 2, 3: Cooperative "La Peta"

The analysis was made by means of a questionnaire to be integrated, when necessary, with the information collected during a meeting with the managers of the analyzed facilities. The information collected about the case-studies is based on a range of univocal parameters:

- Main function, i.e. the main activity undertaken in the facility;
- Secondary functions related to the main one;
- Type of intervention, which synthetically describes the transformation process in the facility;
- Dimensions of the facility;
- Access in terms of methods and time required to reach the facility;
- Strengths and weaknesses emerged from the critical analysis of the collected information;
- Amount of the investment and source of funds, if any.

The analysis of these case studies has produced some considerations that deserve some attention:

- during the process that redevelops rural properties, the facilities concerned must have an adequate surface and be easy to get access to;
- radical transformation requires external funds;
- a crucial factor is the willpower of a person interested in promoting the local products.

The upgrading of rural real estate

The complex and still unexplored issue of the upgrading of abandoned Malga-systems was developed with a pragmatic approach. This analyzes the Alpine pasturage system from the point of view of real-estate investors, leaving aside the more traditional standpoint of farm-forestry-breeding operators.

The facilities built on the Malga-systems are public properties with some constraints, and represent non-economic values that must be adequately taken into consideration; on the other hand, these buildings form a building stock that is worth preserving (if and when feasible) and upgrading like any other asset.

To define the effective methods to upgrade rural buildings we need to refer to the well-rooted practices applied by investors in the traditional real estate market, i.e. that of urban buildings.

The upgrading process in the real estate market

At a certain stage of its lifecycle, every building has the extraordinary power of generating a market value by means of a well-designed upgrading process. “The design of a building upgrading process is aimed at identifying and, subsequently, at calculating the unexpressed share of property value, ~~or~~ the value share that may be identified only by fully perceiving the characteristics and potential of the specific asset as against the market demand within that specific context” (Manfredi and Tronconi, 2012).

According to this principle, we may consider applying the methods of the large real-estate operators to the feasibility study of a rural building’s upgrading intervention, while adequately considering its specificities. Being property assets, these buildings too may serve as an investment for some subjects interested in operating in the mountains: their actual potential depends upon the activities that these buildings and their relevant external areas may host in the future.

Typically, any property development project starts from a feasibility study that checks whether the project may be implemented in economic, technical and organizational terms. The feasibility study reports, in an organic manner, the strategic targets of a property development or upgrading initiative. It is a pre-requisite to steer the complex set of decisions about its implementation (Mangiarotti and Tronconi, 2010).

More specifically, the feasibility study allows exerting the necessary discretionary evaluation of the project because: 1) it provides the decision-maker with useful information to generate an autonomous opinion about the goodness of the original idea and the expediency of the different carrying-out possibilities; 2) it is an objective assessment of the different interventions analyzed in the study

(quantitative analyses, mathematical models); 3) it is able to isolate the specific issues that require a separate, political decision.

This form of project analysis allows turning the starting project-idea into a specific intervention hypothesis, by identifying and comparing two or several alternative solutions and collecting all the information required to support the decision-making process.

This process stems from the investor's expectations and subsequently explores the most suitable project solutions in technological-performance-management terms, concerning the specific analysis of the territory and market environment (supply & demand for that specific type of property).

The procedure required to perform a feasibility study about the development of an existing rural property is as follows:

1 ***Territory and socio-economic framework:*** It analyses the environmental, planning and socio-economic features of the area to be developed, as well as the real estate market and it includes:

   a. Analysis of the environmental and town-planning framework of the area where the property rises: chorography, extract from the municipal land use plan, planning-regulations compatibility audit, etc..

   b. Socio-economic analysis of the municipalities bordering with the area where the property rises: study of the socio-economic impact with reference to the existing demographic, manufacturing and trading context.

   c. Analysis of the real estate market: the types of buildings in the area are analyzed together with the real estate market scenarios in terms of the potential supply and demand – both current and future; with the real estate market trend, identification and analysis of the process that generates the comparables (if present), or other examples of rural building upgrading implemented in the area under examination.

2 ***Feasibility study*****.** The feasibility study analyzes project alternatives. It starts by defining a matrix for the project alternatives that considers the technological, organizational, and financial choices of the intervention and also includes the environmental impact analysis related to the preferred project solution and to its feasible alternatives (a general analysis of the geological, geotechnical, hydraulic, and hydrogeological features that are derived from the existing maps or from previous interventions in the area; listing of the environmental, historical, archeological, and landscape limitations on the area or on the facilities to be upgraded). The feasibility study is designed to check whether, and to which extent, the alternative projects are feasible in real terms, financially sustainable, consistent with the laws in force, and compatible with the technical and institutional skills of the investor, who has to guarantee the making of the intervention and its subsequent operation. The feasibility of an alternative solution is divided into three macro-categories:

   a) *Technical feasibility*, or an opinion about the technical-engineering feasibility of the individual alternatives thus identified. When the projects are about the reuse of existing buildings with a change in the destination of use, this stage is of material importance; it requires precise information about the technical features of the building to recover. It is necessary since it provides useful indications for the subsequent design stage; the analysis model proposed in this paper applies exactly to this stage.

b) *Economic-financial feasibility* checks the financial sustainability of the intervention (Cash flow analysis) and the financial profitability of same (Discounted Cash Flow Analysis). This stage includes the finding of the project financing sources (Project Financing, government funds, European Union, etc.), as well as the timing of the incoming and outgoing cash flows related to the project.

c) *Management-administrative feasibility*, or the definition of the various aspects concerning the project's bureaucratic and administrative process, starting from the identification of the project management model during the implementation stage (project planning and sharing), of the management model for the operation stage, to end up with the identification of the obstacles that might emerge during the investment performance and, hence, the possible remedies.

3 ***Definition of the macro-project for the chosen alternative*.** Once the feasibility study is done, the best alternative is identified among the analyzed ones followed by identification of the Highest and Best Use of the building under examination. The master plan is made upon this changeover hypothesis. This consists in a meta-project that includes a description of the intervention's functional and architectural mix, as well as a general plan of the times and costs to implement the project.

The analysis model to detect the highest and best use of the Malga-systems in the Orobie Bergamasche Park

The analysis model herein proposed meets the requirements of the investors who are potentially interested in changing existing abandoned or under-utilized rural buildings, since it is a suitable tool that supports the identification of the most profitable function.

This model starts by analyzing some technological and functional parameters (input) in the rural buildings under examination, in order to assess the technical feasibility of a changeover process. These buildings' Highest and Best Use is identified by analyzing some pre-defined re-functionalization opportunities (farm accommodation for tourists, lodging, accommodation offered in several small facilities on the same territory, B&B, breeding activity and sale of its relevant products, or a building serving other Alpine refuges).

The input parameters asked for by the system are easy to find and relate to the following information categories:

- Access to the property: for pedestrians, by bicycle, by tractor and similar vehicles, or driveway.
- Architectural features of the property: number of buildings and gross floor area of each Alpine refuge/mountain cottage; number of levels/floors in each building; floor area (i.e. the volume occupied by the Alpine refuge/mountain cottage).
- Property networking ability: its ability to generate relations with other buildings and/or with interest points on the territory.
- Property systems and services: presence/absence of aqueduct, sewage system, toilets, hot water, telephone, Internet, etc.

More specifically, the analysis model to detect the highest and best use includes two steps:

- A synthetic Abacus of the best opportunities to changeover the Malga-systems - called *"the Abacus of opportunities"* - creates a relationship between the various changeover opportunities and a range of parameters related to various aspects (location, infrastructure, type, size, etc.) and highlights the necessary/unnecessary conditions for the technical feasibility of the intervention.

- An analysis model to identify the highest and best use of Malga-systems, hereinafter called *"HBU Model"*, targeted at checking the technical feasibility of the upgrading of a specific property by checking the presence (or absence) of the parameters in the Abacus of opportunities.

The Abacus of opportunities

The Abacus of opportunities is a matrix that establishes a relationship among the various investment opportunities and the features of the buildings, grouped as parameters and sub-parameters.

By definition, it stems from the definition of the main opportunities for intervention that are embodied by the following activities: farm accommodation for tourists, lodging, accommodation offered in several small facilities on the same territory, Bed & Breakfast, places for the production of products based on the breeding of farm animals, or a building serving other Alpine refuges. These have been derived from the experiences of multifunctional farming, from the analysis of the best practices and from some examples of refunctionalization by creating accommodation offered in several small facilities on the same territory (*Albergo diffuso*): all of these, though not being strictly typical of the mountains, might be proposed in this setting as well.

Afterwards, some parameters have been defined, which are considered of primary importance when assessing the likely new destination of use of a property. These parameters have been grouped into 5 classes (access, primary functions, other functions, networking, systems and services) and a measurement unit has been assigned to each.

Each parameter has been given a different weight depending on its relevance for the start-up of the identified opportunities (Table 2). The parameter is defined as a "necessary condition" (weight "10") when its presence is essential to start an activity, or when its absence makes the opportunity unfeasible. The parameter is defined "a non-necessary but desirable condition" (weight "5") when its presence, though not being absolutely necessary, might form an added value for the activity. The parameter is defined "an unnecessary condition" (weight "0") when its presence has no incidence at all on the start-up of a new activity.

Table 2: The Abacus of opportunities

The HBU Model

Stemming from the Abacus of opportunities, the HBU Model offers the possibility to identify the highest and best use of the Malga-system (grazing lands in the Alps) that are under examination in terms of the intervention's technical feasibility.

For each Malga-system under examination, the model must be filled in by checking the presence or absence of each parameter. There are three filling-in possibilities, each having a different score: Score

"1": the parameter is present; Score "0.5": the parameter is not present but may be created; Score "0": the parameter is not present, and it cannot be created at all.

The analysis model is user-friendly for the stakeholder, who is simply asked to fill in the column "Presence of the parameter" in the HBU Model. The score is automatically weighed by the model according to the weights in the Abacus of opportunities.

The parameters defined as a "necessary condition" are analyzed first; following this operation, the model may then identify the opportunities that "may be realized" or "cannot be realized". Once the opportunities that "cannot be realized" are discarded, the stakeholder may identify those that "may be realized" by checking the presence, if any, of the parameters related to a "non-necessary but desirable condition". Once this task is over, the model shall point to the opportunity with the highest score, or the Highest and Best Use of the property.

The analysis of all the recorded results for each building on a Malga-system provides all the information required to generate the system's highest and best use (Table 3).

Table 3: Definition of the highest and best use of the Malga-system

Applying the model to the Alpine grazing land in the Orobie Bergamasche Park

The Orobie Bergamasche Park stretches over an area of 70,000 hectares under the administration of 43 municipalities: 12 of these municipalities are located in Seriana Superiore Valley; 27 in Brembana Valley; and 4 in Di Scalve Valley. The territory is mainly covered with woods and grassland of various types, while the urbanized part is smaller with 43,888 inhabitants and an average density of 55 in/km^2 (as against 406.7 in/km^2 in the province of Bergamo and 417.9 in/km^2 in Lombardy).

The Malga-systems in the Orobie Bergamasche Park

In the light of the results of the first round of the research The A.R.C.OROBIE Project - Alpeggi: a cultural resource for the OROBIE Alps in the province of Bergamo, a census has been generated together with a collection of the architectural features of the buildings and, more generally, of the Malga-systems overall. This made it possible to draw a detailed picture of the current situation.

The buildings are in an adequate state of maintenance mostly. Following some recent interventions, these buildings are now compliant with acceptable living and working standards. The main maintenance issues are linked to moisture seepage, due to the unsatisfactory waterproofing of the facilities and their roofing.

From the functional viewpoint, these public properties are mostly abandoned, although some private entrepreneurship initiatives have expressed some interest recently. At present these facilities, which have undergone a functional reuse, are mostly devoted to grazing uses, while dairy production has been fully discontinued (despite cheese-making being a typical qualitative, economic and historical-cultural product of the mountains of Bergamo).

The buildings are extremely simple: their positioning within the grazing area is simple indeed, as are the functional and production areas, usually arranged as a single building/volume.

18 Malga-systems pertain to the area under examination, and fall under the management of 7 different municipalities. All the listed systems consist of grazing land plus one or more Alpine refuges with different functions of use.

Application of the HBU model to a case study: the Former Miners' House

The Former Miners' House is one of the 10 Alpine refuges of the Alpeggio Polzone, in the Municipality of Colere (Figure 4, 5).

Figure 4, 5: The Former Miners' House

Currently, this asset is a storehouse/lodging, and its maintenance condition is poor. Despite this, its architectural features, its access path and the availability of all the main services and systems make this a property that can be easily changed over to other functions.

Based on the information collected about the characteristics of this hut, the HBU model was filled in to generate the best investment opportunities with their feasibility, the percentage of the hut's correspondence with the requirements/parameters required for the various functions, the number and types of redevelopment actions required to change the function of the asset (Table 4).

Table 4: Results of the HBU analysis performed on the Former Miners' House

Summing up, the Former Miners' House might be suitable for four new functions of use following the technical feasibility study of the refunctionalization project. The investor may then choose the most convenient opportunity on the basis of the information provided by the model and by other (economic-financial and management-administrative) analyses made within the feasibility study.

The application of the model to all the properties in the Park

The model has been applied to all the Malga-systems in the Orobie Bergamasche Park in order to test its actual applicability and validity. Its application has given rise to three different scenarios, which have been simplified as follows:

- *Alpine grazing land that cannot be developed*: this group includes those buildings that, because of their characteristics, do not possess the requisites to take on a different use than mere pasturage.
- *Alpine grazing land for production purposes only*: this group includes those buildings that, because of their characteristics, have the requisites to host some production activity as well as pasturage.

– *Alpine grazing land with a potential for development*: this group includes those buildings that, because of their characteristics, possess the prerequisites to be changed over to a new use, other than production only (by way of example, accommodation, catering, etc.).

The analysis showed that:

- 12% of the analyzed Malga-systems cannot be developed at all;
- 38% might still be used for mere production purposes;
- 50% of the analyzed buildings have some features that offer some development opportunities.

More specifically, a high development potential was observed in the systems Di Genie, Del Pastore, Vecchio-Albani, Miners' house (Colere), Del Dosso (Gromo), Bricconi (Oltressenda alta), Flesio (Valbondione), Moje (Vedeseta); while a low potential for development was noted for the systems Della Guaita, Polveriera Piccola, Polveriera Grande (Colere), Avert (Gromo), Alben and Regaduro (Taleggio), Torracchio and Toregella (Valnegra), Piazzo (Vedeseta).

Among the most likely uses there was the chance to open a Bed and Breakfast, or a Refuge, or to provide services to other buildings. In one case only did the building prove suitable for transformation into a farm accommodation for tourists (*Agritourism*). None of the Malga-systems under examination has the necessary characteristics to serve as *Albergo diffuso*, or accommodation offered in several small facilities on the same territory.

Conclusions

The HBU model emerges as an analysis tool worth applying before any strategy is designed to develop one or more rural buildings. Within the set of the complex stages of the feasibility study, this tool applies to technical feasibility since it supports the definition of a new destination of use for those projects that focus on the reuse of existing facilities. It is, therefore, an analysis model for the Alpine pasturage system that operates on two pivots:

- the standpoint of the real estate investor, or of the subject who shall invest in the asset changeover to gain a profit from its subsequent use;
- the standpoint of public administrators, who can take decisions on the redevelopment of such assets on an informed and rational basis, going beyond mere economic considerations.

Together with more classical analysis tools, this model allows defining a framework of the potential use of the Malga-systems and of their change of function, if possible, by identifying the highest and best use of such an asset.

In some cases the system calculates that a specific facility is not suitable for the reuse of its traditional production function, or for a changeover; the reuse, if any, and subsequent maintenance of these facilities must therefore be based on non-economic considerations (historical, cultural, landscape, environmental reasons or others) and specific resources must be found for their future management.

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