

# “MANTOVA SI RIGENERA”

## PILOT ACTION

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D.T2.3.2 Report about the implementation of  
the Web-GIS platform in a HBA in Mantova

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Mantova city centre view from Torre della Gabbia. Picture by Elena Frolidi – Mantova Municipality

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## THE CONTEXT

PP1, with the support of PP13, implemented the Web-GIS platform for the integrated monitoring of changes and modifications in Historic Built Areas (HBA) in Mantova. The platform is an ICT product able to collect different data through GIS technology and show them and their interactions in a user-friendly way through a specific web interface.

### **Identification of the thematic to be analysed through the GIS platform**

BhENEFIT application form defines a range of possibilities to be tested in the pilot action: identify the interactions between reuse, new functions, social and historical value, touristic flows of Historic Built Areas. Before the definition on the specific thematic, many meetings were held because many ideas were identified about main problems and opportunities of valorisation as indicated in the deliverable D.T2.2.3 “Guidelines for the local development of a Monitoring plan for a HBA in each PA” and in the deliverable D.T2.3.1 – Monitoring plan for an HBA in Mantova”.

Among the topics of considerable importance for the historical city centre sustainable management, in addition to the innovative theme of existing built heritage energy efficiency increase (that today in Italy still suffers from the conflict between the exploitation of cultural heritage and the energy efficiency technologies), the need to contrast the desertification of city centres phenomena acquire a significant importance. Mantova city centre follows the general trend of decentralization and consequent desertification towards less protection constraints areas of the city in which localization is therefore both for citizens and companies.

In this context an essential element for the sustainable management of the historical asset is the maintenance of essential uses and the simplification of new residing citizens settlement process as well as new activities and services, in accordance to the city cultural heritage protection characteristics.

The topics analysed in the context of Local Support Groups referred to:

- Depopulation of commercial activities;
- Management of events to better exploit the characteristic of Mantova as “City of festivals”;
- Accessibility (in order to define the Plan for the elimination of architectural barriers – PEBA);
- Use and livability of historical city centre open public spaces (as for example squares).

All the topics were analysed by different sectors working together. Thanks to the dialogue and confrontation, the administration found out that a tool for the management of events is already being used by the Commercial department and that there is an on-going project to identify the unused commercial spaces.

What was missing was a tool enabling the collection of opinions and perceptions of citizens. In fact perceptions could give a relevant support to urban regeneration that is one of the main topics of the new urban plan (the city is equipped with an urban plan that is in its revision phase).

The departments involved decided then to focus on the urban regeneration concept and in particular on the perception of citizens related to decay of the historic city centre.

The identification of the areas to be subjected to regeneration, on the basis of decay conditions definitions at different levels, and of inhabitants decay perception, will allow to identify different types of homogeneous areas in terms of architectural, functional, of proprietary and legal structure. The goal is the definition of regeneration policies and possible processes to provide facilities for the recovery, reuse and renewal of existing city and building heritage. The most important challenge refers to the data collection from citizens, city-users and associations.

In fact, the involvement of people represents a delicate phase, that needs to be studied in detail most of all considering that the Public Administration calls for information without the possibility to directly give sure and concrete answer in the short period.

### **Identification of a working methodology**

Once identified the topic, the departments together tried to understand:

- The needed information to get a clear picture and to be able to analyse and identify regeneration measures;
- The information to be given to citizens to ask for their contribution without, at the same time, conditioning them.

The Monitoring plan (deliverable D.T2.3.1) was the starting document collecting the list of needed data. The following step regarded the identification of:

1. Existing data already owned by the Administration  
The existing data not already in GIS shape were translated in GIS
2. Existing data that needed to be verified and updated  
The departments identified the best way to maintain the data updated solutions expressed in the Monitoring plan that identifies the necessary and useful data, for which a continuous or ad hoc monitoring could be provided
3. Data to be collected through filed surveys  
It was built up an analysis sheet and a methodology for the field surveys.

The data collected through filed surveys are:

- Building condition/building typology
  - Building condition/condition of exterior
  - Building level of usage
  - Ground floor usage
  - Building predominant use (residential, business, commercial)
  - Building facades level of conservation
  - Presence of abandoned or unfinished building sites
  - Construction codification data
4. Data to be collected through crowdsourcing and the way to collect them directly in GIS shape

It was built a questionnaire able to collect data from civil society and to integrate those data in the GIS system. The questionnaire was discussed with different departments and at political level in order to avoid the risk of the tool perceived as an online tool just collecting impressions or critical alerts. Two categories of users were identified because of different visions and perceptions of the city:

- Citizens
- Associations.

### **The data identified and the monitoring**

The significant data, existing and to be collected, to be systematized and monitored are linked to the possibility of transformation and reuse of private and public buildings included in the city centre. The data will allow a more detailed analysis of current and permitted uses in relation to the building typologies, to the conservation status of the asset that insist on the asset itself as well as to the verification of area vocations as a pole of attraction (both in terms of services and cultural and tourist attractions).

The analysis of the above-mentioned data with the data collected from civil society will allow the municipality to identify areas to be subjected to regeneration on the basis of decay conditions definitions at different levels and of inhabitants' decay perception. Thanks to monitoring it will be possible to define regeneration policies and possible processes to provide facilities for the recovery, reuse and renewal of existing city and building heritage.



## THE PLATFORM “MANTOVA SI RIGENERA”

In parallel with the execution of filed surveys, the questionnaire was defined as well as the platform front-page of the platform called “Mantova si rigenera”.

Link to the platform: <https://mantovasirigenera.giscloud.com/>

### The platform structure

The on-line platform is a page composed by the map of the city, an explanation of the questionnaire and a questionnaire. The structure of the page is already defined by GISCloud but there is the possibility to define colours, include a title and the contents of the questionnaire. The title could not be changed, on the contrary, the explanation of the project and the questionnaire could be modified.

To guide users in the compilation of the questionnaire, the identification of the HBA area was the starting point.

The map on the front page identifies the pilot area with a red line surrounding the historical city center. The HBA was then divided into main neighborhoods (as indicated in the City Plan).

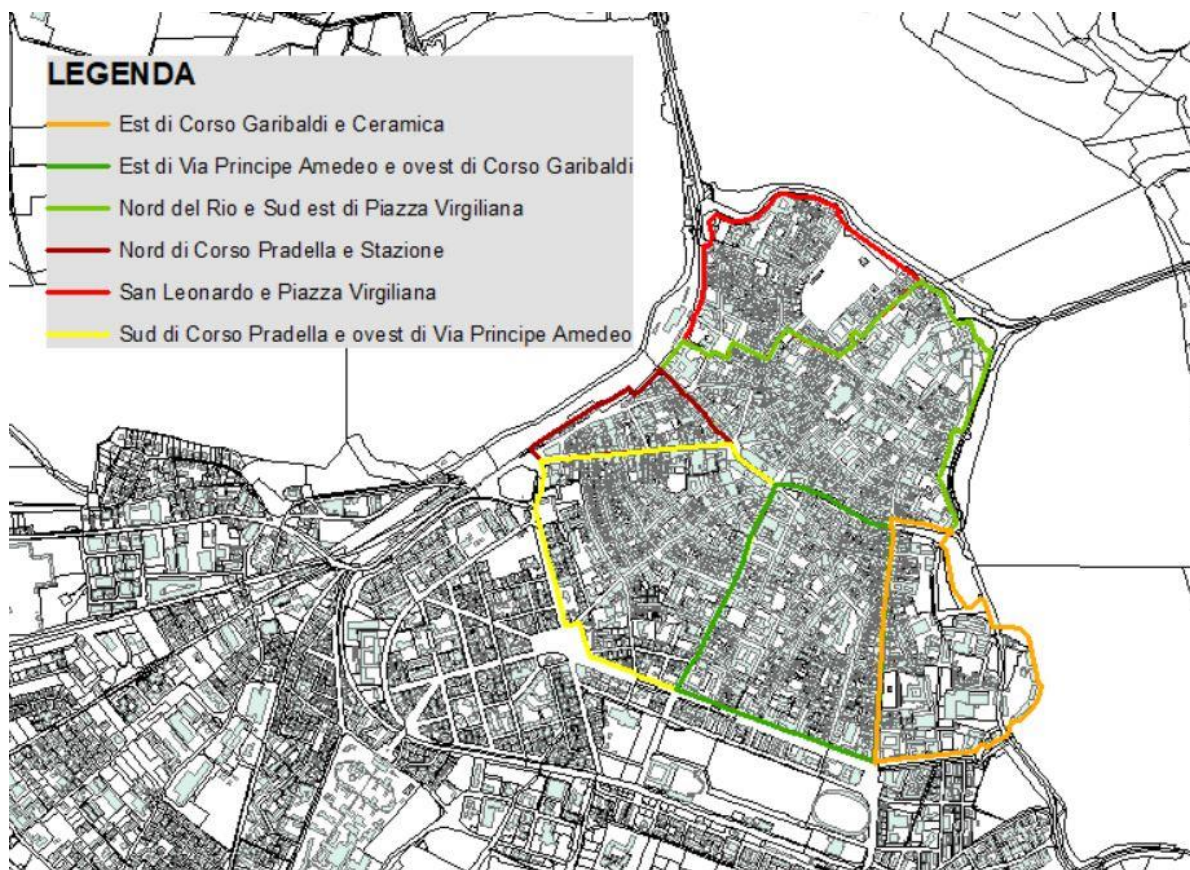
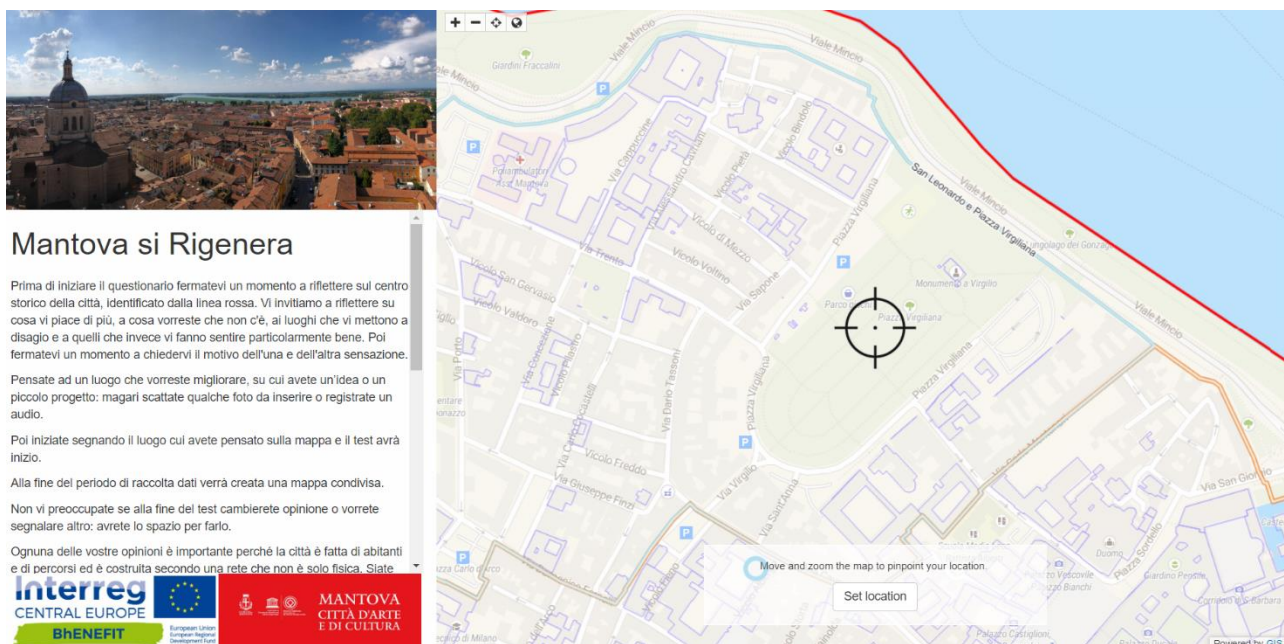


Figure 1- subdivision of the neighborhoods Project Bhenefit 2018



Users starts filling in the questionnaire by identifying a point on the map. After this first step, they identify themselves as “Individual citizen” or “Association”. The questions are different depending on the category chosen.



2 - The starting screen of the survey in Giscloud

## The users and their answers

### ASSOCIATIONS

The categories mapped and contacted:

- Trade associations
- Environmental associations
- Political and social associations
- Association of Volunteers
- Cultural associations
- Sports association
- Technical associations (Architects, Engineers, ...)

Associations were invited via mail to fill in the questionnaire (a guide was prepared explaining all the sections) and a meeting was organized to explain it. The Municipality asked associations to collect the response of the group and to invite associates to fill the questionnaire as individuals.

The answers received cover the following categories:

- Technical orders,
- Trade associations,
- Political and Social Associations,
- Volunteers associations.

The interesting result is the possibility to compare different point of view in relation to the purpose of the association itself.

### Structure of the questionnaire

The first part is related to the framework: beauties or deficiencies related to the purpose of the association and therefore to the interests of citizens they represent.

The second part relates to critical point and deficiencies. It is asked to indicate what it is considered negative and that would probably improve urban quality if present.

The third part wants to collect strengths then the advantages and the potentialities of the HBA that could improve its value.

The last part refers to proposals.

### The responses

The responses could be summarized as follows:

ASSOCIATION	FRAMEWORK	CRITICALS POINTS	DEFICIENCIES	STRENGTHS	POINT TO BE ENHANCED	PROPOSALS
Political Associations	Road, mobility, parking, architectural barriers	Public transport or sustainable mobility	-	Size of the city centre	-	Improving the efficiency of the issues raised
Volunteers associations	Use of an architectural asset	Decay	Lack of function	Location	Location	Innovative and social activities
Social Associations	Places in the city	Quality of public space	Enhancing places	Water and historical centre	Places rich in culture	events and water connection and architecture
Trade associations	Urban Policies	Road conditions, constraints	Valorization	Quality of life and place value	Urban policies and tourism	Improvement of the efficiency of historic buildings

		on built-up areas				
Technical orders	Places in the city	Junctions and roads	Parking and street furniture	Recovery of empty areas in car parks	Junctions and entrances	Urban furniture and joints

Annex 1 collects the answers of the associations.

## CITIZENS

Individual citizen is represented by resident of the city centre, city user, resident outside the city centre but frequenting it. Individual citizen fills in the questionnaire according to his/her specific characteristics, his/her own paths, his/her own aspirations, criticalities found, proposal he/she intends to make as a citizen.

Resident and worker/student: is the one who lives in the centre and works there or studies there.

Resident working or studying outside: is the one who lives in the historical center but works or studies outside of it, inside or outside the city centre of Mantua.

Worker or student in the city centre with external residence: is the one who works or studies in the city centre but lives outside.

User: an occasional visitor who does not live or work there but who visits the city.

Visitors of Mantova HBA were asked to reflect on the city and to suggest ideas. Users of the HBA were invited to follow a path where negative aspects and positive aspects had to be motivated and lead to a proposal or to the signalling of a place considered important for the city. The text fields were defined with a fixed number of characters. A detailed guide for users and indication in the front-page were given to help users in filling in the questionnaire. In addition, users were reassured that no sensitive data would be required and that no data would be traced, in order to allow full freedom of expression.

In order to facilitate the collection of answers, mandatory and optional fields were identified.

### The structure of the questionnaire for citizens

The first part of the questionnaire collects material data in order to relate the issues and potential with the type of user.

The second part is instead the 'Narration of the Paths': the citizen is asked to explain the negative and positive aspects, the preferred routes and those avoided with a motivation.

## The responses of citizens

In the opening period of the platform, 73 responses were received. Users were invited to participate through the dissemination of the link mainly on social and mobile conversations (messenger, whatsapp, etc.) as well as on the website of the Municipality of Mantua and on local press.

Responses in relation to the type of attendance:

TIPOLOGY	NUMBER
Resident of the historical centre	13
Resident and student worker of the city centre	15
Resident in the city centre with work or school outside the city centre	4
Worker or student of the city centre with external residence	28
User of the city centre	13
<b>Total</b>	<b>73</b>

Responses related to the role: worker, student, retired, not occupied waiting for work, not occupied generic. The public response was as follows:

TIPOLOGY	NUMBER
Worker	39
Student	29
Retired	2
Not occupied waiting for a job	1
Not occupied generic	2
<b>Total</b>	<b>73</b>

Users were also asked to indicate the main entrance used to enter the city centre in order to understand the relationships between the criticalities and the perceived potentialities and to know the options chosen by residents and users who live/study outside.

The **residence of the respondents** is divided as follows:

TIPOLOGY	NUMBER
Historic Centre	32
Surrounding Neighborhoods	6
Neighborhoods Municipalities	11
Municipalities in the province	9
Outside Province	15
<b>Total</b>	<b>73</b>

Of the 32 residents: 8 comes from the north-west of the city, 10 from the monumental area east, 2 in the area between Corso Vittorio Emanuele and Via Principe Amedeo, 7 from the centre-south area between via Principe Amedeo and Corso Garibaldi, 5 east of Corso Garibaldi up to Ceramica.

About the residents in the neighboring districts came 3 answers from Valletta Valsecchi, 2 from Valletta Paiolo, 1 from the neighborhood Due Pini.

Regarding the residents in the neighboring municipalities, 11 replies have arrived fairly distributed between Borgo Virgilio, Curtatone, Porto Mantovano, San Giorgio di Mantova.

Nine responses came from the other municipalities in the province.  
 As for the 15 answers from outside the province, 9 are from Verona.

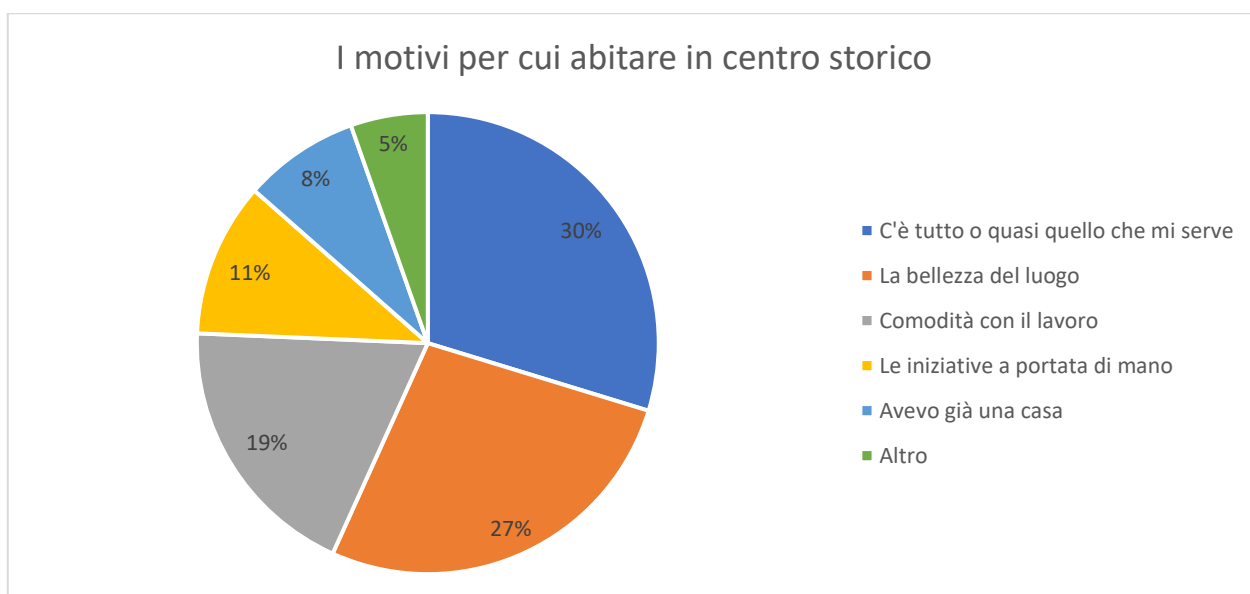
In the second part of the questionnaire the questions (and consequently the answers) differ between users living and working in the city centre and users/workers living outside.

The questions were asked in a way to lead to reflection, in order to limit polemic answers in favour of answers that could suggest solutions or proposals. The themes were as follows:

To residents of the city centre, the **motivation for living in the city centre** was asked:

ANSWER	NUMBER
It's all or almost all I need (blue)	11
The beauty of the location (orange)	10
Comfort with the work (grey)	7
The initiatives at hand (yellow)	4
I already had a place to live (light blue)	3
Other (green)	2
<b>Total number of responses</b>	<b>37</b>

It is interesting to notice that the majority of answers are related to the possibility of finding what is needed and to the beauty of the place.

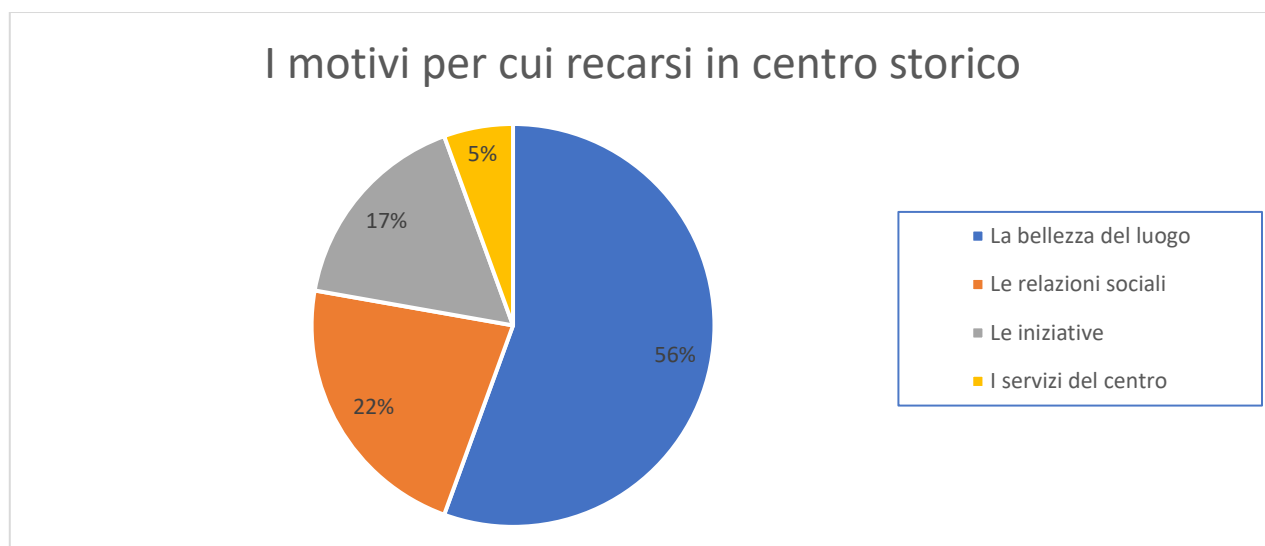


For general users, it was asked the **reason for going to the city centre**:

ANSWER	NUMBER
--------	--------



The beauty of the location (blue)	10
Social relationships (orange)	4
The initiatives (grey)	3
The services of the centre (yellow)	1
<b>Total number of responses</b>	<b>18</b>



To all users it was asked **what is missing in Mantova HBA**. The responses were obviously different according to the type of attendance, although for all groups there was a need for innovative activities and activities for young people.

The answers:

<b>ANSWER</b>	<b>NUMBER</b>
Innovation Activities	25
Craft Activities	19
Areas or services for young people	16
Local shops	14
Green areas	12
Shops with important brands	8
Stores with niche brands	5
Areas or services for the elderly	5
Areas or services for pets	5
Ethnic restaurants	4
Pizzeria	3
Areas or services for children	3
Traditional restaurants	2
Bar	1
Other	4
<b>Total number of responses</b>	<b>112</b>

Those who live in the centre would like to see the presence of innovative activities, more choice for young people and more economic activities that have to do with the residence. The problem of insufficient parking lots, insufficient parking for bicycles is reported under heading “Other”.

For non-residents working or studying in the city centre, the **deficiencies of the city centre** are summarized in the following table:

ANSWER	NUMBER
Innovation Activities	14
Areas or services for young people	8
Ethnic restaurants	7
Local shops	5
Craft Activities	5
Areas or services for children	3
Areas or services for the elderly	3
Pizzeria	2
Stores with niche brands	1
Green areas	1
Bar	1
Traditional restaurants	1
Areas or services for pets	1
Other	2
<b>Total number of responses</b>	<b>54</b>

This type of user is less affected by the need for services for children, elderly, animals that are probably already present in the place of residence. The demand for artisanal activities and shops of neighborhood probably regards instead the daily permanence in the hours of opening of the shops: boosting this economic fabric the effects would probably be positive also for residents outside the city centre that spending the whole day in the capital would see the possibility of using such activities as a greater comfort in the organization daily. The increase of these activities and perhaps of their partial opening even in work-free slots, could be of a stability also thanks to those who come daily from outside.

The required quality of these shops is certainly high as those who come from outside the centre, having access to public or private transport for the daily route and comfortable times of medium-sized shops, could choose to stock outside the town.

To the other voice they come reported: bookstores and gyms and spaces mainly usable in winter and with the rain.

For occasional users, the deficiencies of the city centre are summarized in the following table:

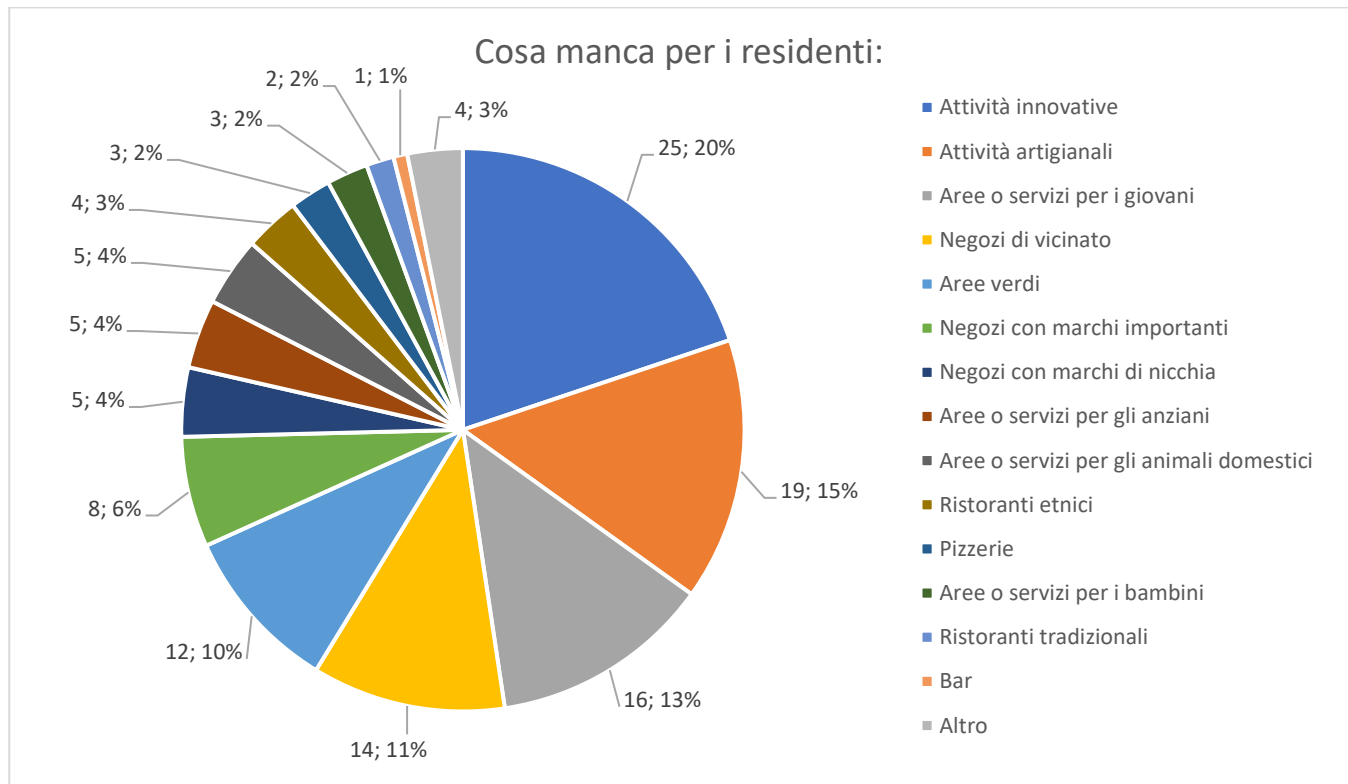
ANSWER	NUMBER
Innovation Activities	5
Local shops	5
Green areas	3
Areas or services for children	3
Areas or services for young people	3
Traditional restaurants	2

Shops with important brands	2
Craft Activities	2
Stores with niche brands	1
Areas or services for the elderly	1
Areas or services for pets	1
Pizzerie	1
Bar	1
Ethnic restaurants	0
Other	3
<b>Total number of responses</b>	<b>33</b>

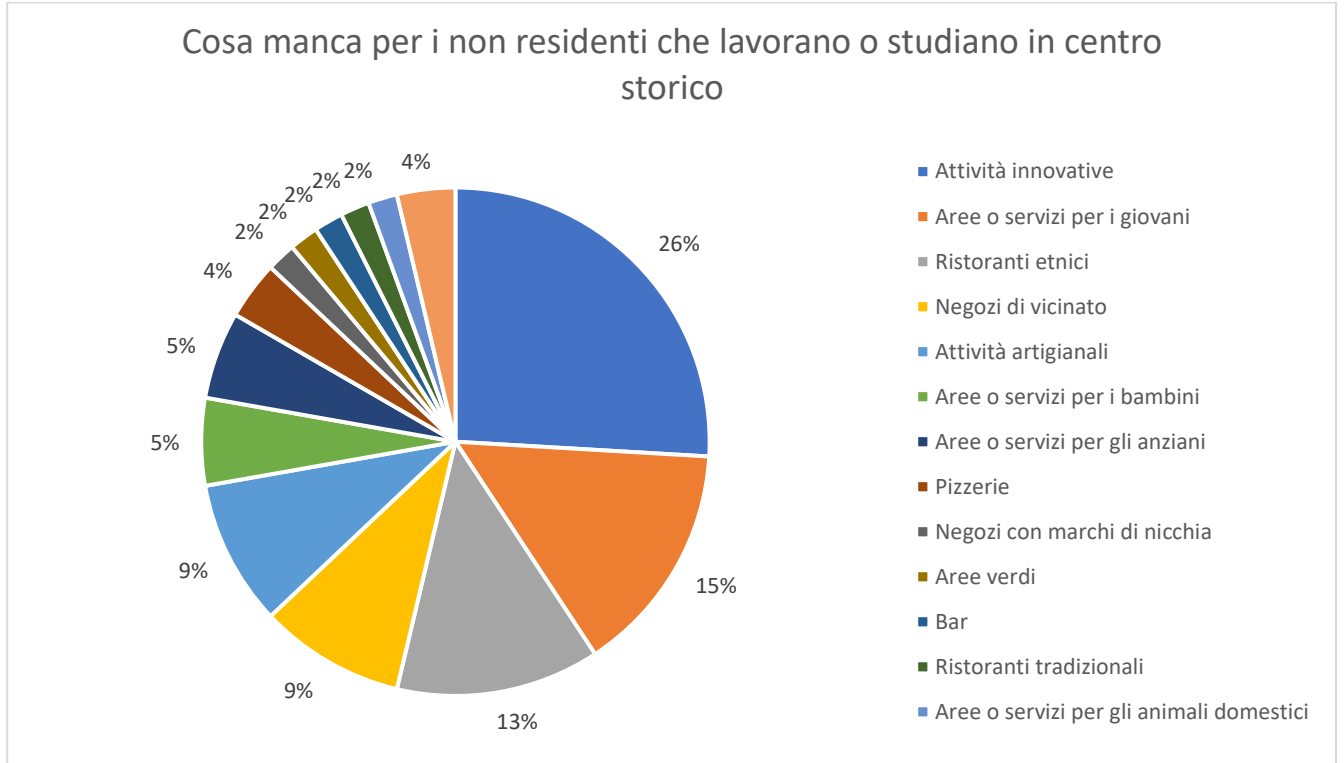
Still retaining the majority on innovative activities and neighborhood shops, generic users distribute responses between areas or services for young people and children and green areas. In all three cases there is a lack of parking and in two cases there is a specific lack of free parking.

The percentage of distribution on **what is missing in the centre for the three types of visitors** is as follow:

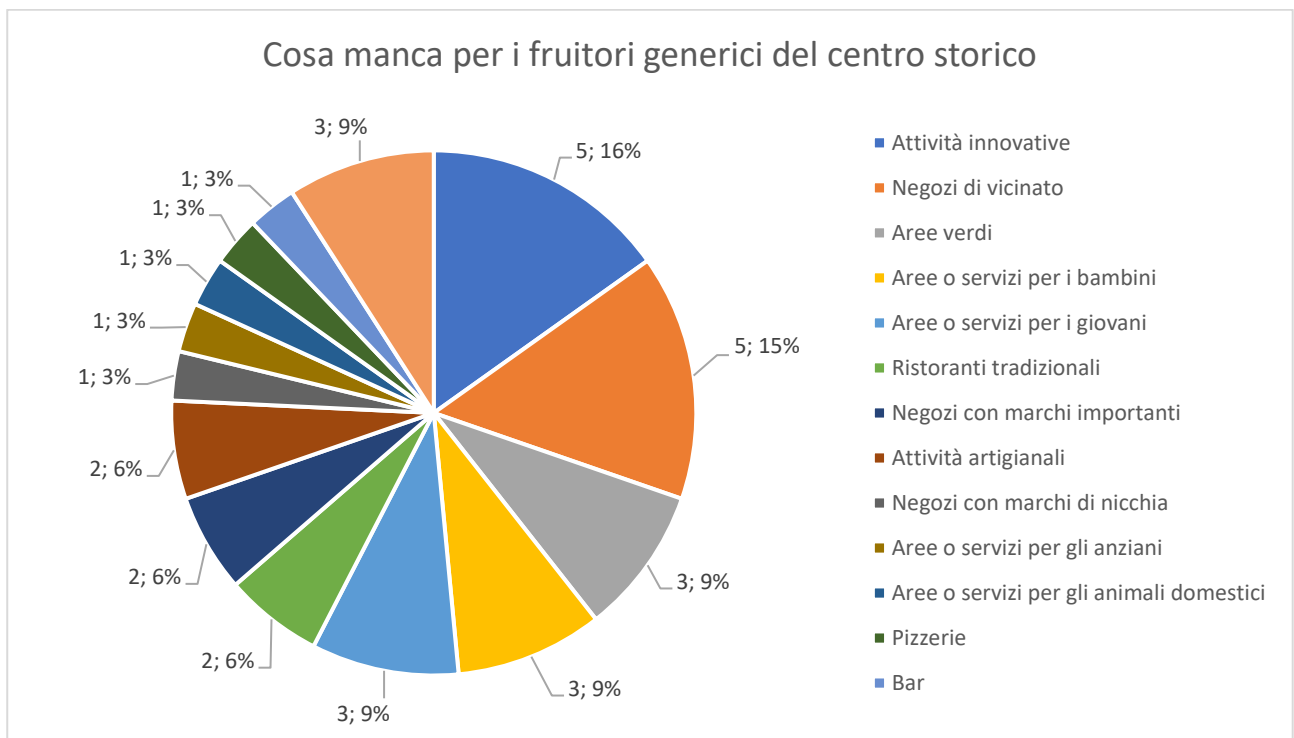
Residents:



Residents outside:



Generic users:



As for the **potentialities of the HBA**, almost the totality of users indicated the beauty and care of the context, the cultural initiatives, the social initiatives and then thematic evenings.

Another section of the questionnaire is dedicated to the **“Narration of routes”**.

The first question of this section refers to **areas to be avoided**.

The answers could be grouped into four thematic groups: traffic problems, the perception of insecurity combined with a feeling of abandonment of places, urban decay and lack of beauty. Significant is the fact that lack of beauty is perceived as a parameter for the sensation of discomfort.

Regarding the four themes mentioned above, the majority of users indicated, as motivation of discomfort, the perception of urban insecurity linked sometimes to the attendance of places and other times to the lack of lighting and the feeling of isolation. In all these cases the reference is more a sensation than the occurrence of real facts. The second theme refers to the sense of discomfort given by urban decay perceived (in certain cases, the perception referred to a specific area of the city, is concreted by the presence of the skeleton of an ex ceramic factory). Several users reported, as area of discomfort, also Mondadori square.

Traffic is the third element. Users identified the most “problematic” areas of the city centre.

As final evaluation, what was noticed is that there is a relation between discomfort type and type of users. In fact, people living outside the historic centre but working/studying there identify traffic as main theme of discomfort.



Figura 3 - Map of places to avoid for users or who generate discomfort (Extract table 1) Sintesi delle percezioni negative



To sum up, the areas considered negative are those, from an urban point of view, that were rebuilt after the second post-war period.

The area considered as the most negative is the Station area and the *Giardini Nuvolari* area (Nuvolari park). It is interesting to note that historically, probably because of the limits of the city surrounded by 3 artificial lakes, the chronicles of XIX already reported problems of safety in that area that, on the contrary, from an architectural point of view, is very well designed, well maintained and contains botanical species of great interest.

As for the area of the station, in this case it is not new and it is a matter common to many cities and it depends on attendance the perception is negative but not supported by data).

Another aspect investigated in this section is related to **positive aspects**, in particular the questionnaire asked users to underline **hidden places**. This question refers more on the relationship between the user and the city.

The answers allowed to identify mainly places less frequented and more distant from the commercial areas, especially places from where it is possible to admire the Rio (the little rivers crossing the city centre).

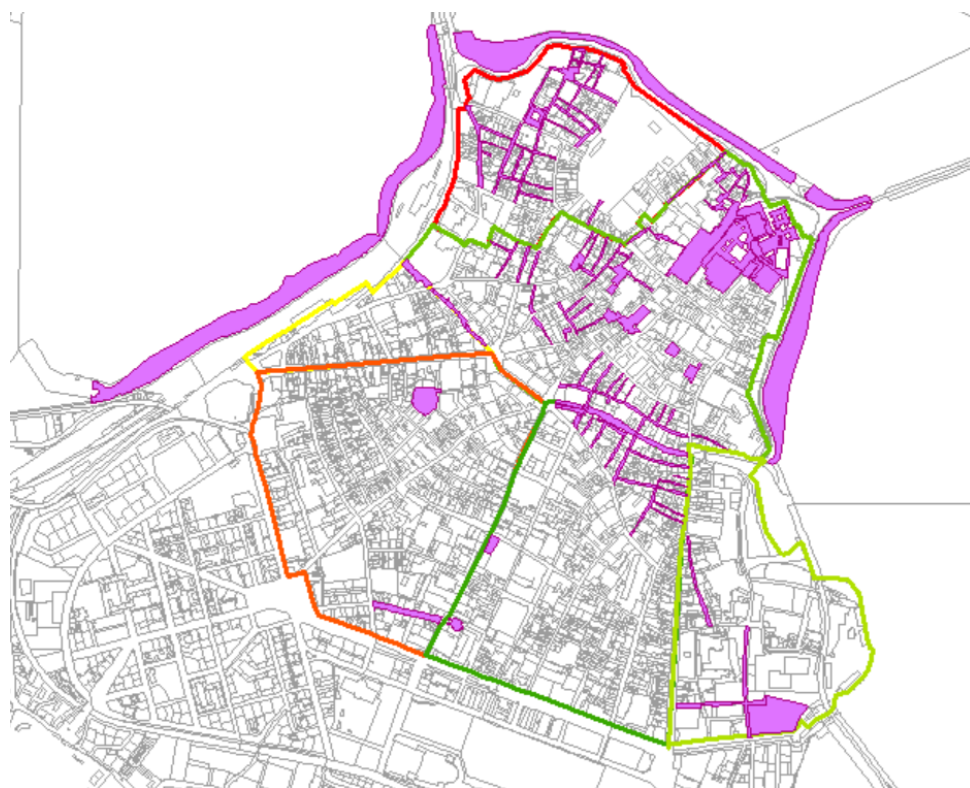


Figura 4 Hidden Places (Extract Table 2)

The questionnaire went on by asking to indicate **favorite places**. The most common answers indicate the city centre entirely or individual squares and streets, and the area of the lakefront as favorite places. The *district of San Leonardo* is also mentioned several times, but also the area of *Santa Maria del Gradaro*. The gardens are often named among the favourite places, with a clear preference for *Piazza Virgiliana*. The city's favourite places cover the entire city centre and the two stretches of lakefront.



Figura 5 - Favorite places (Extract table 2)

The **places for walking** was another question. It is interesting to notice that the majority of users indicated that one of the most appreciated aspect is the possibility to walk all the city, from one place to another without the need of a car.

The favorite places for walking are within specific neighborhoods (such as the *district of San Leonardo* and the area the *Duomo*).



*Figura 6 - The places for walking (Extract table 2)*

When asked to indicate the reason of the choice, the majority of users indicated the beauty and cultural references, a minority indicated the vitality of the area. The green areas were mentioned several times for the possibility to walk quietly. The term tranquillity was then often reported.

The platform allows on the one hand to give direct suggestions to the Administration, on the other hand, to create thematic maps regarding perception of urban safety, of places to be valorized, of the most beloved routes and of criticalities.

Users could also include **proposals**. The suggestions were mapped and divided in 3 main groups:

1. Suggestions for specific places,
2. Suggestions related to specific issues but not referring to a specific place,
3. Suggestions related to the management of Mantova HBA

For the second group it is interesting to notice that many users indicated the problem of **architectural barriers** followed by an issue related to security, in detail the possible increase in lightning of green areas.

The majority of proposals suggest an **accessibility** but that does not include the increasing of cars, on the contrary the implementation of public transport and the improvement of bikes accessibility.

As for the management of HBA, many answers indicate the **lack of activities for young people**. Many proposals refer to the implementation of cultural activities and to the creation of aggregation places, perhaps in unused historical buildings. Important suggestions are also related to the possibility to implement policies to attract young people. This last point is very important and shows also that it is clear also to the public that the sustainability of the city centre is linked to the presence of inhabitants.



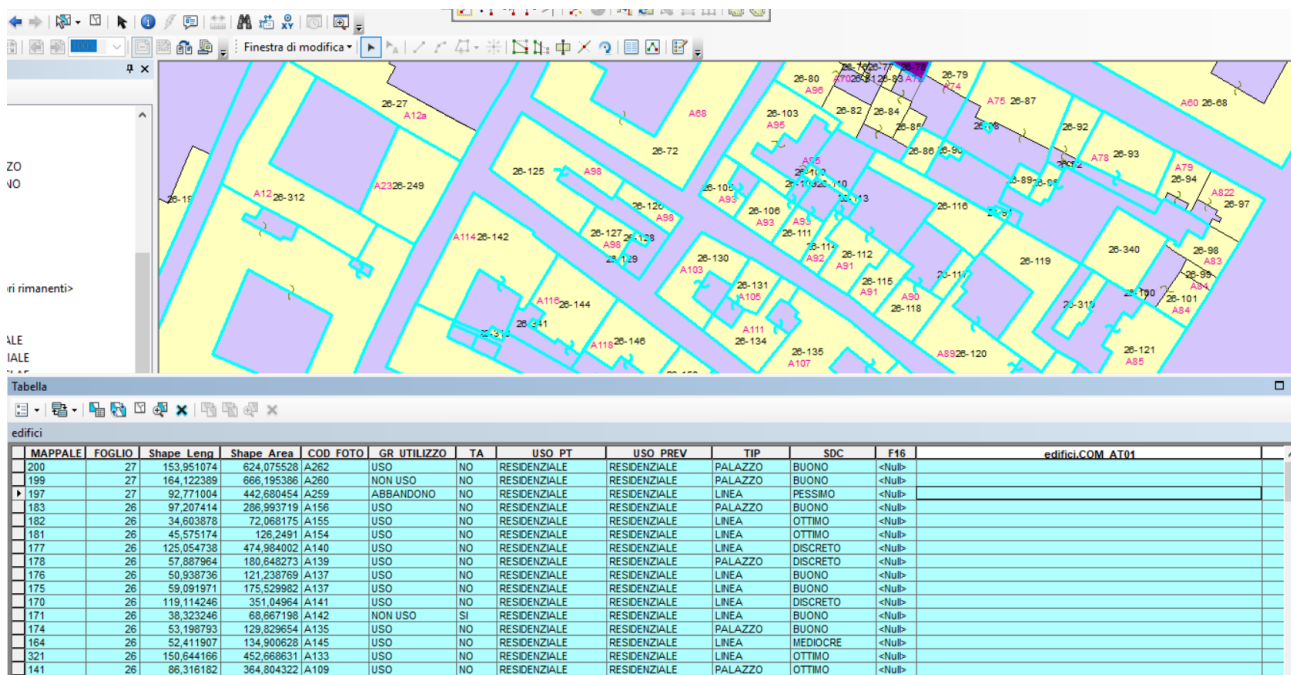
## THE FIELD SURVEY

As mentioned above, in parallel with the collection of data from civil society, **field surveys** on city centre were made.

The area of the city centre was divided into blocks and each building was photographed and its characteristics were evaluated to define the map that identifies the places to be regenerated and the possibilities of enhancement.

The map provides a sort of "**state of health**" of HBA but also, if we consider that the presence of the inhabitants and activities are the first sign of vitality of the centre, the health of the city in its wider sense.

Using the GIS system of the Municipality of Mantua, each building was identified from its cadastral coordinates and all the information collected were added.



The survey was made in 2018 and could be easily and constantly updated thanks to the methodology built. For example, it would be useful to add information about the closure of existing yards, the opening of new ones or to verify the duration of the same ones. This monitoring could be carried out with the collaboration between Urban planning department and Commercial department. The connection with the building bonds could also provide an indication of the vitality of the interventions and the interest that raises in owners and possible investors.





B71 – Building already detected as construction site in the year 2012

## The photographic relief

(ANNEX 3 – EXTRACT OF THE SURVEY, DIGITALLY DELIVERED DATABASE)

The photo relief returned the image of each building. When the building was in the corner, images were taken on both sides. To the record of the table of the buildings has been added a code – "COD\_FOTO" that uniquely identifies the building and has been assigned the same number to the photo so that also when disconnected from the database it is never lost its location, for a total of about 2,800 buildings photographically acquired.

The image also exemplifies the data collected and in case of doubt allows to verify the data entered.

In addition, other features could be assessed thanks to this acquisition. For example: quality of the pavements of public spaces, use of road sites in terms of traffic and parking, state of urban furniture. By lining up the images of the road fronts it is possible to detect the potential and criticality of the various streets.

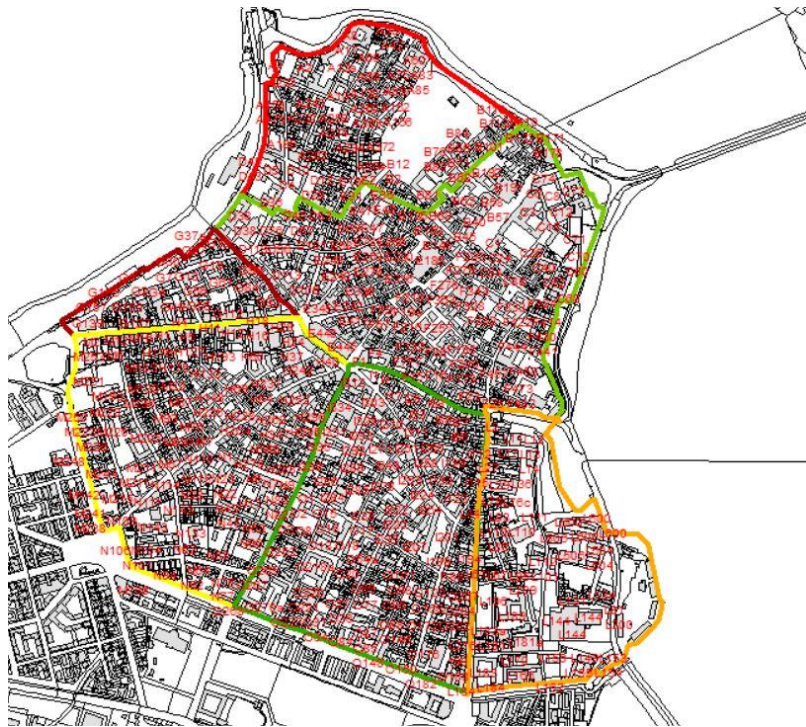


Figura 7 The map of the photographic survey as a whole, below the detail of a block and a reference column



CODICE 12	MAPPALE 12	FOGLIO 12	COD FOTO
54-732	732		54 099
54-747	747		54 098
54-750	750		54 097b
54-753	753		54 097a
54-755	755		54 097
54-767	767		54 096
54-799	799		54 095b
54-796	796		54 095a
54-774	774		54 095
54-801	801		54 094
54-805	805		54 093
54-805	805		54 093
54-792	792		54 092
54-808	808		54 091
54-812	812		54 090
53-431	431		53 09
54-1077	1077		54 088
54-823	823		54 087
54-826	826		54 085
54-827	827		54 084
54-825	825		54 083
54-D	D		54 082

In the image below are highlighted the image acquisition codes and the codes of the individual buildings made up of the sheet-mapping pair- followed by examples of the photographic relief on single front or corner.





*Figura 8 Map code high*



*A114 front 1*



*A114 front 2*



*A119*



*A120*

## Data collected through the field surveys

### The intended uses

(Table 3)



*Figura 9- Mapping of the destinations of use (Extract Table 3)*

Regarding the survey, the following use destinations were mainly distinguished:

- Residential
- Commercial
- Craft
- Directional
- Accommodation facilities

- Technological services
- Cultural Services
- Civic Services
- Religious Services
- Mixed

The **use destination** has been detected regardless of the degree of use to which it is inseparably linked in some parts of the city. Crossing the two data, in fact, it is found that some areas to the prevalent office destination have emptied of such function and on the contrary buildings with the commercial ground floor are sometimes empty in the upper residential floors.

Where a mixed destination was present, all the present uses have been inserted if detectable by sight. The condition is that, often in the absence of shop windows, residence and office use are not distinguishable. In the case in which it was marked the management use was generally present outside a sign, as in the case of banks, or in any case a cartel as in several private offices.

It is considered, however, that an error of some unit between residence and office does not generate great consequences in the use of the buildings. When the use is commercial or craft, the activity type specification columns have been completed.

Starting from the left of the façade, or from the west in the court installations, the various activities have been included in these columns, including in the list also the empty activities.

The accommodation facilities have been included as a destination mainly in the case of hotels or in any case in the case that the accommodation facilities actually occupy a well defined and large portion of the property.

Room rental, bed and breakfast and similar have been identified with a symbol, punctually on a separate layer, affixed to buildings with other main purpose use.

As far as technological services are concerned, these are examples such as water tower, electrical cabins and similar uses.

Museums and libraries were mainly included in cultural services, while schools were integrated into civic services along with health services, local services and security.

Churches, monasteries and all the buildings belonging to them have been included in the religious services.

The mixed-use destination was used only on the ground floor and only in cases where there were destinations belonging to more than two categories (for example, residential craft-businesses). In case of presence of activities, the destinations were specified in the columns of the trade.

Compared to the surveyed building stock, the intended use is divided as follows:

<b>USES</b>			
Destination of the ground floor		Main destination	
N°	%	N°	%



Residential	1.844	64,66	2.523	88,19
Commercial	643	22,55	39	1,36
Craft	42	1,47	18	0,63
Directional	132	4,63	91	3,18
Accomodation facilities	7	0,25	7	0,24
Technological services	1	0,04	1	0,03
Cultural Services	46	1,61	48	1,68
Civic Services	82	2,88	80	2,80
Religious Services	55	1,93	54	1,89
	2.852	100,00	2.861	100,00

The term 'artisanal-commercial' has been retained because it is numerically relevant.

Craft activities are those classified by *Confartigianato* (Trade association). In the borderline cases between commercial and craft, the presence of workmanship was verified. The butchers were categorized as commercial.

### The building typologies (Table 4)



Figura 10 - Mapping of building types (Extract table 4)



The survey identified the **building types**. The starting point was a previously prepared abacus that categorized the buildings through a point shape and that represented, in addition to a useful base, a reference for the verification of the collected data.

In the current plan the typologies have been connected to the area of the building and the cases has been enriched.

**The typologies concern the historical buildings and the recent ones:** when they are superimposed a specification is made in a special column prepared regarding the apparent period of construction. This column has not been compiled in the cases of congruence between type and probable historical dating while it has been compiled in the case in which the typology is markedly historical but the building that is on the seat has been reconstructed or extensively modified. For example, with regard to historical buildings, these are houses on gothic plots and their relevance, of the recasting of the same ones that acquire therefore an elongated shape of the facade and a scan of the more irregular opening often due to the insertion of slides or wheelbases.

The type on gothic lot is referred to a type of house with curtain on road, with narrow front and medium length greater than the width. On the back of the house there is generally a courtyard inside which was the latrine since the toilets were not inside the housing units. At the end of the courtyard there were rustic houses for sheltering wood and any farm animals. The facade was scanned depending on the width of the lot but on average it was an access door placed on the side and flanked by one or two windows on the ground floor while on the upper floors there were two or a maximum three windows in case of lots of dimensions major. Often the two windows on the ground floor, due to the different scanning given by the access door, were not aligned with those on the upper floors, aligned instead. On average, there are three-storey above-ground buildings, one with access to a first housing unit and two upper floors.

The extended type is similar to the gothic lot with a single entrance on the right or left and a series of windows that continue along the façade. Generally, the windows are evenly distributed starting from the ground floor to get to the attic windows if present. The access door can be either a normal door or a driveway hall.

The recast typology resembles the elongated typology as it has a greater width than the Gothic lot and generally has an access on one of the two parts of the facade. It was distinguished mainly because the façade is disorderly and has more than one access on the front or unordered commercial windows. Sometimes such typology was verified with the map of the Raineri of 1831.

It has been used the term "***Palazzetto***" to define buildings that present themselves with a tidy and symmetrical facade of greater dimensions of a house on gothic plot or elongated also without having connotation typical dimensions of a palace. This classification does not exclude that the building derives from the recast of the Gothic plots no longer present even in the nineteenth-century map of Raineri, however, what is presented now is a small palace. The name also refers to small Liberty buildings always when they do not have a dimension of an impact with the road front identifiable as a palace. When the palaces have an even more important character and an adjoining courtyard it is a court facility.

There are then the single houses, called "***Villino***", that is isolated on lot for a family or more families. In these cases they are generally buildings born from the second half of the 800 and as palaces and villas eclectic or liberty.

Two further typologies have been identified, such as the “**loggias**”, where the ground floor is entirely dedicated to the public walk and the building is open on two long sides, the **towers and the monumental complexes** where the single components are still service of the entire complex.

They follow the **religious typologies** such as churches, convents, bell towers and other annexes.

The **productive buildings** have been inserted like warehouses with the eventual specification on the dating like for the civil buildings.

Other types of buildings are **schools**, so defined when typologically recognizable as such as is generally the case of schools built in the twenty years, technological plants, such as water towers, electrical cabins, isolated chimneys.

Finally, the most recent types of architecture have been identified, such as **block and tower inline houses**. Also in these cases a rough dating has been indicated in order to frame the style that could identify a block or a neighborhood.

It is important to specify that the typology is indicated regardless of the function installed. For example the schools that are in the ancient convents, passed in public property, are identified with destination= of use school and type= convent.

The dual information also makes it possible to verify the purpose of using the buildings.



*Figura 11 house on original gothic lot*



*Figura 12 house on gothic lot with modification of the aperturs*



*Figura 13 rebuilt house on gothic plot*

The abacus (annex 4) encodes the types and also indicates the most common compromises of the individual types.

**The degree of use**  
 (Table 5)

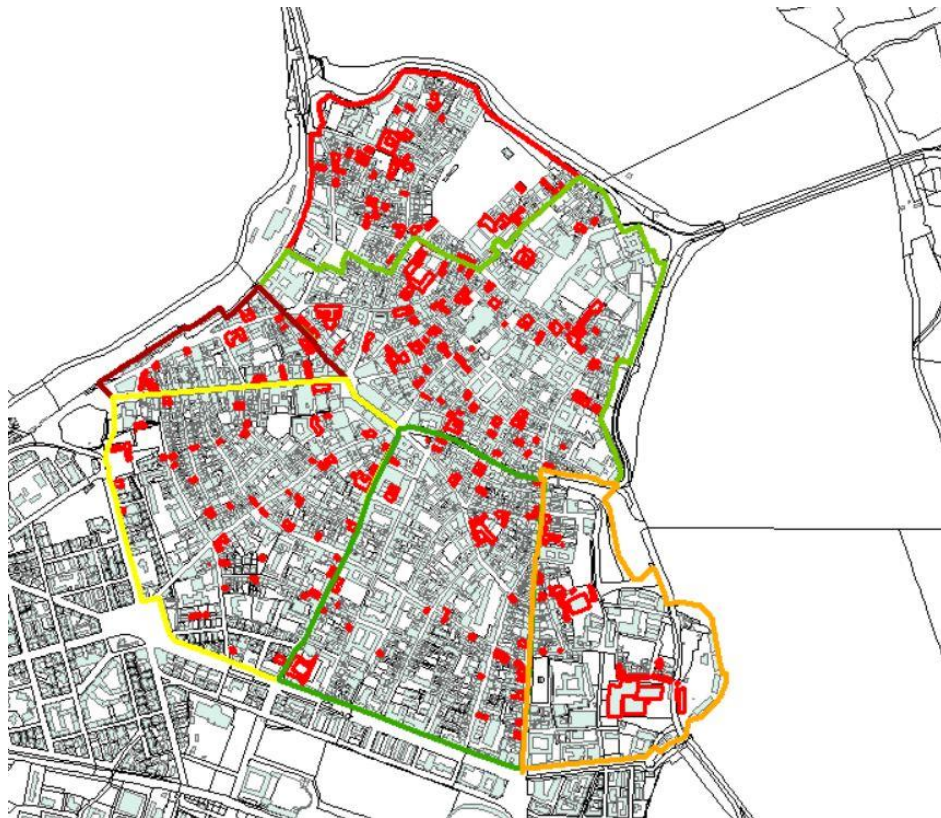


Figura 14 - Map of buildings not in use (Extract Table 5)

The survey identified the building degree of use:

DEGREE OF USE		
	N° EDIFICI	%
In use	2.587	87,69
Use of the ground floor only (cod shape UPT)	28	0,95
Use only upper floors (cod shape UPS)	129	4,37
Into disuse	169	5,73
In abandonment	37	1,25
<b>TOTAL</b>	<b>2.950</b>	<b>100,00</b>

This is a visual assessment but with a rather low margin of uncertainty. The Municipality GIS system divides the buildings not in use in the two categories ‘in disuse’ and ‘in abandonment’. The difference between the two specifications depends only partially on the length of the abandonment period: the character distinguishing the two entries mainly concerns the lack of care. While a disused building is simply not used, an abandoned building shows the total lack of an owner to take care of it. An abandoned, maintenance-free building as well as real public health and safety problems can increase the perception



of urban insecurity and above all lead to careless behaviour such as waste disposal. It is often found that, in addition to scattered waste from occasional passers-by, waste bags are often deposited near abandoned buildings. The two examples below clarify the difference: both buildings have been in disuse for a long time but in the case of *Via Cocastelli* the total lack of maintenance is linked to a poor state of conservation. The building in the *Broletto square*, the *former Chamber of Commerce*, probably owes the best maintenance to the type of property but also to the fact that commercial activities on the ground floor although occasionally were rented thus generating income.



*Figura 15 Abandoned building in Via Cocastelli*



*Figura 16 Building not in use in piazza Broletto*

The situation returned by the survey finds that the real estate in use is close to 90% of the built and about 10% involves various types of disuse. In particular half of these are in a state of total disuse while the other half has the ground floor unused. This figure is relevant as compared to the public city, about 10% of buildings have a lack of relationship and can generate perception of decay.

The map shows the areas where the phenomenon is most common. In particular, areas where there is widespread lack of use of offices and similar to the ground floor, situation due to the changing economic situations of the last years and for which it could be thought to activities of incentive of the use of the spaces to such function so as to fill the centre of both inhabitants and users for work reasons.



*H42*

## The conservation status

(Table 6)



Figura 17 - Conservation status (Extract Table 6)

During the campaign, the **visible conservation status** of the buildings was found. This conservation status mainly concerns public space.

The conservation status found, considering the objectives of the project, concerns the relationship between the building and the public space. In this sense it does not include any assessment of the changes or the type of restoration carried out.

In this sense it does not include any assessment of the changes or the type of restoration carried out.

The following classes have been defined:

- Excellent building - generally well maintained or intervention just performed
- Good building - evidently maintained in good condition but for example some facade finishes are not in optimal condition
- Discreet maintenance - present but not optimal (it refers to recently unused buildings with for example exterior windows with little maintenance)
- Mediocre maintenance - absent for a long time and with the risk of losing finishes, frames, plasters, windows
- Disease - generally of abandoned or underused buildings. Risk of loss the property.

**Crossing the data with destination of use and the degree of use**, it could be verified both the consistency of the inhabited buildings of the city centre, or an index of the quality of living although based on perceptive data, than the possibility of recovery of abandoned buildings.

<b>STATE OF PRESERVATION</b>		
	N° BUILDINGS	%
Excellent	606	21,24
Good	1.323	46,37
Discreet	561	19,66
Mediocre	325	11,39
Disease	38	1,33
<b>TOTAL</b>	<b>2.853</b>	<b>100,00</b>

The survey shows that about **87% of the buildings are in a state of conservation between discreet and excellent while a residual part of about 13% needs more important interventions.**

It may be noted that some of the buildings in a poor state of conservation and abandonment are currently interested by public or private interventions. For example, the area of *San Nicolò* (ex-ceramic factory) is interested by the regeneration project *Mantova Hub. Palazzo Cavriani*- one of the most beautiful buildings of the city - was recently purchased and probably in the next years, after a long period of closure, restoration works will start.



## The relation between type and degree of use



Figura 18 Gothic abandoned use in via Pero.



The compromise of the houses on gothic plot led in some cases to abandonment given by the loss of the part discovered behind the building. The most attractive feature of these houses– of great charm but of poor habitability for the modern necessities– is given just by the presence of a large garden area with any rustic. Over the years these auxiliary spaces have often been sold to houses on the opposite side of the road, either as gardens or as building areas, or the properties have been divided between house on the front and rustic interior transformed into independent house. The added value of these buildings is therefore diminished, and real estate remains on the market for a long time. Sometimes what makes them less attractive are the transformations in shop windows of ground floors: in these cases, only one of the 2 destinations is occupied.

- SDC
- OTTIMO
  - BUONO
  - DISCRETO
  - MEDIOCRE
  - PESSIMO

## THE INTERSECTION OF DATA

**The answers collected from civil society and data collected through field surveys were crossed.**

This action aims to verify how the suggestions met the qualities of buildings, the conservation and use degree of building and public spaces.

When overlapped the 2 maps, the results showed that no particular discomfort has been reported with respect to the issues of use of the non-use or conservation status of buildings: Therefore, **there is no correspondence between the perception of inhabitants and the state of health of built heritage.**

**A second data intersection, on the other hand, concerns the “non-mappable” requests such as - for example - those of craft activities and innovative activities.**

### RELATIONSHIP BETWEEN AREAS WITH NEGATIVE PERCEPTIONS, DEGREE OF USE AND STATE OF CONSERVATION OF BUILDINGS (TABLE 7)

Table 7 shows that the connection is not found in the historical centre. The places perceived as degraded are mainly the result of a poor planning, even historical, of public spaces and their connection with the built-up and, above all, from the more or less real perception of a bad attendance. The only area where this connection was found is the ceramic factory where an abandoned concrete skeleton coexisted with the remains of the ancient factory.

The area of *Piazza Sordello* has been instead signalled for the feeling of abandonment and insecurity that it generates because, even if it is the centre of the *civitas vetus*, in the evening it appears deserted and desolate. Probably to increase this sense of insecurity, which certainly is not linked to factors of decay neither of the buildings facing the square nor of the urban public space, but probably to physical and the urbanistic conformation. From a physical point of view, going out from the vault of San Pietro you can see the height of the square rising approximately diagonally towards the entrance to the Doge's Palace. This rising of the square together with the fact that it is deserted in the evening probably creates a feeling of disorientation. The issue of urban planning is related to an unresolved problem because this place, just like the others on which negative perceptions have been reported, has been subject to some variations that have generated some critical points.

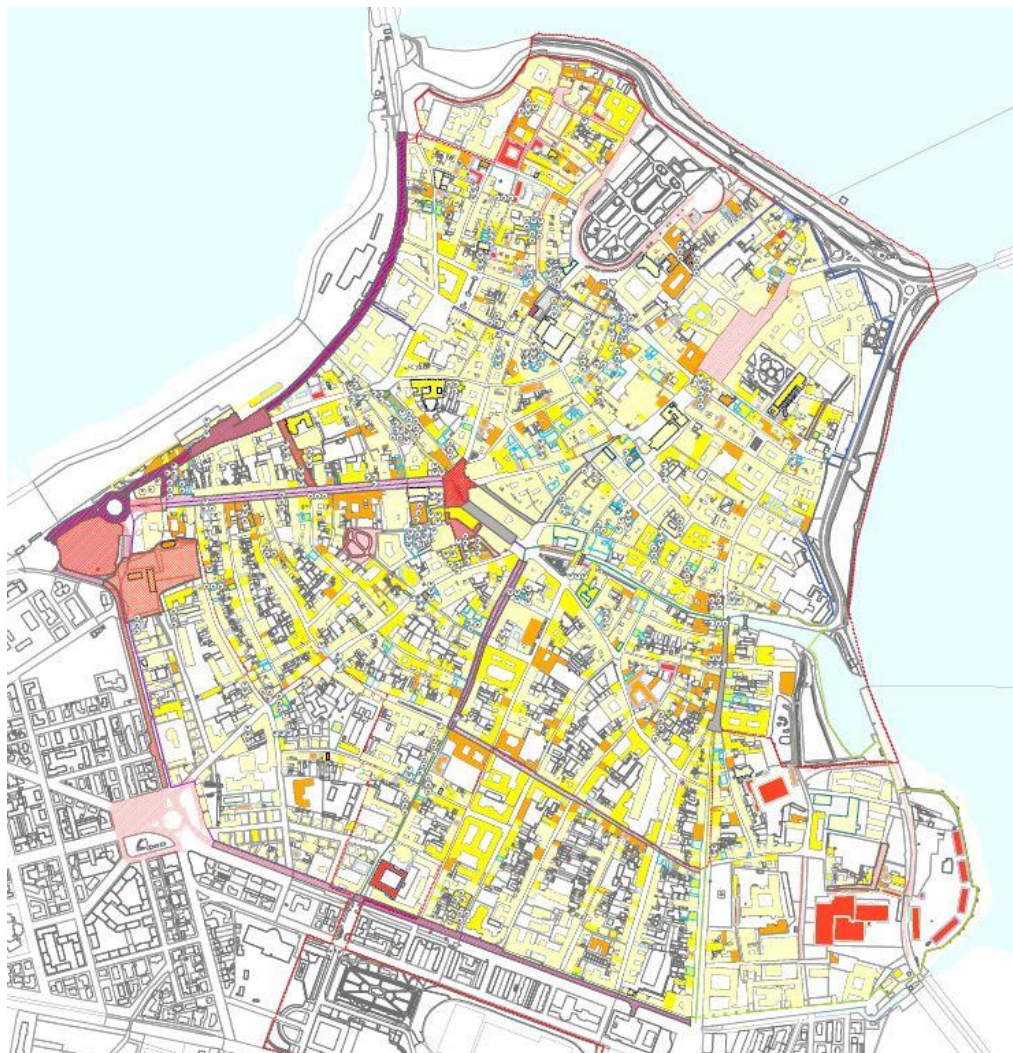


Figura 18 - reworkings: negative perceptions and recorded data (Extract Table 7)

Another perception of insecurity is linked to the streets around *Piazza Virgiliana*, the gardens of the promenade, the *Belfiore Gardens* and the *Valentini Gardens*. In all cases it is probably the perception of insecurity linked to the frequentation and poor lighting.

The other areas of decay and insecurity are those near the train station (common to many cities), the areas surrounding the 24-hours supermarket and the bus station square. In all these cases the places are still unsolved from an architectural and urban point of view.

It was initially thought of a connection between the empty activities detected on the ground floors and the perception of decay. This connection is actually present. What is not clear is whether the assets have emptied due to decay or whether the opposite process has taken place. However, it can be assumed that restoring economic activities to the ground floor of buildings together with new urban projects would significantly improve the situation in the most critical areas. **The CPTED (crime prevention through environmental design) approach could be a first response to perceptions indicated by citizens however it is not the only solution.** In fact to clearly define the situation and find an integrated solution it is advised **to involve other Departments of the Municipality** (the Welfare and social



services department) to deeply examine the answers of citizens and then to integrate effective intersectoral policies into the City Plan and in the design of places.

## RELATIONSHIP BETWEEN ZONES WITH POSITIVE PERCEPTIONS, DEGREE OF USE AND STATE OF CONSERVATION OF BUILDINGS

(TABLE 8)

**This table has been checked trying to determine whether the positive perceptions were only linked to the areas best preserved:** the result found is not completely directed. The idea of living and frequenting such a beautiful city is probably and fortunately prevailing than the occasional emergencies of decay or lack of care do not prevail over the perception of the context. Related to this concept, we could take as example the small district of San Leonardo where buildings conservation status is very differentiated: recently restored buildings, large abandoned buildings including a noble house (*Palace Cavriani*) and another small palace of historical value on the corner between *Via Cavriani* and *Vicolo di Mezzo* as well as a portion connected to the ancient hospital fifteenth-century state owned. In the neighbourhood there are very few commercial activities and limitations in traffic.

Users indicated as places for the promenade, very alive from the commercial point of view, *Corso Vittorio Emanuele* – recently renovated - and *Via Chiassi* where most commercial activities are in use and are mixed with some basic craft activities for inhabitants.

Many users have reported also less frequented alleys in which it is possible to breathe an atmosphere of authenticity. These areas, for example on the sides of *Via Cavour* or in the area of *Via Montanari*, present several abandoned buildings in a poor state of conservation.

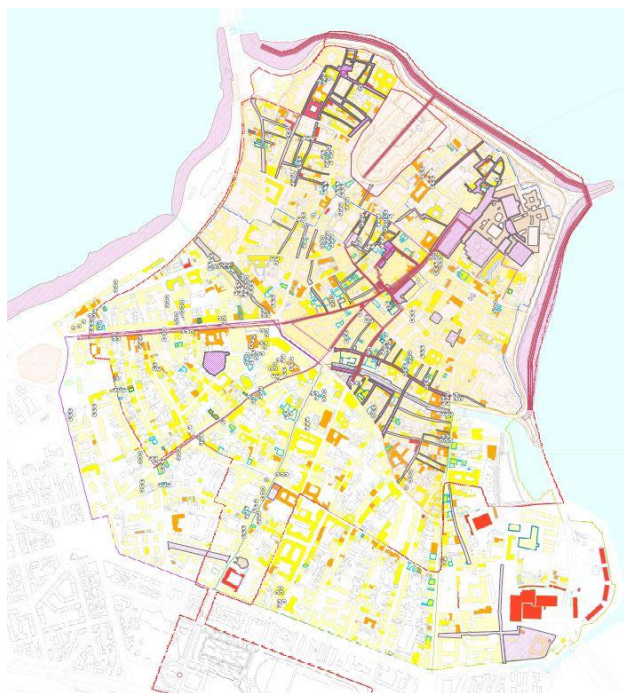


Figura 19 - reworkings: positive perceptions and recorded data (Extract Table 8)

## OVERLAP BETWEEN ZONES WITH POSITIVE PERCEPTIONS AND ZONES WITH NEGATIVE PERCEPTIONS

(TABLE 9)

This simple elaboration has been prepared because, considering responses of users, we have noticed that some places are reported from someone as degraded or to be avoided and as favorite or hidden places of the city from others. The *district of San Leonardo* itself, which is one of the most beloved of the city, has been pointed out by a user as an insecure place also because of the low lighting. The alleyways south of San Leonardo have been marked as hidden corner by a user and as poorly maintained despite their proximity to the monumental centre by another user.

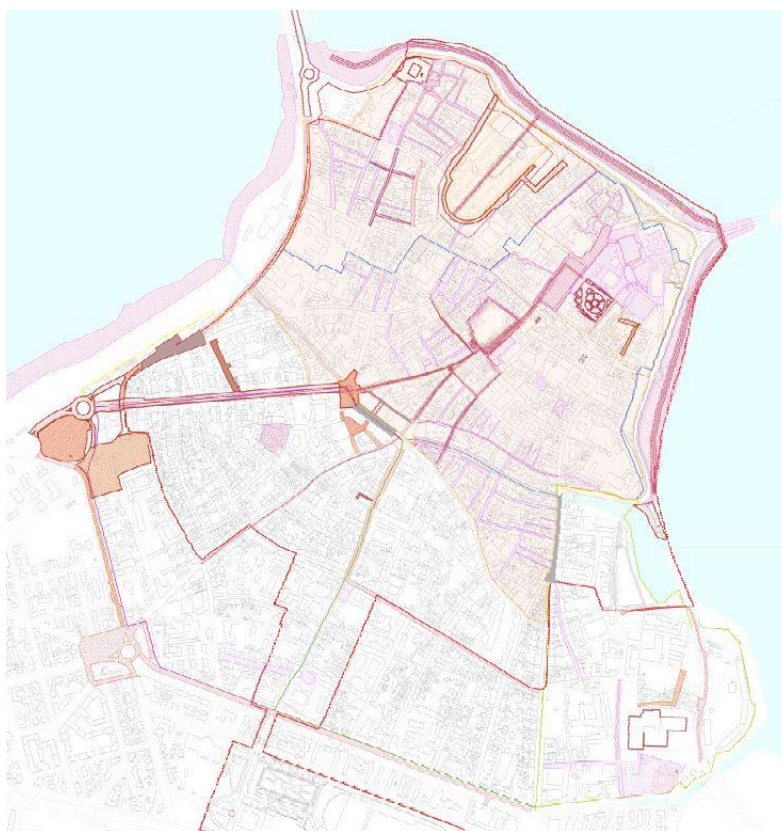


Figura 20 reworking: negative and positive perceptions (Extract Table 9)

The monumental complex of the *Doge's Palace* and the surrounding squares includes hidden corners favored by the citizens but at the same time, in addition to what has already been said for *Piazza Sordello*, contains, according to some users, critical elements: the gardens of *Piazza Pallone* or *via Teatro Vecchio* where the indicated criticality is in the presence of a betting room and, again, in the perception of bad attendance.

OVERLAP BETWEEN ZONES WITH POSITIVE PERCEPTIONS AND ZONES WITH NEGATIVE PERCEPTIONS DATA OF THE SURVEY AND ELEMENTS OF URBAN HISTORY

(TABLE 10)

Following findings of previous tables and data collected, the themes were grouped together in a single table. This table combines conservation status and degree of use, as well as presence of empty yards and commercial activities on ground floor.



*Figura 21 reworkings: user perceptions, recorded data and historical emergencies (Extract Table 10)*

The map was compared with the historical maps of the city (1831, Giuseppe Raineri). The comparison shows that areas marked with negative meanings almost in all cases belong to one of the two following categories: derived from the demolition of buildings and historical blocks or from historical location on the edge of the city. This report certainly does not have anti-historical considerations in mind, since what has happened cannot be reconstructed. It should also be noted that in the map of the 1831 many elements of the historical city had already been rebuilt. It should be borne in mind, however, that in these very particular areas planning should continue, and new sociological, cultural and architectural and urban values should be brought where previous values have been lost. This type of design, when confronted with an important history, can certainly not result in a few embellishments works as it must bring positive effects that can last over time.



PRINCIPALI STABILIMENTI CHIESE ED ORATORI															
A	Archivio di Governo	1	Compagnia dei Pompieri	29	M	Magazzino della SS. Trinità	38	P	Posta de Cavalli	57	S	Scuola Element. Israelitiche	70	A	Duomo Parrocchia
	Archivio gen <sup>te</sup> Notarile	2	D	Delegazione Provinciale	23		Magazzino dei Cappuccini	39		Prigioni di Pusterla	58		71	B	Basilica di S. Barbara
	Anfiteatro Virgiliano	3		ed' Uffici relativi	25		Mag <sup>te</sup> Filippini	40		Prig <sup>te</sup> di Piazza	59		72	C	Basilica di S. Andrea Par.
	Arsenale	4		Demanio	24		Mag <sup>te</sup> S. Domenico	41		Prig <sup>te</sup> della Mainolda	60		73	D	S. Simone Sussidiaria
C	Camera di Commercio	5		Direazione del Genio	25		S. Antonio	42	R	Raffineria de Nitri sop <sup>ta</sup>	61	T	74	E	S. Leonardo Sus <sup>a</sup>
	Casa di Ricovero ed Ind <sup>a</sup>	6		Dogana e dispensa dei	26	S	Gradaro	43		Scuole Element <sup>te</sup> mag <sup>te</sup> Fem <sup>te</sup>	62		75	F	S. Gervaso Par. <sup>a</sup>
	Casa di R <sup>te</sup> Israelitica	7		Tabacchi	26		S. Barbara	44		nel Casin Lottinger	62		76	G	S. Orsola Sus <sup>a</sup>
	Cantelma Caserma	8	E	Ergastolo o casa di pena	27		S. Nicola	45		Scuole minori Maschili da			77	H	Ogni Santi Par. <sup>a</sup>
	S. Barnaba Cma.	9	F	Forni Militari	28		S. Vincenzo	46		S. Giuseppe	65		78	I	S. Maurizio Sus <sup>a</sup>
	S. Lodovico Cma.	10		Fabbrica di Vetri	29		Madonna del Popolo anessa			Scuole Femmindi minori da			79	K	S. Barnaba Par. <sup>a</sup>
	Nuvolara Cma.	11		Fabbrica dei Corami	30	O	all' I. R. Accademia	47		S. Cristoforo	64		80	L	S. Teresa Sus <sup>a</sup>
	S. Maurizio Cma.	12		Fab <sup>te</sup> dei Tabacchi sopressa	31		Ocfanotrofo dei Maschi	48		Scuole Maschili minori da			81	M	S. Carità Par. <sup>a</sup>
	S. Giovanni Cma.	13	G	Ginnasio e Biblioteca	32		Ocfanotrofo delle Femmine	49		S. Egidio	65		82	N	S. Martino Sus <sup>a</sup>
	S. Agnese e Soccorso Cma	14		Museo, Liceo e Scuola	33		Ospedale Militare	50		Scuole gratuite Femm <sup>te</sup> nelle			83	O	S. Egidio Par. <sup>a</sup>
	S. Sebastiano Cma.	15		Element <sup>te</sup> Magg <sup>te</sup> Maschile	32		Ospedale Civile	51		Stabilimento di ragione del			84	P	S. Sebastiano Sus <sup>a</sup>
	S. Domenico Cma.	16		Giudicatura Politica ed'	34		Orto Botanico	52		Sig <sup>te</sup> Conte Mellerio	66		85	Q	S. Spirito Sus <sup>a</sup>
	S. Paola Cma.	17		Ipoteca	35	P	Palazzo Reale	53		Seminario Virgiliana	67		86	R	S. Apollonia Par. <sup>a</sup>
	Castello Prigioni	18		Gendarmaria	34		Palazzo Vescovile e Cancell.	54		riedificato nel 1849	68		87	S	S. Caterina Sus <sup>a</sup>
	Comando di Piazza	19	I	I. R. Intendenza di Finanza	35		Palazzo Municipale	55		Scuola grande di Culto	69			T	Oratorio sotto il titolo della Mad <sup>te</sup> del Canossa
	Comando di Artiglieria	20		Monte di Pietà	37		Palazzo dell' I. R. Comando della Fortezza	56		Israelitico	69				
	Congregazione di Carità	21													

Figura 22 - List of the buildings present in 1831 mapped in table 10



Figura 23 - the area of the Station in the map of 1831



Figura 24 - the area of the Station in the map of 1935

## CITIZENS' REQUESTS AND INTENDED USE

### The innovative activities

From the field survey no specific innovative activities emerged, which instead were requested by users as evidenced in the question **'What is missing in the historic centre'**.

It will certainly be of interest to push the design of the city towards this direction and test the answer, since such request has been signalled by users of different types with diversified relationships with the city centre.

### Craftsmanship

To the question on what is missing in the city centre, a significative percentage of inhabitants found a shortage of craft activities.

The field survey verified that these activities are present.

At the first glance, it could be seen that there are indeed a few small-scale services missing in the city. If for example the tailoring activities have certainly increased in recent years for the dedication to such activity by the Chinese community, which thus responds to the need for small repairs, as customized packaging has been found the presence of a single shirt.

TYPES OF CRAFT ACTIVITIES		
	N° ACTIVITIES	%
Hairdressers and barbers	26	21,14
Beauticians	15	12,20
Bakeries	14	11,38
Cut and take away Pizzerias	8	6,50
Tailoring and packaging services	7	5,69
Ice cream shop	6	4,88
Electrical repairers - telephones - computers	6	4,88
Building craftsmen	7	5,69
Patisseries	4	3,25
Shoemaker	4	3,25
Graphic arts and art studies	4	3,25
Car repair shop	3	2,44
Laundry Shop	3	2,44
Laboratories of goldsmiths	2	1,63
Tattoo Shop	2	1,63
Frame makers	2	1,63
Print Shop	2	1,63
Photographic Studios	2	1,63
Knife Sharpeners	2	1,63

Upholsteres	1	0,81
Roaster	1	0,81
Dental Prosthetics Laboratories	1	0,81
Upholsterers	1	0,81
<b>TOTAL</b>	<b>123</b>	<b>100,00</b>

The majority of the activities refer to aesthetic field, food and home-living. It should probably be noted that the survey cannot be considered reliable with respect to craft activities that do not require showcases, such as building craftsmen, and that have activity tax residence in private house (e.g. electricians, plumbers, pavers).

CATEGORIES	%
Cosmetic	34,96
Grocery	26,83
Car and home management	20,33
Personal care	9,76
Other	8,13
<b>TOTAL</b>	<b>100,00</b>

### Local shops

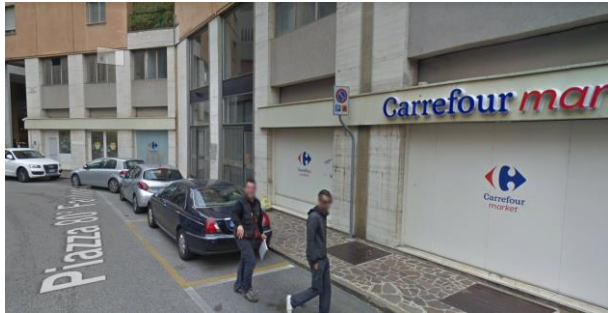
It has been reported by users, in a fair percentage, the shortage of neighborhood shops. In this case- if we consider as neighborhood activities those below 250 sq m, we could say the city centre is full of them. However, it could be considered that in the collective idea the neighbourhood shop is not that of the legislation but the small commercial store selling food or household products as well as the activities that produce them. It would therefore be a category halfway between commercial activities and craft activities such as small supermarkets, bakeries, cobblers and the like for shopping and services for the home and everyday person.

## FURTHER CONSIDERATIONS

### The perception of decay

Regarding commercial activities, in particular for medium-sized structures, even if in use, some problems have been identified that generate a perception of decay in relation to public space. In particular, the criticality comes from the fact that such activities involve a remarkable number of windows (of which are maintained cured only those relative to the main access). The other windows often are kept lowered or equipped with glass. This issue has been raised in all three supermarkets in the historic centre, which anyway represent an excellent service to the community.





Carrefour – Shop windows on Piazza 80 Fanteria



Carrefour – Shop windows on Piazza 80 Fanteria



Peroni, Shop windows on Via Porto



Peroni, Shop windows on Via Filzi



Peroni, Shop windows on Via Concezione



SMA, Shop windows on Via Dottrina Cristiana



SMA, Shop windows on Via Giustiziati



SMA, Shop windows on Via Giustiziati

This is not a secondary element. In fact, in the case of the supermarket with entrance in *Via Porto* there are eighteen display cases distributed on three streets (four display cases on *Via Porto*, seven display cases on *Via Filzi*, seven display cases on *Via Concezione*) including a limited section alley where the perception of carelessness becomes higher. In some cases, the disorder is accentuated by the use of

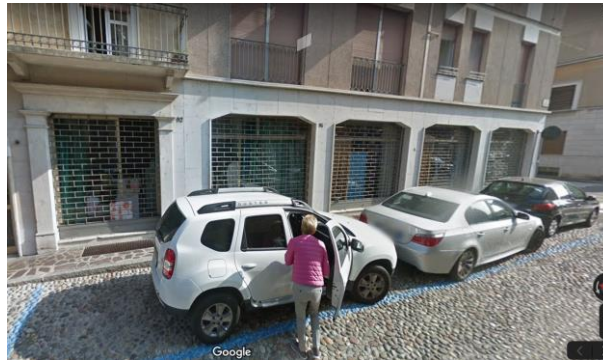
curtains and lighting randomly distributed in the different windows, glazing, the presence of technical installations or trolleys of material collection.



*Restaurant in via Gradaro*



*Bicycle warehouse via Gradaro*



Laundry Shop windows on Via Conciliazione

### The empty activities

As shown on the map, there are many empty activities on buildings ground floors. Some of these are isolated and, tendentially, unless there are particular problems of abandoned or totally unused buildings, may have been empty at the time of the survey but may be subject to turnover of activities.

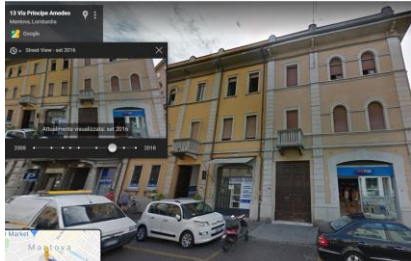
The example below shows the same store, currently empty, in the Google Surveys of 2008 and 2016. The corner building has been occupied at least since 2008 while the space to its left, currently in use,



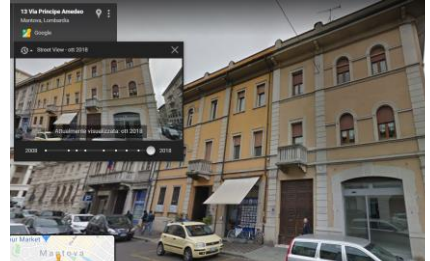
saw the passage of three different activities (Western union, real estate agency, computer assistance and real estate agency).



Ed. 36-242, via P.Amedeo, 2008



Ed. 36-242, via P.Amedeo, 2016



Ed. 36-242, via P.Amedeo, 2018

On the contrary, there are areas in which the unused parts are concentrated for a long time. The example below shows two cases, in the district at the south of the Rio, where certain activities have been unused constantly for a decade.

In these cases it would probably be interesting to act at urban level even before intermediation with the individual owners.

It should also be noted that- comparing with previous years- in the neighborhood there were some new openings also of quality such as a high-level clothing store and a new hairdresser, which could be the driving force behind the installation of new activities.



Ed. 35-1003, via Mario, 2008



Ed. 35-1003, via Mario, 2016



Ed. 35-1003, via Mario, 2018



Ed. 35-831, via Mario, 2010



Ed. 35-831, via Mario, 2016



Ed. 35-831, via Mario, 2018



## THE RESULTS OF THE PILOT

The main results of the pilot are related to several aspects.

The analysis of the above-mentioned data with the data collected from civil society allowed the municipality **to identify areas to be subjected to regeneration on the basis of decay conditions definitions at different levels and of inhabitants' decay perception.** Monitoring supported the definition of regeneration policies and possible processes to provide facilities for the recovery, reuse and renewal of existing city and building heritage.

The pilot action allowed **the construction of a working methodology able to involve the main departments related to the topic of Historic Built Areas management.** The activities were the starting point to build up a multidisciplinary working group that is now stable and works on urban regeneration related issues in an integrated way.

*Mantova si rigenera* enabled the Municipality to define a **methodology to collect data directly from stakeholders.**

Related to the previous point is the fact that the **ICT tool implemented enables to take into account different needs and expectations.** The tool supports in the re-definition of urban space design: as the ideal user does not exist but local users present different needs and expectations, the pilot action supported the idea of planning basing on effective users and not on ideal users. One direct result is related to the thematic of architectural barriers: the suggestions emerged opened a reflection on this topic supporting in the design and implementation of the City Plan for the architectural barriers destruction. More on that is the fact that suggestions opened to the idea of considering accessibility of all users together and not separate when designing public spaces.

The **differences in the perception** opened to several reasonings

- International students underlined the lack of ethnic restaurants, on the contrary other residents underlined the opposite need that is to say the lack of traditional restaurants. Moving from the concrete example, the **different perception and needs should be taken into account into the new Urban plan that will be a synthesis of different visions.** The tool supports local authorities in taking into account need of different targets.
- Technical data shows high buildings status (example of Piazza Cavallotti) but the perception of citizens is negative. This example confirms the **need of working together to align perception and reality,** to use tools supporting integrated design based on need of citizens and data monitoring for a social, environmental and economical sustainability.

## FUTURE DEVELOPMENTS AND SYSTEM CORRECTIONS

The target of **schools** requires a particular organisation and have been excluded from the pilot action also because to include them it is necessary to plan activities at the beginning of the instruction year. The idea is to involve students also through activities on the field (discovery of places and direct collection of suggestions).

In addition, the idea of the Municipality is **to extend the questionnaire to other areas of the City**. The questions should be slightly adapted to the different neighborhoods presenting historical value not recognised as Unesco heritage but of considerable importance.

With regard to system correction, in a future version, **some optional fields should be made mandatory** and answers should be changed as closed answers in order to be able to analyse data in a more efficient way. In addition, the possibility to identify the are object of the suggestion should be moved at the end of the questionnaire because in some cases the place initially identified was then changed answering to following questions.

The **questionnaire**, and the explanations on how to fill in the questionnaire, **translated in English** could be used by other partners. In fact the GISCloud web space allows the integration of other data from other cities.