

Materiality, meanings, and competences for historic rural buildings: a social practice approach for engaging local communities in energy transition.

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Abstract. Natural and cultural heritage are important resources for engaging local communities in the promotion of a sustainable future, both for achieving energy targets and repopulating rural areas. Public engagement is an important factor particularly to preserve historic rural buildings and its landscapes in Alpine communities, where people build up an emotional relationship with cultural and natural heritage. The study, realised in the framework of the Interreg ITA-AUT SHELTER project, aims at defining a new use for an abandoned historical building by the engagement of the local community and, according to the new use, at defining insights for elaborating the energy retrofit balancing preservation and sustainability issues. The study also identifies the relevant elements to be available within a local community to ensure a long-lasting use and management of a public retrofitted historical building. Among these elements and using the sociological lens, we investigate: the materiality of the historic building and its landscape; the community and social meanings attributed to the building and the landscape; and the heritage management competences of the local community to manage and maintain the building in the next future. All these elements can be translated into a social practice of building and land management that avoids a second abandonment. Social science-based interviews are conducted in Valbrenta (IT), using content analysis.

Keywords – Heritage preservation; Sustainability; Social sciences; Local community engagement; Social practice.

1. Introduction

The European Green Deal (COM/2019/640) for Europe (EU) and its citizens aims at accelerating the process for achieving the climate and energy targets through the carbon neutrality by 2050. Similarly, the Paris Agreement [1] boosts the cooperative approaches for promoting the reduction of greenhouse gas emissions, sustainable development, climate mitigation and adaptation, and environmental integrity in the built environment and landscape. The three pillars of sustainability are strongly connected in this document for improving the resilience: Environment converged with care for natural and built environment, Economy with sustainable growth, and Society with people wellbeing, social responsibility, and commitment of citizens for the sustainable development [2]. Collective awareness and public engagement are important especially for heritage towns and buildings [3], as they can help people to better understand their living context. The reactivation process of local communities that moves around heritage particularly can contribute to achieve the United Nations (UN) Sustainable Development Goals (SDGs), guaranteeing affordable and clean energy for sustainable communities. Preservation activities play a crucial role for safeguarding, enhancing, and transmitting the memory of a community and assist the social development of a nation, ensuring its accessibility to present and future generations. On the contrary, damage and abandonment cause the progressive loss of artefacts, related to materiality, meanings and significance as well as social, economic, and cultural values. This

is true particularly on historic rural buildings and natural landscapes. It is not uncommon for civic associations to work towards saving an abandoned historic building. But the common desire to preserve cultural heritage does not mean that there is also an agreement about the HOW and the WHY.

A positive social practice for using, managing, and maintaining a retrofitted historical building could support the preservation of the cultural heritage, repopulating rural areas. Social practice is a habit recognized and reproduced by a local community and its individuals [4]. When there is an abandoned building within a cultural heritage landscape, **a new social practice for the use, management, and maintenance should be created for ensuring a positive and long-lasting-term use**. But which are the elements for creating and reproducing a positive social practice within a community and how an energy concept for retrofit can support this new social practice?

This study identifies a **new and shared use of an abandoned building** within a cultural heritage context **by the engagement of the local community**, for addressing an effective retrofit of the building which will avoid a second abandonment in the near future. Behind the mere declaration and shared vision on the future use of the building, the analysis can go in-depth assessing the elements of two relevant interlinked processes. First, we investigate the elements needed for the reactivation of the local community in order to make it prepared to preserve the cultural heritage. Second, we study the presence within local community of some elements needed to the development of a positive and long-lasting-term social practice for historic building management and maintenance.

Using a **social practice approach** [4], the focus of the analysis is on the materiality available in the landscape and concerning the building to be retrofitted. This **materiality** – physical and infrastructural context, technologies, natural environment – crosses **meanings** attributed to them by the local community. Meanings can be divided or explained as personal and familiar identity, individual identity and self-definition, community identity, economic, and ecological meanings [5, 6] attributed to the building and the landscape. These meanings declare – all together – the interest and the attachment of the local community in concretely preserving the building and the landscape. For developing a new social practice for the management and the maintenance of the retrofitted building, the availability of **competences** within the local community to maintain and manage the retrofitted building in future are also fundamental.

The results of this study will support the elaboration of an energy concept for building retrofit. In a long-term perspective, the engagement of people on sustainable energy use from the beginning of retrofit planning over the active volunteer work on the construction site, ensures the maintenance and the management of the local environment in a more conscious way. The emphasis on regular management and vigilance, not only on energy retrofit measures, support the preservation of the heritage buildings and landscapes, the prevention of further damage, also minimizing the maintenances costs and improving the consciousness of citizens on heritage values and significance.

This study applies a social science approach, using a qualitative interview method [7], a case study method, and an analytical framework based on rural sociology and social practice approach [4] to a historic building, placed in Valbrenta (North-Eastern Italy). The case study is part of the Interreg ITA-AUT SHELTER project, which supplies the resources to retrofit an abandoned building. What is new is that proven social science tools are being used in a targeted manner and the view is being broadened from unique cultural-historical, economic, or ecological values to a negotiation process with a holistic sustainable concept.

2. Methods

This study uses several methods from the sociological discipline. Several research steps have been carried out within a case study:

Analysis of the context and stakeholder map [8]

This part of analysis includes the reading of the scientific material already available about the case study coming from past project (books, short films, articles, architectural projects, academic workshop reports). A stakeholder analysis defines who is part of the local community. For key stakeholders considering their level of power within the local community, their knowledge of the territory, their relevance within the community, and their need or motivation to express their opinion in the project are defined. On the basis of the above criteria, 25 stakeholders were identified and eight were interviewed.

In this step, we also defined the main relationships among stakeholders considering potential conflicts and identifying groups, which were excluded by some reasons [9].

Face-to-face interviews [7]

An interview track consisting in six open questions was used. The interview was conducted *face to face* to eight persons. Being a small community and being a special period because of the Covid-19, for the interviews we were looking for persons who covered one or more of our stakeholder selection criteria. Almost all of the people indicated were already present in our stakeholder map.

The interviews were analyzed using the illustrative and thematic technique that consists in making a selective use of the words expressed by the interviewee using quotations and transcripts of the interviews and in identifying themes and sub-themes [7]. The interviews were analyzed using the Nvivo software.

Workshops

The workshops aim at defining a shared vision of the future use by the key stakeholders of the local community. These workshops are not organised yet and will consist in online events with the participation of approximately five stakeholders for each.

2.1. Analytical framework

In particular, the interviews were analyzed by bringing out three themes: the social practice to manage and maintain the landscape, the place meanings, and the ideas on the future uses of the building.

Aimed at understanding the interaction among the local community and a practice of new use and management of the building and the landscape, this study interprets the collected data using the social practice approach [4]. Social practice is defined as a routinized way of doing or talking, common for everyone engaged in a community and recognized as a “normal” action or behavior [10, 4, 11]. The way to manage the landscape and the future way to manage the building can be recognized as a practice, shaped by the meanings attributed to the landscape and the building, the available competences on how to manage the building and the landscape, and the materiality available in the landscape – concerning the building stock, terraces, available renewable resources, etc. For understanding how the building could be used and managed in future, it is relevant to investigate the previous elements, investigating in-depths some elements of the meanings.

Concerning the meanings attributed to a place, the **significant place** concept refers to the interpretations that individuals develop in reference to a territory of belonging [5]. The different meanings attributed to a place are the result of relationships that individuals create with specific spaces [5, 12] and materiality [4]. Each individual or group, on the basis of their own experiences, establishes a special and unique link with the place, which in turn affects actions and behaviors [13]. Knowing the meanings of this place considered by the people is relevant to analyze possible interactions of the population with the place and the retrofitted historic building, especially concerning its care and use.

The results of the analysis of all the contents collected through interviews and workshops will inform the definition of an energy concept for the retrofit of the historic building, which is described in the following paragraphs.

2.2. Case study

The municipality of Valbrenta has about 4.993 inhabitants. The people here are particularly connected to their region, which is reflected in numerous voluntary work and civic associations. This strong presence on the territory guarantees social and human resources to manage and maintain the landscape, the local resources, and the cultural heritage. The territory is still marked by the numerous legacies of the tobacco industry and its infrastructure that was established here. Relevant elements in Valbrenta are terraces, retaining walls in dry construction (*muri a secco*), mule tracks, and historic buildings. The tobacco cultivation dates back to 1763 [14], but the trails or mule tracks to move around the terraces – “*mulattiere*” – were also built and used during the Second World War. The buildings, nowadays recognisable as ruins in the verticality of the hill, were the residences of the tobacco farmers.

Until about 50 years ago, the population survived thanks to a large area dedicated to the cultivation of tobacco. The following years were characterized by a strong emigration to neighbouring centres looking for work; this in some cases led to abandon. Today the entire hill is uninhabited, the only terraces

that are still cared for are those at the bottom of the valley [14]. Terraces and mule tracks are currently in a good condition due to the commitment and the activities of the local associations.

Up to the hill, in the Col22ore area, one of the abandoned residences of the tobacco farmers is going to be retrofitted (Figure 1) in order to be used, managed, and maintained by the local community. The detached building is built in natural stone walls and in a state of serious disrepair. Originally, it was used for both, agricultural and residential purpose. Typically, there was a cellar as stable, ground floor and 1st floor for residential use and the roof for drying tobacco.

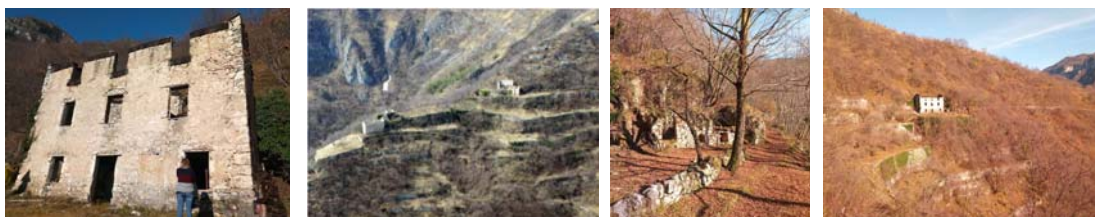


Figure 1. SHELTER Case study building on Col22ore near Valbrenta (IT).

3. Results and discussion

There is the need to seek funding to fully renovate the building, which will now only be partially renovated as part of the SHELTER project. Local community stakeholders stressed on the need to create a building ready for incremental renovations over time, due to new uses which will be applied in future when new resources will be available. To meet this need, the renovation concept can be applied in accordance with the so-called “step-by-step” or “no-regret” method, and the energy concept can itself be designed to allow incremental interventions over time.

The following table includes information - deriving from the analysis of interviews - relevant to develop an energy concept for the building retrofit.

Parameter	Information deriving from the analysis based on social science approach
About the past:	
Original building purpose	The building was a residence of tobacco farmers and their families. This kind of buildings is tall for permitting to drying tobacco on the top floor.
About the future:	
Building use	The uses are divided into three incremental steps over time and related energy needs. (1) Building will be a daily and summer support for association, school, and university activities. Needs: Electricity for household and office appliances; electricity for the lighting; thermal energy for cooking and a first heating system. (2) Caretaker living in the building during the summer, with the possibility to create a social farm based on traditional cultivations and animals: Electricity for some more household appliances (e.g., fridge) and the lighting during the night; continuous need in the summer for thermal energy for cooking and a first heating system; heating system and electricity for purified and hot rainwater; energy and water for cultivation and animal care activities. (3) Touristic or academic structure hosting several people for middle-long periods: heating and thermal insulation, biomass heating system, energy for purified and hot water for more than one person. In the third step, the needs must be calculated on a wider amount of people visiting and sleeping in the building.
Periods of use	In the first step, the building will be used during the day and the summer. In the following steps, the building will be used all day during the summer season.
Number of users	In the first step, many people (volunteers and students) will participate to activities on the Col22ore only partially using the building. The caretaker (one person or one family) will live in the building. For the third step, a business model or further thoughts should be made for understanding the number of tourists or visitors will be hosted by the structure.
Ownership	This is a public building, owned by the Valbrenta municipality and formally managed by associations. From 2019 to 2029, the association in charge is ‘Adotta un terrazzamento’.
Heated rooms	First step: kitchen. Second step: kitchen, bathroom, bedroom. Third step: kitchen, bathroom, several bedrooms.
About the context in which the building is embedded:	

Cultural landscape	Alpine space, arid area, terraces for tobacco cultivation and big and high residential buildings to concentrate residents (for heating and resource saving reasons) and dry tobacco. More recently, the cultural landscape is characterized by a recovery and safeguard of the terraces. This activity is attracting many people from other Italian regions to live in Valbrenta.
Geographical situation	Narrow valley with little sunshine. Col22ore is located at the top of the hill seen from the valley at middle-altitude, in a wide, very sunny, windy area with terraces and woods.
Context - surrounding	Rural area, terraces for tobacco cultivation and wood forests, no supply of electricity and no supply of running water, no easy access, and no access with car.
Extreme weather events	The most famous extreme weather event was the 'Vaia' storm in the Autumn 2018, characterized by hydraulic risk and wind destroying parts of the surrounding forests. Climate change and higher temperatures could permit to have some cultivations at upper hill differently from the past.
Cultural, social, and natural resources to retrofit and maintain the building:	
Meanings attributed to the building and the landscape as part of the heritage significance	The attachment to the Col22ore place is very high within the local community. Meanings can be attributed both to the family and individual and the community components.
Local and renewable resources for energy production	The preference of local community stakeholders is clearly for the wood (heating system only based on the wood and using "classical" stoves) and the sun (to produce electricity). If further energy needs are recognized, the sun could be used also for producing thermal energy. Batteries are needed for the electricity during the night. The wind was a fundamental resource for tobacco drying and has shaped the houses of the place, but no studies on the wind potential to produce renewable energy on Col22ore has been made by now.
Local materials for the building retrofit	Sedime (natural binding agent) was used to build in the past. Trees felled by the storm 'Vaia' provide plenty of timber for renovation.
Local community competences on how to manage and maintain the retrofitted building	Local community stakeholders have cultivated many skills for land and building maintenance over the years, thanks to their passion and interactions with associations, including international ones, dealing with terraced landscapes. There is also a huge competence on how to promote good relationships among volunteers of associations (even if some conflicts among people are registered). People and associations also have the manual skills to contribute to renovation work.

Table 1 – Insights for the elaboration of an energy concept, deriving from the social science analysis of materiality, meanings, and competences available to the local community.

The information included in the table will be integrated with the results of workshops. The updated information will be used to define an energy concept to retrofit the building in Col22ore, allowing to base the retrofit planning precisely on the expectations of the community and to apply tailored energy retrofit measures to the building according to the needs of the future users.

3.1. A focus on materiality, competences, and meanings

Local community has the availability of several resources in terms of materiality, meanings, and competences to be used to retrofit, manage, and maintain the historical building and the landscape.

Relevant materiality available in the landscape

The case study in Valbrenta is characterized by a relevant presence of terraces in the cultural heritage landscape, which were used in the past for both hydraulic protection and tobacco cultivation. This important cultural heritage is currently attracting people from other Italian regions to live here and incrementing human and social resources of the local community.

The presence of abounded buildings in the landscape and the availability of natural resources to produce renewable energies and retrofit the building create a potential intervention to reinvest in this rural landscape and it is a resource for reinforcing the local community. However, the absence of services and communication ways (such as streets) weakens this process. It is also not taken for granted that the local community will be able to maintain proactive use, management, and maintenance of the building in the long term. This depends on the relationships within the local community, the meanings attributed to the landscape by the local community, and the competences of the local community stakeholders to both cultivate positive local relationships and maintain the building.

Meanings attributed to the building and the landscape

The meanings attributed to the building and the cultural heritage landscape by the interviewed stakeholders are several and all are relevant to anticipate the future social practice to maintain the retrofitted historical building and the landscape.

Considering the **self-expression**, which refers to the experience of the interviewee who links positive or negative experiences in a place to an evaluation of that territory, the Col22ore is relevant. The people interviewed show to have a lot of past memories connected to the Col22ore being about life as a child or a young person. These memories are mostly positive and connected with the natural resources. Integrating the self-expression, the **individual identity** represents the potential attributed to a place in relation to its capacity to shape the personal identity. Col22ore and the wider Valbrenta valley represent a very important aspect in the formation of the individual identity of the inhabitants, whether they were born in the valley or moved there afterwards. People having a strong attachment to the place contributes and lives differently the landscape: someone lives there, others come during the summer or the weekends, and contributes in different ways and levels to the **maintenance of the territory**.

“Ne ho tanti di bei ricordi, ne ho tanti” (I have so many good memories, I have so many) [I9]

“Uno dei più bel ricordi che ho è un ricordo romantico è di una gita che poi sarebbe diventata mia moglie” (One of the best memories I have is a romantic ones of a visit there with a girl who later became my wife) [I3]

“Perché noi da bambini, quando eravamo grandi così, andavamo nei campi di tabacco alle 5 del mattino. Ci mettevano sui sacchi di tabacco a dormire e le nostre madri lavoravano il tabacco” [I7] (When we were children, we used to go to the tobacco fields at 5 o'clock in the morning. They would put us on tobacco sacks to sleep and our mothers would process the tobacco)

“L'idea di tornare qui e fare qualcosa per la mia terra” [I5] (The idea of coming back here and doing something for my homeland)

Those born in the valley have sometimes returned to live there (after short or middle emigration periods) in order to protect the cultural heritage. Also, the new inhabitants have a

strong link with the landscape, due to the presence and the interest into the terraces and the surrounding landscape. However, from another point of view it emerges how this connection with the landscape could be lost with time, especially with the new generations because of the lack of

“L'idea è proprio ... di fare un po una casa bene comune [...] creare un luogo ovviamente che sia gestito e che possa essere utilizzato da chi ne ha la necessità” [I5] (The idea is just that... to make a bit of a common good house [...] to create a place that is obviously managed and can be used by those who need it)

past memories related to this place. In some cases, the people interviewed returned to live in this place because of lived experiences with their family in these areas. Some ties grew day by day because of the time spent with the family on the Col22ore. Therefore, we can also attribute a strong **family identity** in Col22ore, at least for people who were born in the valley and have memories about the last poorest decades (60s – 70s). People recognize the ability of Col22ore to represent part of the identity of the individual who resides in it and they feel to be represented by this place that must be protected and maintained (**self-efficacy identity**).

“L'idea è quella proprio di sperimentare il più possibile [colture tradizionali] per poter poi magari trovare dei giovani per avviare la loro piccola azienda agricola. Questa era partire per vedere come è la produzione quali, sono le problematiche per poi dirle ai giovani che vogliono cominciare questa avventura” [I5] (The idea is just to experiment as much as possible [traditional crops] in order to maybe find young people to start their own small farm. This was to start out to see what production is like, what the problems are and then tell them to the young people who want to start this adventure)

Unlike what is usual in contemporary society, there is also a **community identity** in Valbrenta. Community identity allows the individual to broaden their individual and family identity by incorporating it into the rest of a community with which it is shared a tradition and a culture. The community relationships and ties are strong here, at least for the people who is active in the associations of the local community and Col22ore is recognized as a reference place for the local community. This place was for a long time the economic life of the nearby village, Valstagna. Today, Col22ore has not an **economic meaning** and a further discussion on how to make new revenues should be stimulated within the local community, for having a more practical path for a long-lasting use of the public historical building. There are ideas (Table 1), but they should be transformed into practical activities. Finally, the interviewed stakeholders recognize a relevant **ecological meaning** concerning the

characteristic of a sunny place (in a little sunny valley), where wild animals are present, and with relevant opportunities to farm traditional crops.

“Sai perché si chiama Col22ore? Perché il sole c’è per 10 ore di sole” [11] “là c’è il sole fino a 2 ore prima del tramonto” [15] (Do you know why it is called Col22ore? Because the sun is there for 10 hours [11], the sun is there until 2 hours before sunset)

All these meanings represent a resource to be used for proactively maintaining the historical building after its retrofit. They also mean that, given the strong meanings attributed by people into this place, there is a strong need to consider **the local needs in designing the retrofit of the building and in attributing the right and the management and maintenance responsibility to several stakeholders embedded in the local community**. Local administrations have for years considered these types of places included as a source of expense and bureaucratic and administrative problems, but in recent years have recognised the economic and tourism potential of these places.

Competences of local community to manage and maintain the building

Once the meanings attributed to the building and the landscape are declared, the new social practice for the use, management, and maintenance of a retrofitted historical building also needs competences. These competences are an intertwining of historical [15] and current, local and transnational [16], scientific and popular issues. The case of Valbrenta is well studied, as there is a special interest from a local, national, and international network on the particularity of terrace systems for cultivation. The huge presence of different kinds of competences and studies coming from different universities created an excellent basis to promote a persistent management and maintenance system. The competences acquired by social actors could promote a shared management and maintenance system also for the building to be renovated and could contribute to the retrofit works themselves. The competences available to the local community concern the production, protection, and environmental-natural functions to be reproduced [17]. There is also a function related to the strengthening and the reproduction of the local community and this community seems to have a wide knowledge on how to create and maintain active its components. However, there are some competences that are not fully developed, such as the knowledge needed to develop an economic activity based on traditional cultivation or tourism. In fact, economic ideas on how to proceed in this area over the years are not clear.

Considering the materiality (building, terraces, etc), the meanings attributed to the place, and the competences available to reproduce a new use and management of the building and the landscape, it is possible to define ad hoc energy concepts, which will support the opportunity to maintain the retrofitted building in a long term, integrating it in the cultural heritage landscape.

4. Conclusions

This paper reports the results of a social science analysis of cultural, social, and physical elements available to a local community for ensuring the creation of positive and long-lasting use, management, and maintenance of retrofitted public historical building. In this study, the main considered aspects are related to the materiality and the competences available in the local community and heritage landscape. Furthermore, the meanings attributed by the local community to the building and the landscape constitute a strong resource for a long-lasting management of retrofitted historical building. These aspects are here considered by engaging the local community in the definition of the future uses of an historical building.

The results of the social study will be incorporated into an energy retrofit planning and thus guarantee a sustainable use of the building over time. Conclusions that can be drawn at this stage are (i) to restore the building according to the step-by-step principle, (ii) to strive for close cooperation with the population not only during the planning phase but also during the execution phase (the retrofit concept should allow for volunteer work on the construction site) and to use local resources as much as possible, both regarding construction materials and energy sources on-site. The renovation solutions developed will be tailored to the future use(s) of the building and thus make precise use of the resources needed while preserving at the same time the identity of the historic building.

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