How to revitalise a historic district: A stakeholders-oriented assessment framework of adaptive reuse

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Abstract This research proposes an application of a MultiCriteria Decision Analysis (MCDA) in the adaptive reuse framework, which is able to structure the complex decision process required for the effective reuse of an historic district. Nowadays, many cities are facing an economic, financial, social and urban decline. This is particularly true when thinking about historic districts, which are usually characterized by high unique cultural values but, at the same time, show difficult characteristics in terms of comfort and security. Accordingly, the planning rules to be applied to the historic districts need to be re-written overcoming the traditional logics. The proposed adaptive reuse framework deals with the application of the Macbeth method. To properly test, develop and illustrate the framework we conducted an experimental validation through a case study: the urban regeneration of an historical district in Biella (Italy) starting from the adaptive reuse of an historic building.

Keywords: Adaptive reuse; MCDA; Macbeth; Cohousing; Historic district.

1. Introduction

"The days of easy growth in the world's cities are over": this was the title of McKinsey Global Institute Report in October 2016, showing that there is an expectation of a population decline (from 2015 to 2025) equal to 17 percent of large cities in developed regions and to 8 percent of all large cities. The main reasons of the phenomenon are two: i) the aging and falling fertility rate; ii) the waning rural to urban migration.

In a more fragmented urban landscape, we are seeing not only stagnating towns, but also shrinking and abandoned cities. This phenomenon in Europe concerns some Countries more than others (i.e. Spain, Italy and Germany), as shown in Fig. 1. Those abandoned urban areas are often historic sites with an intrinsic and significant

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identity. According to ISTAT (2017) in Italy there are as many as 6000 abandoned villages.

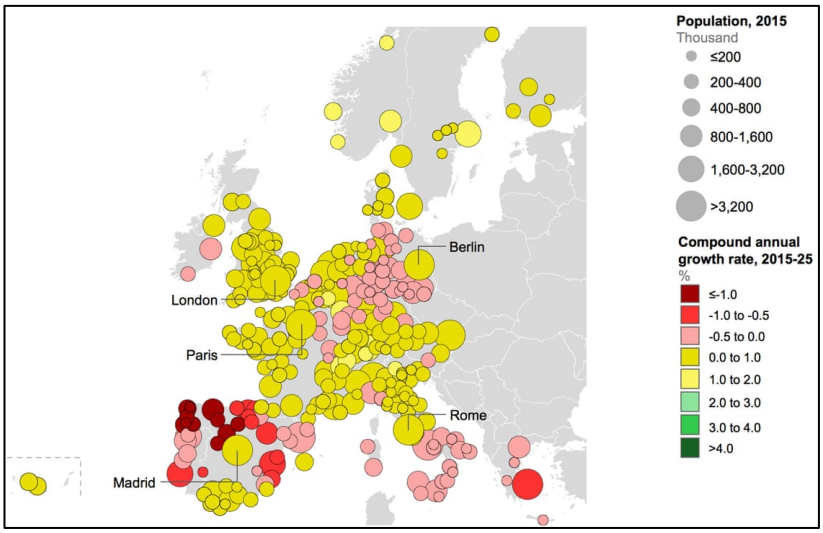

Fig. 1. Population 2015 (Source: The Guardian)

Faced with this phenomenon, the reactions of Public Administrations (PA) range from simple resignation, to creative solutions as whole municipalities put up for sale for a symbolic price. Between these two extremes, the majority of municipalities are looking for sustainable solutions. The paper contributes to the latter, illustrating the application of a stakeholders-oriented assessment framework to tackle the problem of the reuse and valorisation of historic districts.

Address the problem in a perspective of adaptive reuse represents an increasing trend as strategy for existing buildings and is a form of sustainable urban regeneration (Young and Chan, 2012).

In Italy, the protection and the conservation of the architectural heritage has been always considered a cultural imperative and, therefore, supported by institutional constraints. The consequent adaptation of this heritage makes the architecture a window to the past and the maximal present potential for social practices, improving the living standards within a community (Dyson et al., 2016).

While in the past the concept of adaptive reuse has been usually related to the industrial sites (Günçea and Mısırlısoya, 2015), recently many interesting examples can be found in heritage districts, seeing them as opportunities rather than risks. The adaptive reuse of heritage districts often proves better than demolition and reconstruction due to different reasons: it maintains the identity of the location (Geraedts et al., 2017) and strengthens the community feel by linking a city's past to its future (Robiglio, 2016); it decreases the construction times affecting the overall construction costs (Douglas, 2006) and it draws investments, as innovative activities are attracted by recovered historic buildings; Finally, it contributes to global climate protection and emission reduction (Elefante, 2007).

However, an effective reuse of a district is a complex task. The multidimensional nature and the high complexity that characterises the definition of strategies for enhancing historic districts requires support for the structuring of problems (Tavella and Lami, 2018; Lami, 2019), the development of alternative scenarios, the measurement of their impact and the identification of the most satisfactory solution.
Using an Italian case study, the paper shows the combination of different analyses on the territory and a MultiCriteria Decision Analysis (MCDA) (Figueira et al., 2005) to pick out crucial decisions related to the final destination of some spaces involving the community.
The paper is organised as follows. The section 2 provides a description of the theoretical aspects; section 3 describes the case study while section 4 illustrates the MCDA application discussing the valuation processes and the results obtained. Finally, conclusions and future developments are provided in section 5.

2. Theoretical framework

2.1 The adaptive reuse concept

The first theoretical discussions on adaptive reuse began in the 19th century and allowed to define this practice in the late 20th century as a creative discipline with its own rights and theories in favour of the preservation of cultural heritage and to cope with the huge social, technological and environmental changes (Douglas, 2006).
In general terms, it can be defined as the practice of introducing a new content in an existing container (i.e. building, infrastructure, area), paying particular attention to the needs of the society and following the principle of the maximum conservation and the minimum transformation (Robiglio, 2016). Furthermore, the adaptive reuse stresses the need of avoiding the waste of energy and materials caused by new constructions and projects, preserving portion of urban landscape and offering new social and economic profits (Dewiyana et al., 2016). It is worth mentioning at least three reasons in favour of the adaptive reuse approach: i) the adaptation of a building or an area is cheaper than proposing a brand-new project (Douglas, 2006); ii) it allows to preserve social, cultural and emotional values that the buildings or areas acquire through the years; iii) the revitalization of a building or area in an urban abandoned district could encourage an upgrade of the whole urban section.
Operatively, for a valuable adaptive reuse able to meet the market demand and the lifestyle changes of the society, it is necessary to approach different analyses (Robiglio, 2016). The first analysis suggested by the literature is related to the location of the building or area since it plays an important role: accessibility, connec-

tions, services of the area should be investigated in order to be aware of the opportunities and risks of the projects. The second analysis refers to the scale of intervention, which is usually defined according to the context and the goals of the project. A third analysis is usually devoted to identify the potential of the building or area that need to be carefully maximized.
The final analysis provided by the adaptive reuse approach aims at investigate the local and global interests associated to the project in exam. Consequently, a stakeholders-oriented approach is required in order to understand the needs and expectations of the people affected by the transformation (Lami and Abastante 2017; Abastante et al. 2019). With this regard, it is advisable to involve partners in the transformation project in order to make the abandoned and forgotten places known again by the communities (Németh and Langhorst, 2013).

2.2 The Macbeth method

The MCDA proposed in this research is called MACBETH (Bana e Costa and Vansnick,1997). The MACBETH is an interactive approach based on the Additive Value Model (Figueira et al., 2005) and the pairwise comparisons, which are easy to make, discuss, justify and agree on (Dyer and Forman,1992). According to Bana e Costa and Vansnick (1997) and Bana e Costa et al. (2010), the technical procedure supports the construction of numerical scales grounded on semantic judgements requested to the Decision Maker (DM), also used to determine the criteria weights. In this sense, the MACBETH method supports an interactive learning process about the problem and the elaboration of recommendations reducing the "cognitive discomfort" (Fasolo and Bana e Costa, 2014) that could arise in the DM when he/she is asked to express his/her preferences in a numerical scale. Operatively, the MACBETH approach can be divided into three main phases: model structuring, model evaluating and analysis of the results.
The "model structuring" phase identifies all the options to be evaluated (understood as the alternative to solve the problem), their performances and the values of concerns of the problem in exam. The specific and clearly defined values of concerns are called "criteria nodes", while values with vague information, are called "non-criteria nodes". During the "model structuring" phase, all the aforementioned elements are visually represented in form of a tree, called "value-tree".
Lastly, the "model evaluating" phase involves a series of pairwise comparisons, where the DM is asked to specify the difference of attractiveness between the options with respect to the criteria nodes according to the following semantic categories of difference: extreme, very strong, strong, moderate, weak, very weak.
The options can be scored in two ways: directly comparing the options two at a time (direct comparison) or indirectly through the use of a value function built by comparing pre-defined performance levels rather than the options themselves (indirect comparison - for more details see Bana e Costa et al. 2010).
Once the model has been structured and filled in, the "analysis of the results" phase provided by the MACBETH method aims at reporting clear results in the form of

ranking. During this phase, to provide a deep understanding of the problem, can be performed the sensitivity analysis in order to explore the extent to which conclusions can be drawn given varying amount of uncertain information (Bana e Costa et al., 2002).
The choice for applying the MACBETH method is due to a number of reasons. First it is a simple and understandable methodology even by those who are not experts in the decision process. This aspect is supported by numerous applications of the MACBETH method in different fields as: territorial planning projects and real estate market (Frenette et al., 2009; Abastante et al., 2017); education (Cuadrado and Gutiérrez Fernàndez, 2013); waste management (Douhib, 2014); energy consumption (Marques and Neves-Silva,2015).
Second, its technical parameters have a clear and easily explicable substantive interpretation allowing the processing of difficult problem of relative importance of the criteria in a precise way. Finally, it is a stakeholders-oriented and constructive method helping the DM ponder, communicate and discuss their values coming to robust and shared decisions.
In this sense, the MACBETH approach seems to be useful in assessing an urban regeneration problem on adaptive reuse concept, where the most variables under consideration are intrinsically qualitative.

3. Description of the case study

The “Piazzo” is a historic district of the city of Biella (Piedmont - Italy), which was founded in the XI century and in which the atmosphere is “frozen” to ancient times. The “Piazzo” district is well known in Italy for the highly valuable historic heritage, which comprises buildings of different centuries. Particularly, from the XVII century Nobles families modified the medieval lots into big palaces, today’s public museum or cultural locations.
Despite the valuable characters of the historic area, the “Piazzo” district has faced a progressive depopulation starting from the XX century due to several reasons, not only connected to the general decline of Biella. Despite its panoramic location on the hill top of the city it has limited accessibility, that played an important role in the activation of the district isolation process.

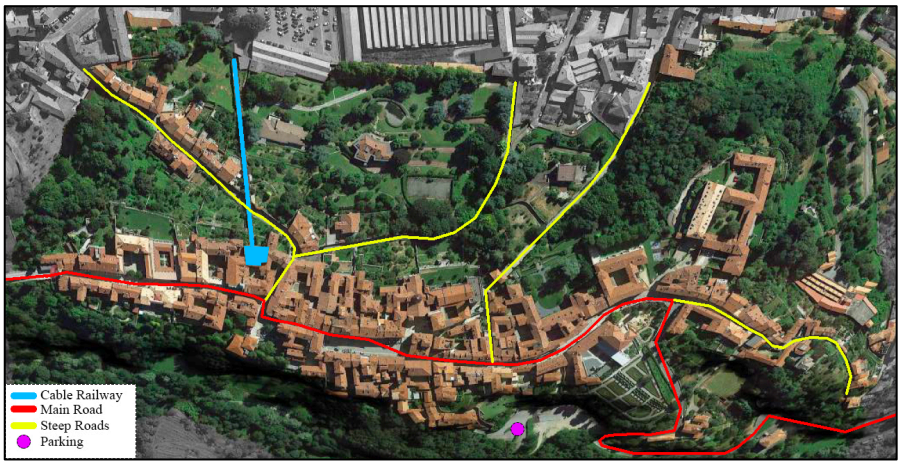

Fig. 2. Drivability scheme on the aerial view of the Piazzo district

The complicated road conformation is constituted by one main road longitudinally crossing the district and different small steep roads perpendicular to the main one and made of cobblestones (Fig. 2).
It emerges that the road conformation is no more suitable for the current automotive traffic and private and public parking are almost absent in the district. Although the Administration of Biella tried to promote the "sustainable mobility" paradigm (Banister, 2008) the only interesting and efficient alternative for the "Piazzo" district inhabitants is the still-working cable railway constructed in 1885, recently renewed in 2018.
A further element that has contributed to the depopulation of the district in exam is the current compact urban pattern, constituted by contiguous urban lots and which is almost unvaried from the XVII century.
Generally, the buildings are 4/5 floors characterised by facades of the XV and XVI centuries and the presence of basements and cellars. However, the rigid structure in bearing walls and the single wings make the distribution of the internal spaces very difficult to satisfy the current standards of comfort for the inhabitants. This contributed to hasten the state of abandonment of the district.
Finally, the abandonment of the "Piazzo" district increased further as a result of the financial crisis started in 2008, since which the economic and social de-growth involved the entire city of Biella.
In this panorama, it is important to notice that the interest in reactivate the "Piazzo" district has been showed in recent times by both, public entities as PA, private investors, real-estate companies, associations and freelancers. Those stakeholders are currently discussing about the best future for the "Piazzo" district.

3.1 Case Handling

After having framed the main intrinsic characters of the "Piazzo" district, we conducted different analyses devoted to understand the social dynamics of the territories, the lifestyle changes and the uses of the district. This constitutes a fundamental step to make a valuable adaptive reuse proposal for the relaunch of the district. In particular, those analyses are related to three main areas: demography, tourist flows, services and activities.

3.1.1 Demographic analysis

Since the average age of the population strongly affects the decisions of new urban activities (Robiglio, 2016), the first analysis conducted is the investigation of the demographic situation of the city of Biella (Fig. 3).

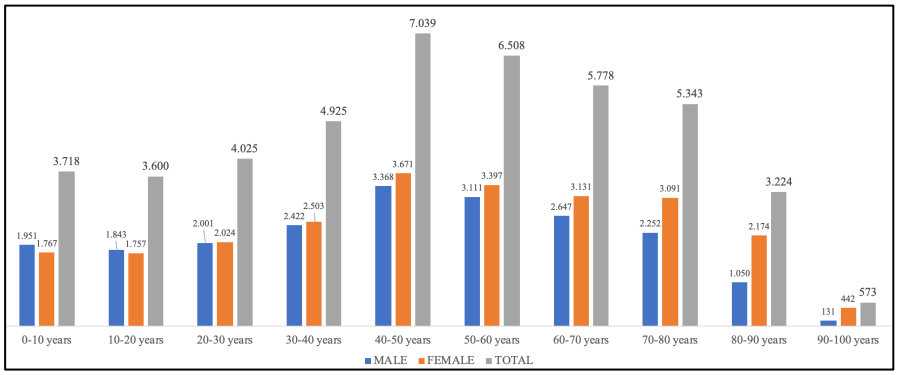

Fig. 3. Demographic analysis according to age and gender

According to the data from ISTAT (2016), Biella reached the peak of population in the decade of greatest industrial fervor (1961-1971 - 54.076 inhabitants). From the following decades, a situation of progressive decreasing degeneration emerges up to attest to 44.733 inhabitants in 2016.
However, compared to the other two main cities in the Piedmont Region, Novara and Vercelli, Biella is the only one that is facing this general depopulation, due to the 2008 financial crisis and to the limited train's system connection with the main northern economic poles of Italy.
A further analysis conducted in terms of aging of the population (Fig. 3) highlights that more than half of the people living in Biella (28.475 inhabitants) is over 45 years old, indicating a non-favorable generational change due to a low birth rate

together with the emigration of the younger groups. This perfectly reflects the current Italian trend in terms of average age: the Italian population is over 45 years (ISTAT, 2017).

3.1.2 Tourist flows analysis

The second study reported is devoted to understand the tourist flows in the Piedmont region and, more specifically, in the city of Biella to identify new-possible functions for the historic district in exam.
According to the data reported by the ATL (Local Tourism Promotion Agencies, 2018) in the decade 2006-2017, the tourists in the Piedmont region increased up to 23,3% thanks to foreign income. In particular, the number of tourists in Biella increased up to 15,6% in the 2016 being the second city of the Piedmont region in terms of tourism's raise (Fig. 4). This brought in turn to an increase terms of accommodation's offer (70,3%). However, the overall number of beds increased simply up to 9,8% (Fig. 4), suggesting the need for more beds in Biella.

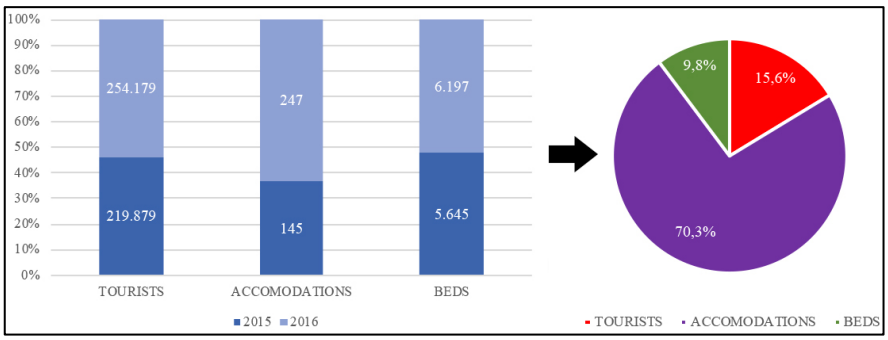

Fig. 4. Tourism flows

Although a growing number of people prefer to stay overnight in extra hotels facilities, the number of beds that the city of Biella is able to offer in those kinds of accommodation is very low.

3.1.3 Services and activities analysis

The last analysis conducted aims at highlighting the current activities and services of the "Piazzo" district. This analysis has been fundamental to understand which kind of activities could contribute to enhance the interest of the possible inhabitants. Fig. 5, it is possible to recognize the commercial activities as bars, a restaurant, a

hairdresser and few small shops. The services for the population are scarce except for a nursery school, a kindergarten a cash machine.
As an attempt to regenerate the district, in the early 2000, the PA invested in the requalification of noble palaces to host permanent museums and temporary international exhibitions. This financial operation turned out to be successful since the number of visitors is increased.

Fig. 5. Map of the current activities

Two professional offices moved in the district contributing to the repopulation of the "Piazzo" district, thanks to the interesting policy of tax breaks and to the low rents promoted by PA.
A part from those weak but important incentives, the "Piazzo" district still appears as a desolate district in which there are no more activities and services for the population and the most residential buildings are currently empty and degraded.

3.2 The "Antoniani" building- in the Piazzo district- as a development engine

After having conducted the analyses reported in section 3.1, from an adaptive reuse perspective we were better situated to identify a pilot building that could act as an engine for the redevelopment of the district. The rationale of this point is directly related to the adaptive reuse perspective. According to the economic and social conditions, it is very unlikely to imagine the presence of a developer ready to invest on the whole district of Piazzo. It is more plausibile to hypothesise a series of small interesting interventions with a limited budget, but not "too unique"to allow a sort of replicability of the real estate operation. Clearly, this is a simplification because it does not consider the synergies arising from a valorisation of several buildings, but we think that is acceptable.
In this sense, among the numerous buildings currently unused in the district, we decided to analyze a specific one, the so-called "Antoniani" building for several reasons. First, it is located in a strategic position at the arrival of the cable railway, moreover it is near to the central square and five minutes' walk to the main services (Fig. 6).

Fig. 6. The "Antoniani" building

Second, the "Antoniani" building is a historic construction whose structural and distributive characteristics are similar to many other buildings in the district. This allows the possibility of replying in the district the idea of requalification proposed even if with different intended uses. In fact, it is composed by three floors above ground connected with a walkway distribution and structured in a regular mesh with beams and pillars, resulting in interior spaces of limited size (Fig. 7).

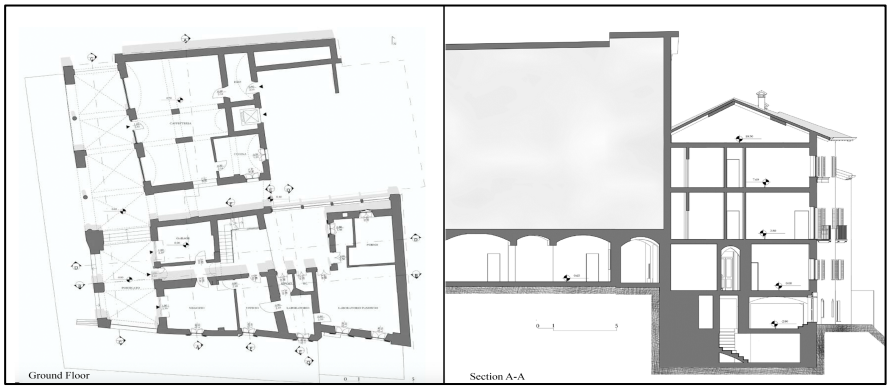

Fig. 7. Graphical documents of the “Antoniani” building

Third, the ground floor of the building directly communicates with the main road crossing the district. This aspect could constitute a high advantage in terms of possible activities and services for the population to be placed in.

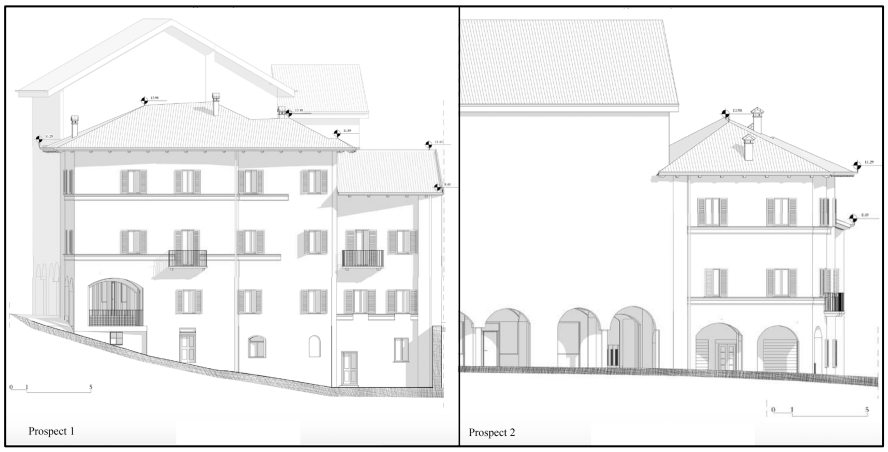

Fig. 8. The two main prospects of the "Antoniani" building

Finally, as suggested by (Douglas, 2006), it is possible to identify an adaptation scale in relation with the degree of transformation of the pre-existing building, namely: a) small, that implies minimal interventions; b) medium, which means changes in the internal schemes, structural alterations and important changes of use; c) large, which sees strong spatial and structural changes.

In relation, we can place the "Antoniani" building transformation among the small/medium scale of impact. This aspect allows containing the financial and economic costs in a perspective of sustainable reuse.

3.2 The cohousing vision

In order to properly requalify the "Antoniani" building we based on a design project of a cohousing, which represents a reaction to the contemporary social and environmental problems such as the changes of family structure, the hyper-isolation of individuals, the increasing stress level and the loss of face to face communication (Lietaert, 2010). The choice of the cohousing is not casual but has been taken after a long discussion among the owners of the building, the PA and the designers. In fact, the cohousing is a peculiar form of living could be able to improve both residential and commercial attractiveness of the "Piazzo" district. Although in Italy is not regulated by dedicated institutional norms, in recent years, it contributed to the requalification of many abandoned buildings (Baratta et al.,2014) improving the sense of social cohesion. The cohousers are engaged to design the future community and to choose the services that satisfy their needs (Abastante and Lami, 2012; Abastante, 2016) in a collaborative process able to encourage the interdependence between residents.
One of the most interesting character of the cohousing is the coexistence of private units and collective (i.e. laundry, children's room) and public spaces (Chiodelli and Baglione, 2014). The latter are opened to the territory and managed by the cohousers in order to enhance the sense of community, involving also the district.
These public spaces are probably the most complex element during the design process since they have to be placed in functional zones, on the street side in order to be accessible from outside without overrun the private sphere.
For the requalification of the "Antoniani" building, we concentrated on the choice of the activities to be placed at the ground floor, using the MACBETH method as a stakeholders-oriented approach involving the community of the "Piazzo" and some possible future cohousers.

4. Macbeth application

4.1 Definition of the alternative options

In order to properly apply the MACBETH method, it was first necessary to identify the possible alternative functions to be proposed as public activities managed by the future cohousers of the "Antoniani" building.
First, a literature review as well as different studies of the existing cohousing in Italy have been performed (Lietaert, 2010; Housing Lab, 2018) to identify the most widespread functions open to the territories.
These resulted in a number of possible functions as: swimming pool, kindergarten, bars, pubs, shops, gym, after-school activities, multipurpose big hall, spa services and library.
Second, we verified the compatibility of the identified functions in terms of size and availability of spaces in the "Antoniani" building. Accordingly, the swimming pool and the gym have been eliminated from the analysis. Moreover, it emerged that the ground floor of the "Antoniani" building is suitable for hosting a maximum of three different functions.
Finally, we crossed the possible alternative options with the empirical analysis of the territory reported in section 3, in order to exclude the not useful functions, as the kindergarten that is already present in the district.
According to those observations, the alternative options considered in the MACBETH application are 13 (Tab. 1).

Tab. 1. Alternative functions as decision options

Alternative options	Description
Arts Hall	Multifunctional room equipped for activities as painting and decoupage strictly linked to the identity of the territory.
Theme Bar	Bar and shop of local culinary products.
Local textile shop	Small shop of local textile products.
After-school activities	Activities for primary school children.
Multimedia hall	Interactive room for different instruction uses.
Small library	Small municipal library for primary school children.
Meeting centre	Multifunctional room equipped with games for adolescents.
Sport Pub	Pub in which it is possible to watch different sports games.
Country club	Meeting room for sports clubs.
Yoga/Pilates Hall	Room equipped for yoga and Pilates activities.

Photography club	Multifunctional room equipped for photography activities.
Music Hall	Soundproof room for musical activities.
Theatrical club	Multifunctional room equipped for theatrical activities.

4.2 Definition of the criteria nodes

After having identified the possible alternative options for the case study in exam, it was necessary to choose a coherent set of criteria nodes to properly describe and evaluate the 13 options.
The criteria nodes were defined with a series of interviews conducted with the PA and aimed at understanding the main desirable transformation drivers for the "Piazzo" district, considering also the point of view of the community.
After the discussions, the identified transformation drivers have been considered as the specific values of the evaluation defined as criteria nodes (Tab. 2).

Tab. 2. Criteria nodes of the decision problem

CRITERIA NODES	DESCRIPTION
Tourism	Settlement of tourism attractions and activities and based on the local products.
Didactic/Recreational	Settlement of functions related to the education and recreational fields for young people.
Sport	Settlement of sport functions as fans clubs and spot associations.
Socio/cultural	Settlement of flexible functions and activities, for cultural, social and entertainment enhancement.

4.3 Development of the model

To apply the MACBETH method, we identified a heterogeneous interviewed sample. Accordingly, 45 subjects (representatives of users and bystanders of the "Piazzo" district) were selected paying particular attention to the balance in term of gender (24 female and 21 male). The respondents were all among 23 and 70 years old. They were chosen in relation to the expertise on the four criteria nodes of the analysis (Tab. 3).

Tab. 3. Characters of the interviewed sample

	GENDER		WHY HE/SHE KNOWS THE DISTRICT			
EXPERTISE	**FEMALE**	**MALE**	**LIVE**	**WORK**	**LEISURE**	**TOTAL**
Tourism	**5**	**5**	**1**	**1**	**8**	**10**
Didactic/ Recreational	**8**	**3**	**2**	**2**	**7**	**11**
Sport	**4**	**7**	**1**	**0**	**10**	**11**
Socio/ cultural	**7**	**6**	**1**	**0**	**12**	**13**
TOTAL	**24**	**21**	**5**	**3**	**37**	**45**

It is important to notice that the composition of the interviewed sample is aligned with the studies conducted and reported in section 3. In fact, only a fifth of the people interviewed lives or works in the "Piazzo" district, while the others are by-standers.

After having identified the interviewed sample, we structured the decision problem through the M-MACBETH software (m-macbeth.com) obtaining 4 different questionnaires, one for each criterion node as well as 110 pairwise comparisons related both to the criteria nodes and to the alternative options. Each questionnaire was composed by two groups of questions. The first group of questions was devoted to acquire information about the ranking and weights of the criteria nodes. These questions were identical for all the questionnaires and were of the type:

1/a) Looking at the criteria node in exam, rank them from most preferred to least preferred.

1/b) According to the rank so far provided, to what extent do you prefer one criterion node to another? Please provide an answer using the semantic categories of ***Errore. L'origine riferimento non è stata trovata.****).*

The second group of questions was different in each questionnaire and was devoted to acquire information about the ranking and weights of the alternative options.

The questions related to a specific criterion node were of the type:

1/a) With respect to the criterion node "Tourism", which alternative option do you prefer? Rank the alternative options from most preferred to least preferred.

1/b) According to the rank so far provided, to what extent do you prefer one alternative option to another? Please provide an answer using the semantic categories of ***Errore. L'origine riferimento non è stata trovata.****).*

All the answers provided by the interviewed sample, were then collected and aggregated in order to properly fill in the pairwise comparison's matrices required by the MACBETH model.

Among the numerous methods for the aggregation suggested by the literature, we decided to apply the Arithmetic Average on the basis of the majority (for more details we refer to Abastante et al., 2017). The answers were then inserted into the M-

MACBETH software in order to provide a ranking in terms of most interesting criteria nodes to be considered for the design of the cohousing (Fig. 9).

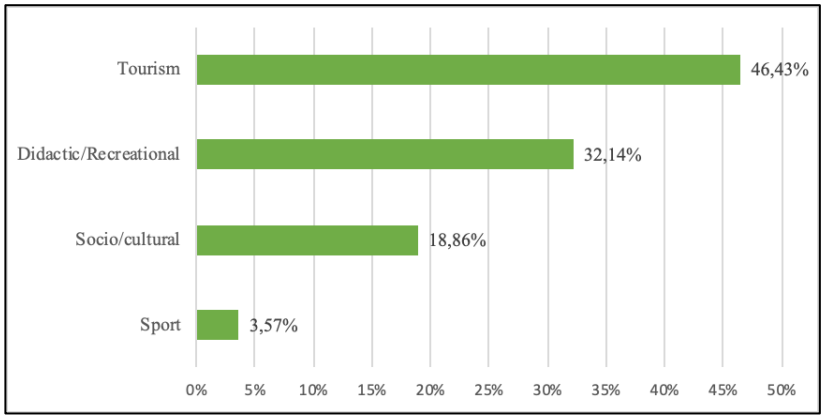

Fig. 9. Ranking of the criteria nodes

According to the answers provided by the respondents, the most interesting criteria node turned out to be the "tourism" promotion (46,43%) followed by the "didactic/recreational" activities (32,14%). Those results are in line with the studies and analyses previously conducted in which emerges that the tourism activities could be a huge economic opportunity for the district. On the contrary, the "socio/cultural" activities and the "sport" functions are not considered fundamental for the adaptive reuse of the district (18,86% and 3.57% respectively). In terms of most interesting activities for the territory of the "Piazzo" district, the results obtained thought the Macbeth method are reported in Tab. 4.

Tab. 4. Partial and overall rankings of the alternative options expressed in percentage

Alternative options	PARTIAL RANKINGS				OVER-ALL
	Tourism	Didactic/ recreational	Socio/ cultural	Sport	
Arts hall	**80,95**	**85,95**	**0**	**0**	**67,7**
Thematic bar	**55**	**15,23**	**0**	**0**	**31,59**
Photography club	**0**	**72,72**	**0**	**0**	**24,26**
Music hall	**0**	**50**	**0**	**0**	**16,68**
Multimedia hall	**0**	**0**	**80,95**	**0**	**11,91**
Theatrical club	**0**	**35,47**	**0**	**0**	**11,83**
Meeting center	**0**	**0**	**60,95**	**0**	**9,72**

Local textile shop	**20,12**	**0**	**0**	**0**	**9,69**
After-school activities	**0**	**0**	**35,95**	**0**	**5,28**
Sport pub	**0**	**0**	**0**	**85,71**	**3,17**
Country club	**0**	**0**	**0**	**60,95**	**2,25**
Small library	**0**	**0**	**10,71**	**0**	**1,57**
Yoga/Pilates hall	**0**	**0**	**0**	**40,23**	**1,48**

The partial ranking highlights the most interesting options for every criteria node, respectively: “arts hall” for tourism and didactical/recreational, “multimedia hall” for socio/cultural and “sport pub” for sport.
Combining the partial rankings with the criteria nodes we obtain the over-all ranking and the three functions for the cohousing in the “Antoniani” building: the “arts hall” with 67,7%, the “thematic bar” with 31,6% and the “photography club” with 24,6%.

5. Conclusions

The paper proposes the use of a stakeholders-oriented assessment framework to help the PA and the private developers for developing strategies to revitalize historic districts.
The framework proposed aims to be adaptive and sustainable, in both ways: in the use of the buildings and in the preparation of the assessment itself. As for the latter, the hypothesis is to use as much as possible the data generally available to any European country on national, regional and local level. The next step is a carefully understanding of the potentialities of the district, to promote its maximum conservation, introducing a new content in an adaptive reuse perspective. The elements collected can be systemized and compared through the application of a MCDA. In the paper we showed the use of MACBETH, which is a simple and understandable methodology, whose technical parameters have a clear and easily interpretation, and helps the DM to reach robust and shared decisions.
To show the potential of the assessment framework, the method has been applied to an Italian case study, the “Piazzo” district in Biella. The analyses of the context were made on the entire district of the “Piazzo”, while the assessment of adaptive reuse opportunities was limited to a single building in the historical area. As has been said previously a series of small interventions with a limited budget are more plausible than an investment on the whole district of “Piazzo”.
The application of the method showed that it is possible to obtain precise indications about the transformation for a building and at the same time more general indications for supporting a decision process, such as a ranking of the criteria.

It is important to underline that the research so far conducted has limitations and there is considerable potential for further work. The main limitation is that the data illustrated is taken from one case study, which limits the generalizability of the findings. However, we carried out a detailed methodological path to approach the realm of the adaptive reuse of an historical district, aimed at exploring a phenomenon in depth and generating insights of operational importance. We would recommend to future researchers to explore the possibility of analyzing more case studies and of applying a sensitivity and robustness analysis to the results obtained in order to verify the validity of the model.
Finally, it would be appropriate to probe the technical feasibility of the alternative options proposed. This would imply a further decision process with different stakeholders apart from the community and the future cohousers.

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