



# WP.T3 - D.T3.2.3

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**State of the Art Report about mobility problems  
and policy challenges within ETP follower  
regions - Castel d'Aiano**

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**2021**



|                             |  |
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## 1. Introduction

Remote regions in central Europe share the same risks and issues related to the fact that they are located at the periphery of main transport networks. Inadequate and under-used services, excessive costs, lack of last-mile services and proper intermodality, poor communication and information to users and car commuting are some of the challenges that many central European regions face.

The SMACKER project addresses these disparities and promotes public transport and mobility services that are demand-responsive and that connect local and regional systems to main corridors and transport nodes.

Within SMACKER mobility issues related to peripheral and rural areas, main barriers are assessed and addressed and solutions drawn on the best international know-how are provided. SMACKER promotes demand-responsive transport services to connect local and regional systems to the main transport corridors and nodes. Soft measures (e.g. behaviour change campaigns) and hard measures (e.g. mobility service pilots) are used to identify and promote eco-friendly solutions for public transport in rural and peripheral areas, with the aim of achieving more liveable and sustainable environments and better integration of population to the main corridors. SMACKER helps local communities to re-design their transport services according to user needs, through a coordinated co-design process between local/regional partners and stakeholders; SMACKER also encourages the use of new transport services through motivating and incentivizing campaigns. The direct beneficiaries of the actions are residents, commuters and tourists.

Participation reflects the overall integration of citizens and groups in planning processes and policy decision-making and consequently the sharing of power. In particular, transport planning and transport relevant measures are often the subject of controversial discussions within the urban community. The concept of Sustainable Urban Mobility Planning has established the principle that the public should be included from the very beginning of the transport planning process and not only when the plans are largely completed and only minor amendments can be carried out. For that reason, public authorities need to open-up debate on this highly specialised and complex subject area and make participation a part of the planning process. In order to ensure participation throughout the process, the development of an engagement strategy would be necessary.

This deliverable “State of the Art Report” on mobility problems and policy challenges within ETP follower regions is the starting point for a better knowledge of the 10 selected Smacker Enlarged Transfer Programme (ETP) partners’ sustainable mobility challenges. The scope of these analysis is to map the needs, problems and expectations of each ETP follower region in low carbon mobility planning. Moreover, it defines the roles of ETP followers and policy leverages. It paves the way for local Action plans in ETP follower regions.



## 2. Project's area description

The present deliverable addresses as core area the ETP of the Municipality of Castel d'Aiano (see municipality area with borders in red colour in the following figure), located in the Southern part of Metropolitan city of Bologna.

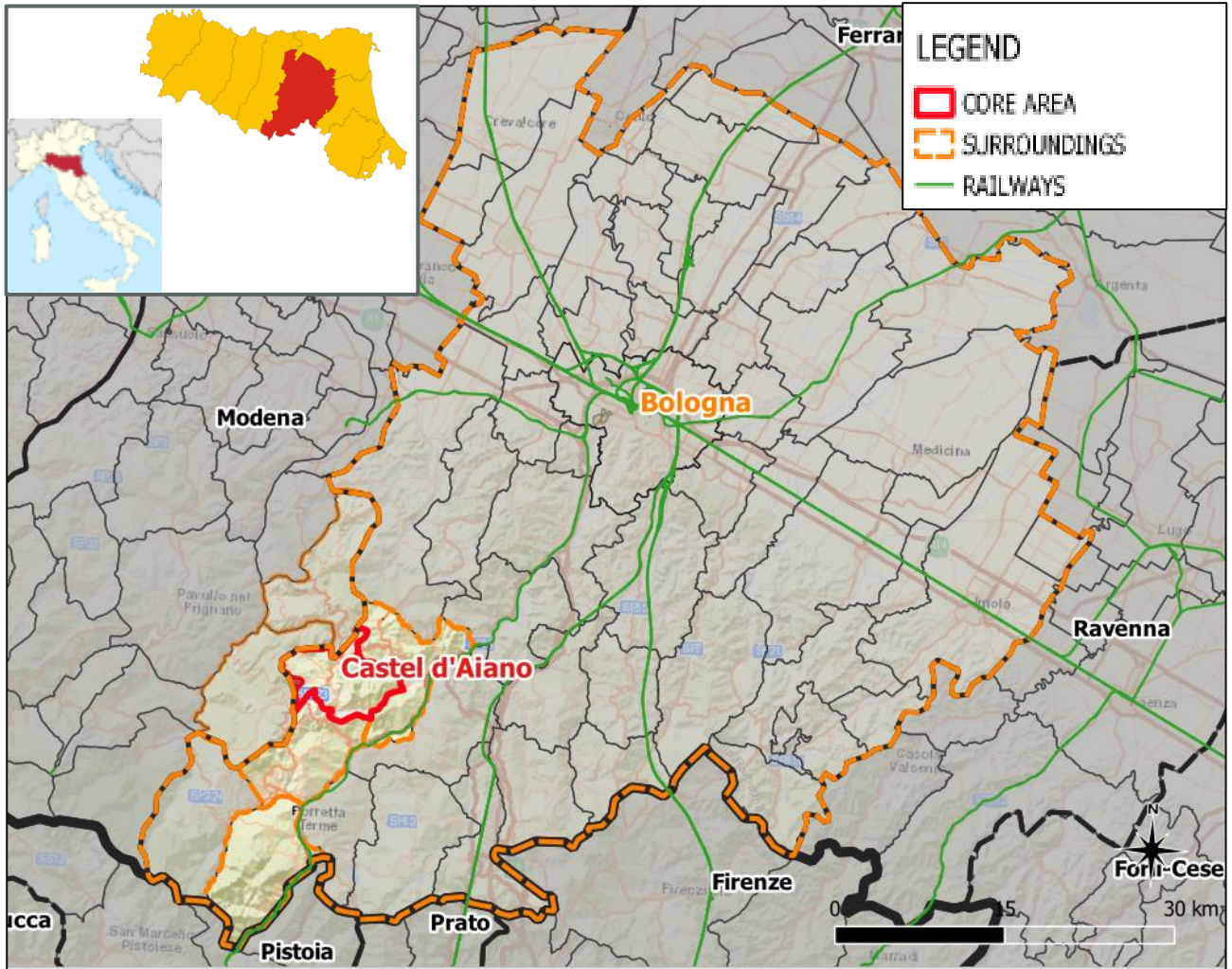


Figure 1. Map representation of the core pilot area as well as the surroundings

The Metropolitan city of Bologna is one of the 9 NUTS 3 areas making up the Emilia-Romagna Region in Northern Italy. Within the Metropolitan City, a relevant surrounding of the ETP core area, is represented in particular by the neighbouring municipality of Vergato. To a less extent, also the municipalities of Gaggio Montano as well as partly Zocca and Montese within the province of Modena.

Moreover, it is to recall also the important role of the city of Bologna, which represents a key reference polarity and destination due to the attractiveness of this main centre for all the metropolitan city, including the analysed area. Nonetheless, taking into account the key focus of the present analyses, in the following will be particularly focusing on the municipality of the core area.

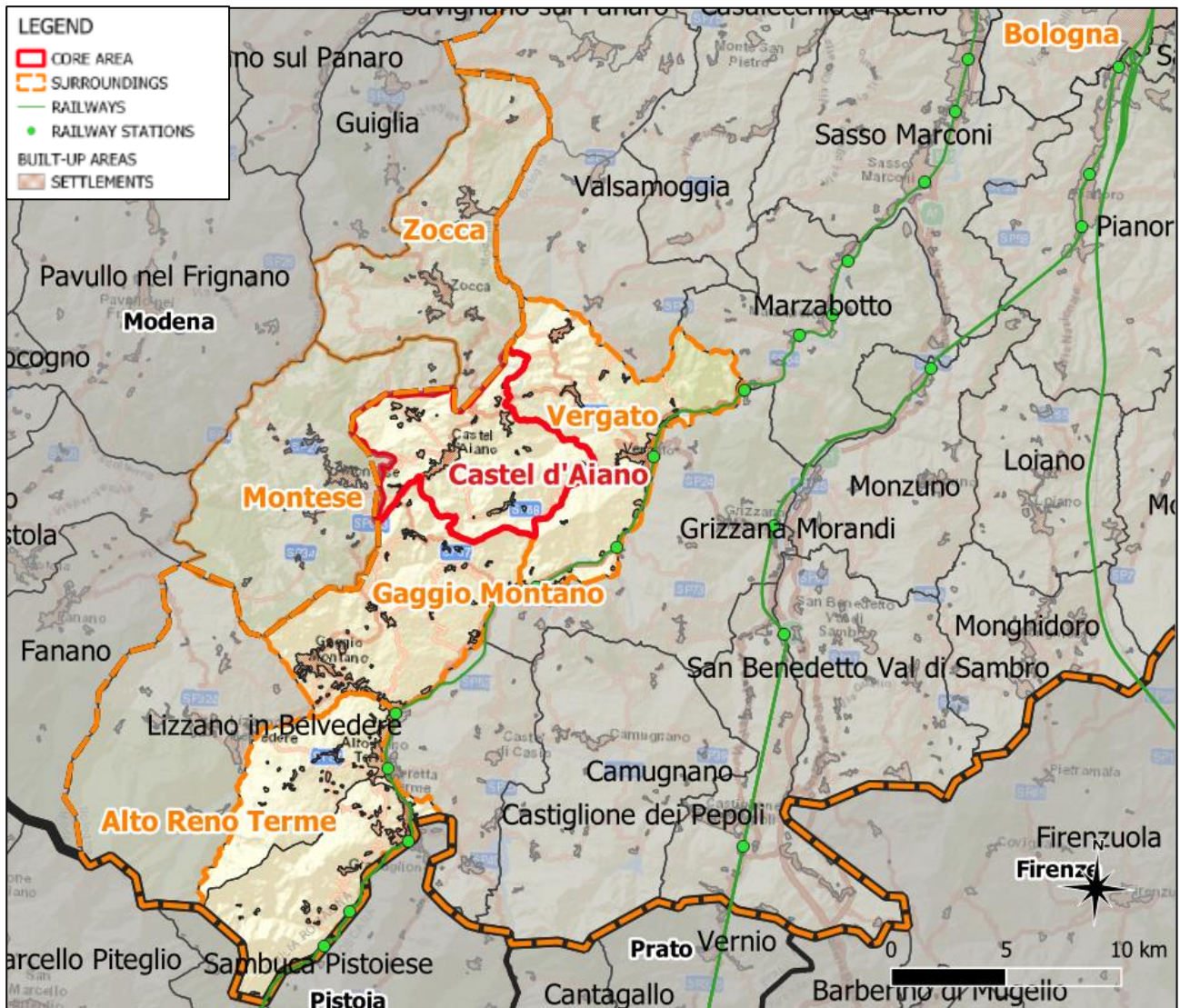


Figure 2. Map representation of the core pilot area as well as the surroundings - zoomed view

From the geo-morphological point of view, the territory mainly consists of mountainous areas belonging to the Tuscan-Emilian Apennines characterised by different valleys including the Reno valley (see Figure 3).

In particular, Castel d'Aiano is located on a ridge, located between two minor valleys branching from the Reno Valley and another one, on the western side, connected to the Panaro Valley (in the Province of Modena). North of the municipality other valleys, including Samoggia one, are accompanying the passage from a mountainous context to a plain area near Bologna.

Consequently, also from the institutional/administrative point of view it belongs to the (wider) “Unione dei Comuni dell’Appennino Bolognese”, including a total of 11 municipalities. They stretch over different valleys and ridges, including the Reno Valley as well as the Setta Valley, where key transport infrastructures and nodes are located (see the next paragraph).

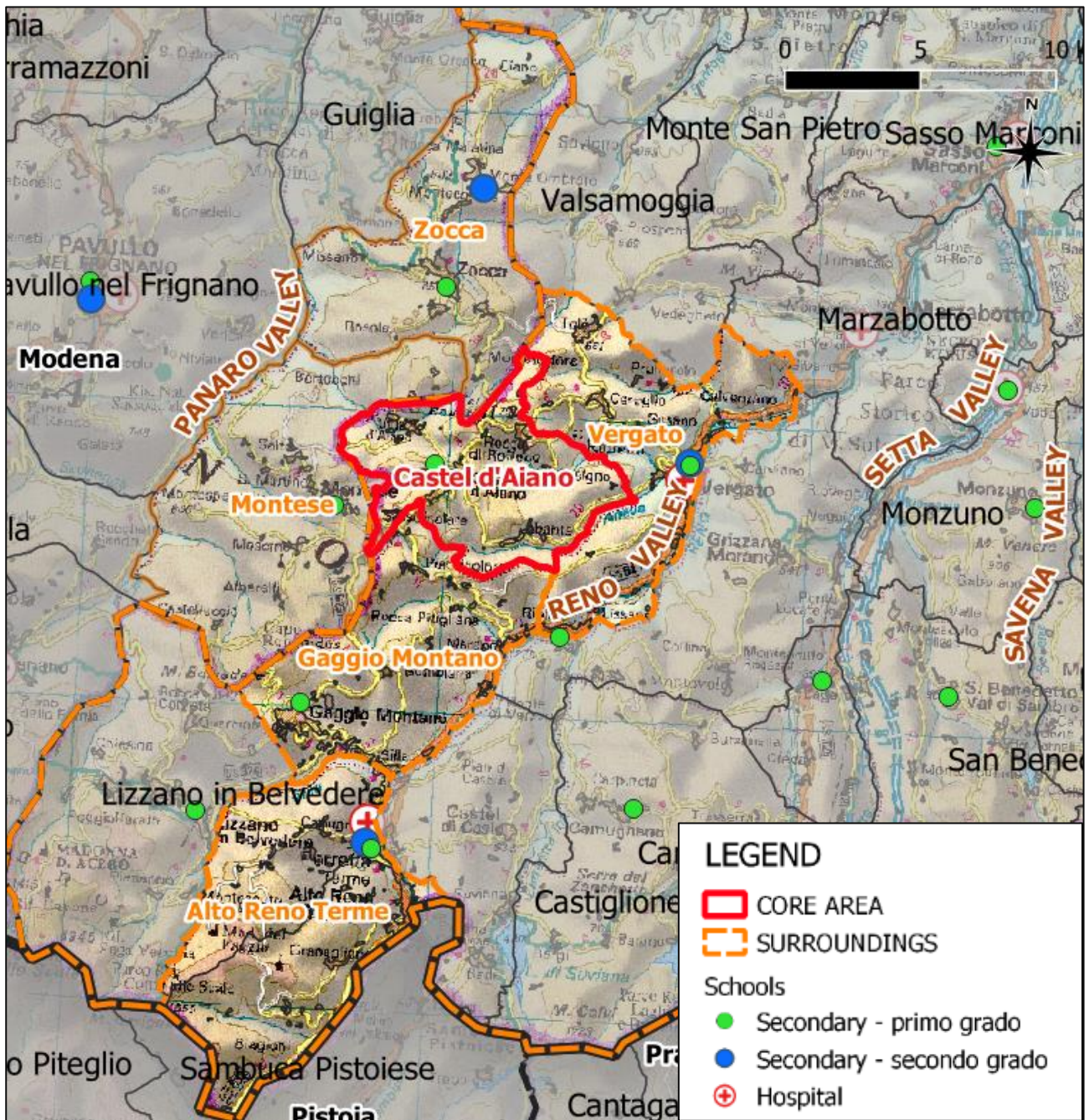


Figure 3. Geo-morphological representation of the core ETP area as well as the surroundings. Source: elaborations of the background provided by Geoportale Regione Emilia - Romagna (<https://geoportale.regione.emilia-romagna.it>)

In general, as from the following table, in all the municipalities, it is to register a relevant difference between the altitude of the valley floors (lower than 350 m) and the elevation of the main centres (between 600 and 850 m).



| Municipality   | Union of Municipalities | Minimum Elevation<br>[meters above sea level] | Maximum Elevation<br>[meters above sea level] | Elevation of the main centre<br>[meters above sea level] |
|----------------|-------------------------|---|---|--|
| Castel d'Aiano | Appennino Bolognese     |   |   | 805 m  |
| Vergato        | Appennino Bolognese     |   |   | 193 m  |

Table 1. Elevation of municipalities in the analysed area. Source: elaborations on ISTAT data



Figure 4. Geo-morphological representation of the core ETP area as well as the surroundings - zoomed view. Source: elaborations of the background provided by Geoportale Regione Emilia - Romagna (<https://geoportale.regione.emilia-romagna.it>)

This morphological characterisation is also mirrored on the population and related density, as shown in Table 2. The resulting population density of the overall catchment area is well-below the average at metropolitan city level. Moreover, as shown still in Table 2, a certain heterogeneity is also to be ascertained with reference to the demographic characterisation within the analysed area. For instance, as regards to age distribution, Castel d'Aiano, in particular, are showing a higher share of elderly people.

Furthermore, concerning the spatial distribution, it is to ascertain a high deal of minor and scattered settlements. In this purpose, it is to highlight that Castel d'Aiano main centre (with about 500 inhabitants)



correspond to one third of the overall population. Apart from the main centre, the only settlements with more than one hundred inhabitants are Rocca Roffreno and Villa d'Aiano (see detailed map in Figure 4).

As far as mobility for studying purposes is concerned, the key data on student and schools are reported in the following Table 3. With regards to students attending the secondary middle school (“scuola media”) the key destination is the institute located in the main centre of Castel D'Aiano, which is also attracting students from the closely located settlement of Pietracolora within the municipality of Gaggio Montano. Concerning high school students, relevant points of Interest are the institutes located in the centres of Vergato and Porretta Terme (the main centre of the municipality of Alto Reno). University students, instead, are commuting/moving towards main cities external to the analysed area (esp. Bologna).

| Area                               | TOTAL POPULATION | 0-14 years [%] | 15-64 years [%] | >=65 years [%] | >=80 years [%] | OVERALL POPULATION DENSITY [inhabitants / km <sup>2</sup> ] | MOTORISATION RATE [vehicles / 1000 inhabitants] |
|------------------------------------|------------------|----------------|-----------------|----------------|----------------|---|---|
| Castel d'Aiano                     | 1.865            | 9,0 %          | 59,4%           | 31,6%          | 11,1%          | 41,2  |   |
| Vergato                            | 7.731            | 12,8%          | 60,9%           | 26,3%          | 8,8%           | 129,0   |   |
| WHOLE METROPOLITAN CITY OF BOLOGNA | 1021501          | 12,6%          | 62,9%           | 24,5%          | 8,6%           | 276   | 82  |

**Table 2. Population and demographic distribution in the analysed area in 2019. Source: elaborations on ISTAT data**

| Area           | Primary School |        | First Grade Secondary School <sup>1</sup> |        | Second Grade Secondary School <sup>2</sup> |          |
|----------------|----------------|--------|---|--------|--|----------|
|                | Schools        | Pupils | Schools                                   | Pupils | Schools                                    | Students |
| Castel d'Aiano | 1              | 84     | 1   | 56     | -  | -        |
| Vergato        | 3              | 413    | 1   | 198    | 3  | 431      |

**Table 3. Number of students and schools in the analysed area in 2019. Source: elaborations on ISTAT data**

Concerning tourism and related mobility flows, some relevant attractions are located in the analysed area, which is close to the path of “Via degli Dei”, an important foot path connecting Bologna to Firenze. In addition to unspoilt natural areas and historical villages, other remarkable sights such as Marzabotto with its Etruscan settlements. Nonetheless, the number of tourists is limited, especially in comparison with the overall Emilia-Romagna region, which is one of the firsts in terms of presence of tourists at the national level. Unfortunately, there is no data referring to the single municipality Castel d'Aiano, while data are available with a certain degree of detail for the wider area of municipalities of the Appennino Bolognese.

<sup>1</sup> “Scuola Secondaria di Primo Grado”.

<sup>2</sup> “Scuola Secondaria di Secondo Grado”.

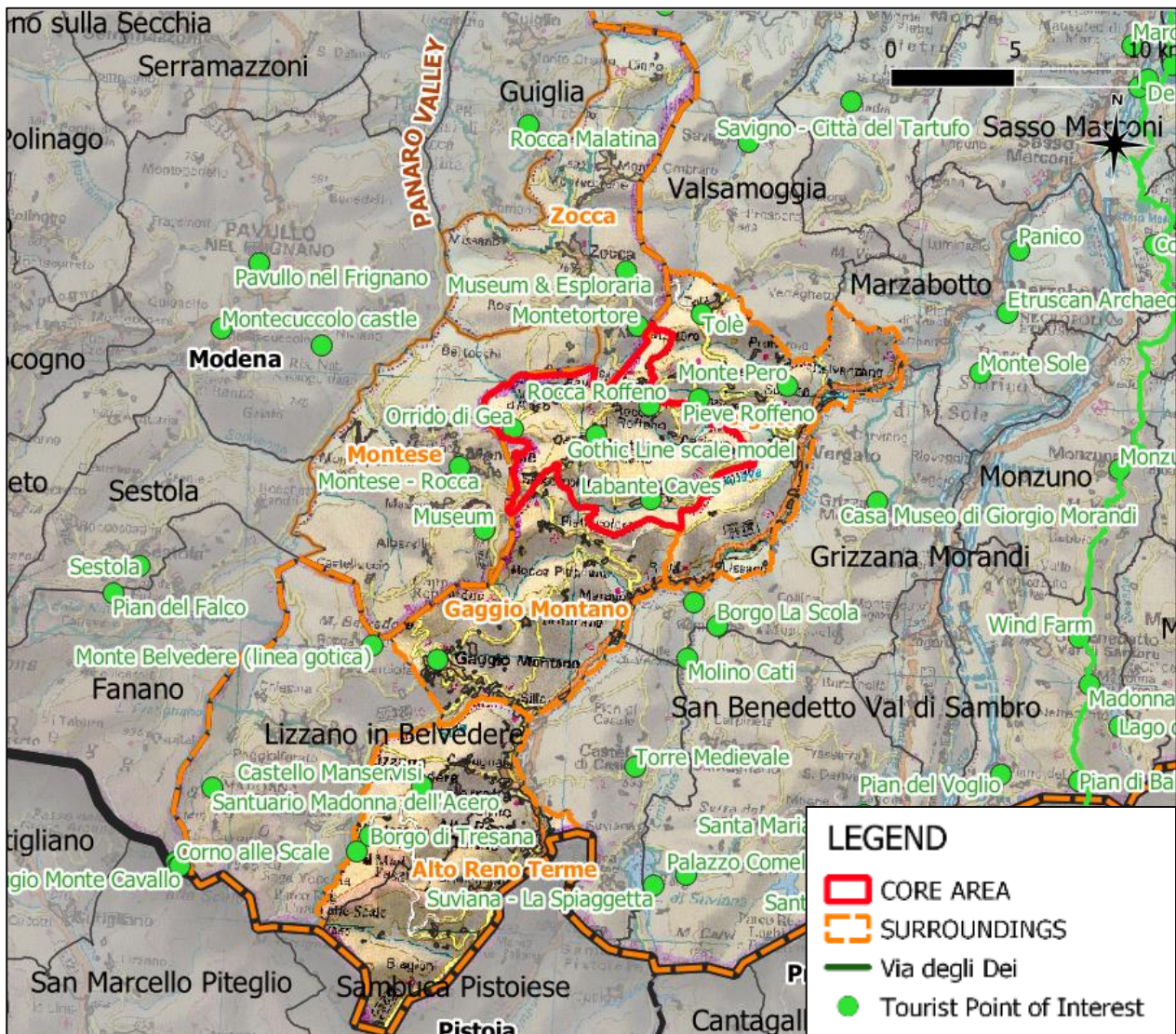


Figure 5. Point of Interests related to tourism the core ETP area as well as the surroundings. Source: elaborations of the background provided by Geoportale Regione Emilia - Romagna (<https://geoportale.regione.emilia-romagna.it>)

As from the statistics, Italian and international tourists accounted for more than 500 thousand yearly attendances in both 2018 and 2019 (respectively 558.663 and 537.423), while in 2020 the registered number of tourists dropped to 302.637 due to limitations caused by the COVID-19 pandemic.

As for tourism and mobility flows, Castel d’Aiano and the surrounding areas offer a variety of landscapes and places attracting Italian and foreign visitors (see Figure 5). In addition to unspoilt natural areas, hiking trails and historical buildings, other remarkable sights such as the Labante caves, Orrido di Gea and the ruins of the castle representing its original nucleus are located in the small municipality. Nonetheless, this area also offers other villages of Roman and Etruscan origins, such as Vergato with its historical castle of Rocchetta Mattei, as well as several thermal and spa locations, such as Alto Reno Terme.

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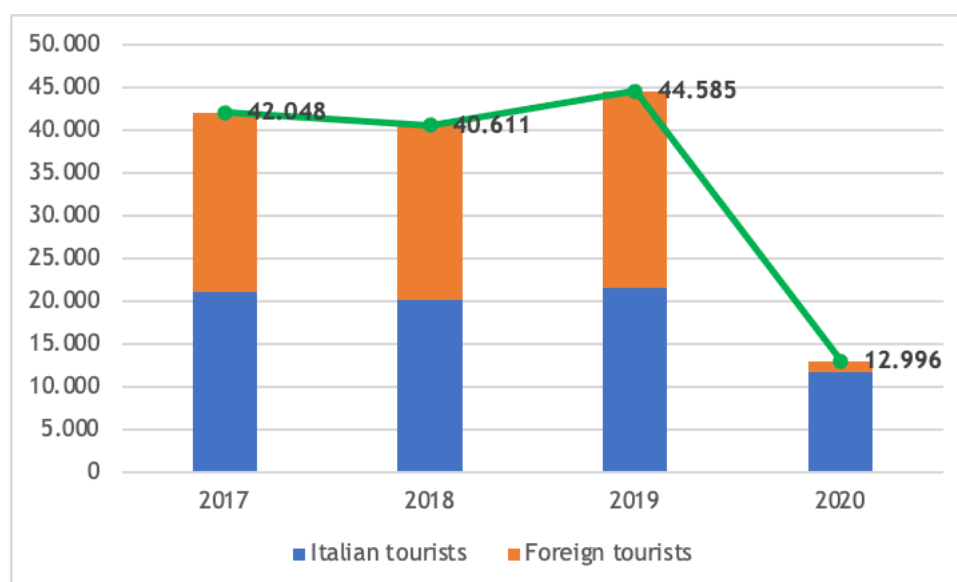


The numbers presented by following Table Y show that in the 6 municipalities of the reference area, Italian and international tourists accounted for indicatively 42 thousand yearly attendances in 2017 and 2018, with a peak of 44 thousand in 2019, while in 2020 the registered number of tourists dropped to 13.000, evidently influenced by limitations caused by the Covid-19 pandemic. Such number appears to be particularly limited, especially if compared to the overall number of tourists visiting the two provinces of Bologna and Modena as well as the overall data registered for Emilia-Romagna Region (as shown by Table 4), which is one of the firsts in terms of tourists' presence at the national level.

|      | Italian tourists | Foreign tourists | TOTAL Reference area      | TOTAL Province of Bologna | TOTAL Province of Modena | TOTAL Emilia-Romagna Region |
|------|------------------|------------------|---------------------------|---------------------------|--------------------------|-----------------------------|
| 2017 | 21.179           | 20.869           | <b>42.048</b>             | 2.192.498                 | 662.875                  | 11.051.890                  |
| 2018 | 20.098           | 20.513           | <b>40.611</b>             | 2.372.172                 | 680.216                  | 11.458.497                  |
| 2019 | 21.525           | 23.060           | <b>44.585</b>             | 2.408.818                 | 721.217                  | 11.597.928                  |
| 2020 | 11.776           | 1.220            | <b>12.996<sup>3</sup></b> | 836.609                   | 320.564                  | 5.673.521                   |

**Table 4.** Number of Italian and foreign tourists registered in the municipalities of the reference area, in the two Provinces of Bologna and Modena and in the whole Emilia-Romagna Region. Source: elaboration on the data provided by the statistical department of the Emilia-Romagna Region (<https://statistica.regione.emilia-romagna.it/turismo/dati-preliminari>)

Nonetheless, numbers reveal there is a relevant share of foreign tourists, which represent indicatively half of the annual tourists' attendances of the area (excluding 2020), as underlined by the following **Figure 6**.



**Figure 6.** Presence of Italian and foreign tourists in the municipalities of the reference area. Source: data provided by the statistical department of Emilia-Romagna Region.

<sup>3</sup> It shall be noted that the total number of tourists visiting the reference area in 2020 lacks the data concerning the municipality of Gaggio Montano, whose statistics were aggregated for that year into a wider area made of different communes. However, the contribution of such municipality to the overall tourists' presence in the area appears to be limited (between 150 and 200 annual visitors) if compared to the other locations included in the analysis.



### 3. Description of the mobility demand and needs (relations and attractors poles)

As far as transport demand is concerned, among the different components, a particularly relevant one is represented by (daily) systematic mobility, mainly corresponding to commuting for work or study purposes. In this regard, the results from the 15<sup>th</sup> National Census (carried out by ISTAT in 2011) provide a remarkable source of information.

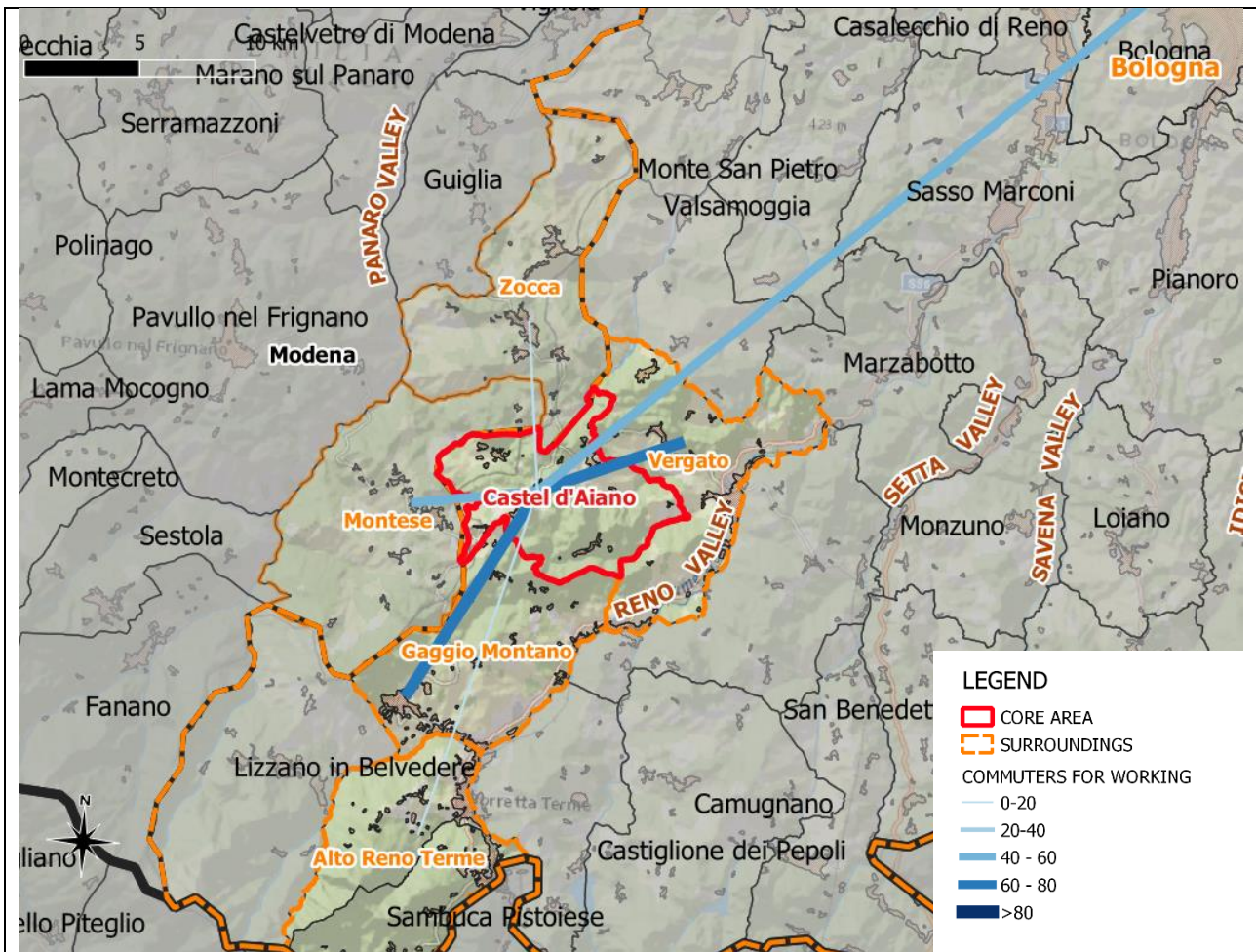


Figure 7. - Thematic maps on commuting mobility demand for working purposes resulting from the National Census carried out in 2011. Source: Elaborations on ISTAT data.

The resulting demand flows are characterised by quite limited values, especially with respect more urbanised areas of Emilia-Romagna region. More in detail, almost a half of the trips correspond to “internal” flows (i.e. with both origin and destination located within the municipality itself). With reference to commuting trips towards the “external” (i.e. with a destination located in a different municipality), instead, the Figure 7 and Figure 8 are showing a thematic representation about trips, respectively, for working and studying purposes.

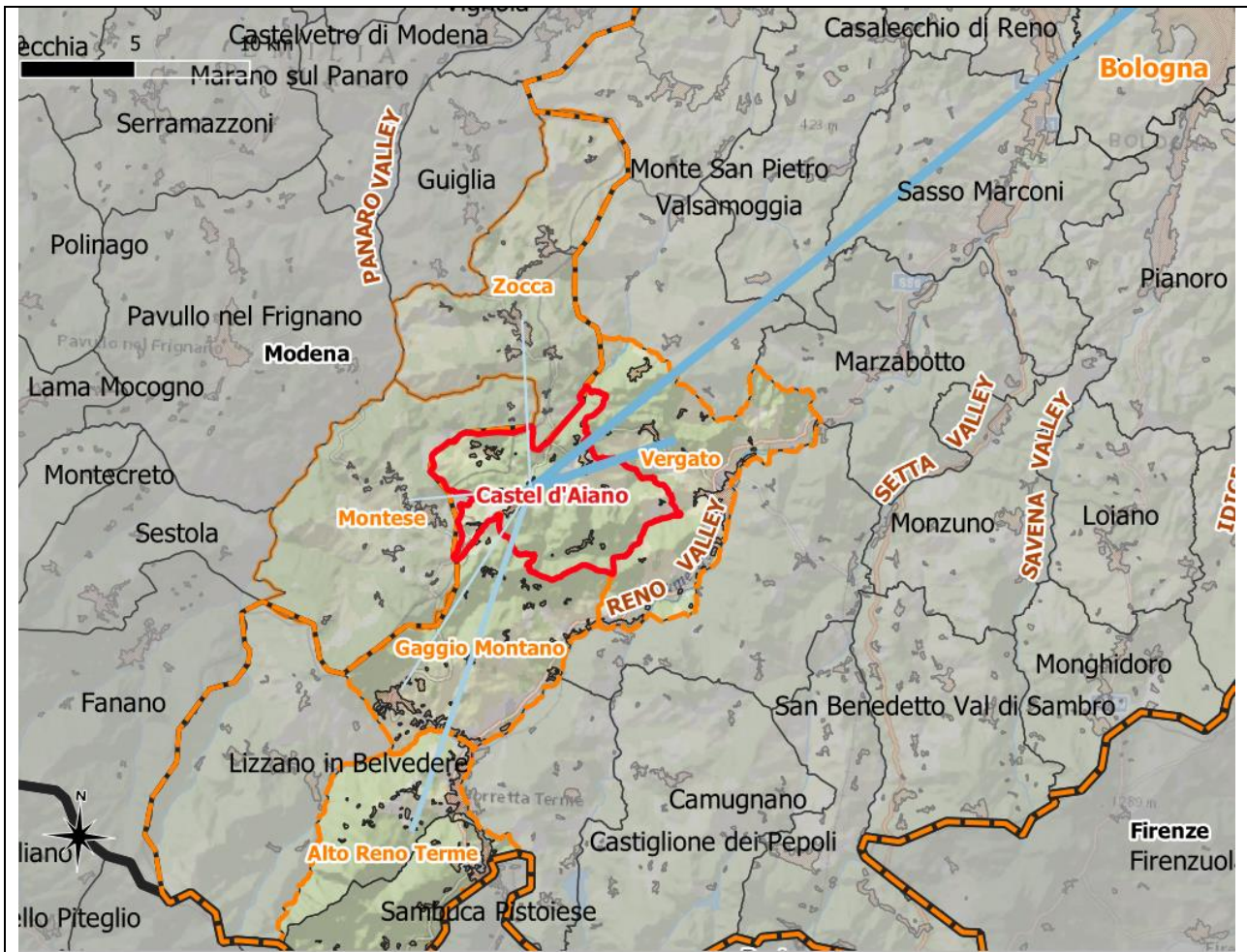


Figure 8. - Thematic maps on commuting mobility demand for studying purposes resulting from the National Census carried out in 2011. Source: Elaborations on ISTAT data.

In this purpose, it is to register the relevant of O/D relations towards centres in the Reno valleys located in the surroundings, especially Vergato. Moreover, it is to highlight the number of commuters towards the city of Bologna, which in the case of studying purposes reach a value beyond 10%.

As regards to modal split (of both internal and external trips), Figure 9 and Figure 10 show quite differentiated percentages between the two typologies.

In particular, as regards to mobility for working purposes, it is to register a similar predominant usage of the car (almost 80% share), while public transport solutions account for only about 3%; in particular it is associated with both bus services (2%) and train services (1%).

With regards to commuting for studying purposes, instead, it is to register a clear predominance of public transport, (with bus services reaching 59% while rail ones account for 11%), with the car alternative limited to about 30%.

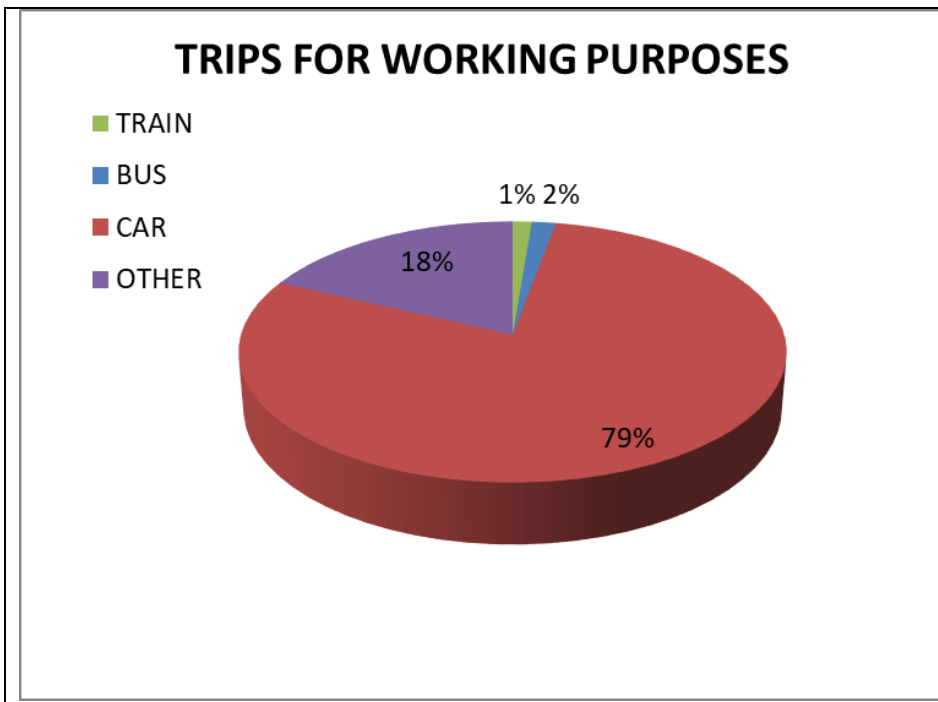


Figure 9. - Modal share of commuters' trips for working purposes resulting from the National Census carried out in 2011. Source: Elaborations on ISTAT data.

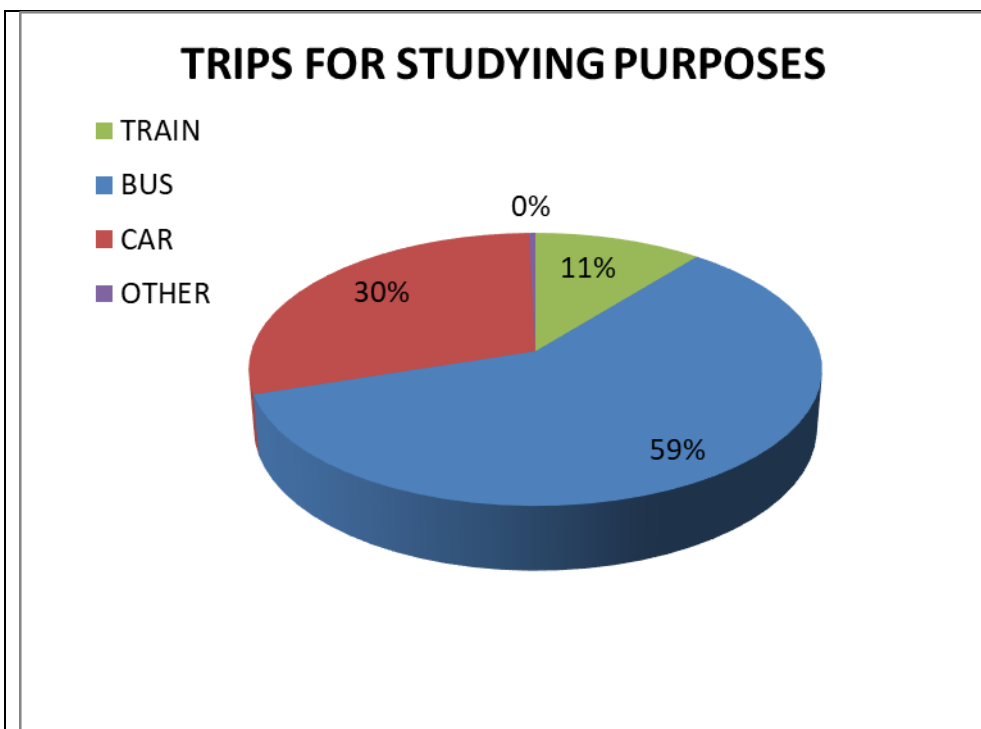


Figure 10. - Modal share of commuters' trips for working purposes resulting from the National Census carried out in 2011. Source: Elaborations on ISTAT data.

## 4. Description of the public transport services and related multimodal accessibility

### 4.1. PT transport supply

The multimodal transport system is made up by the road and rail network shown in the following figures.

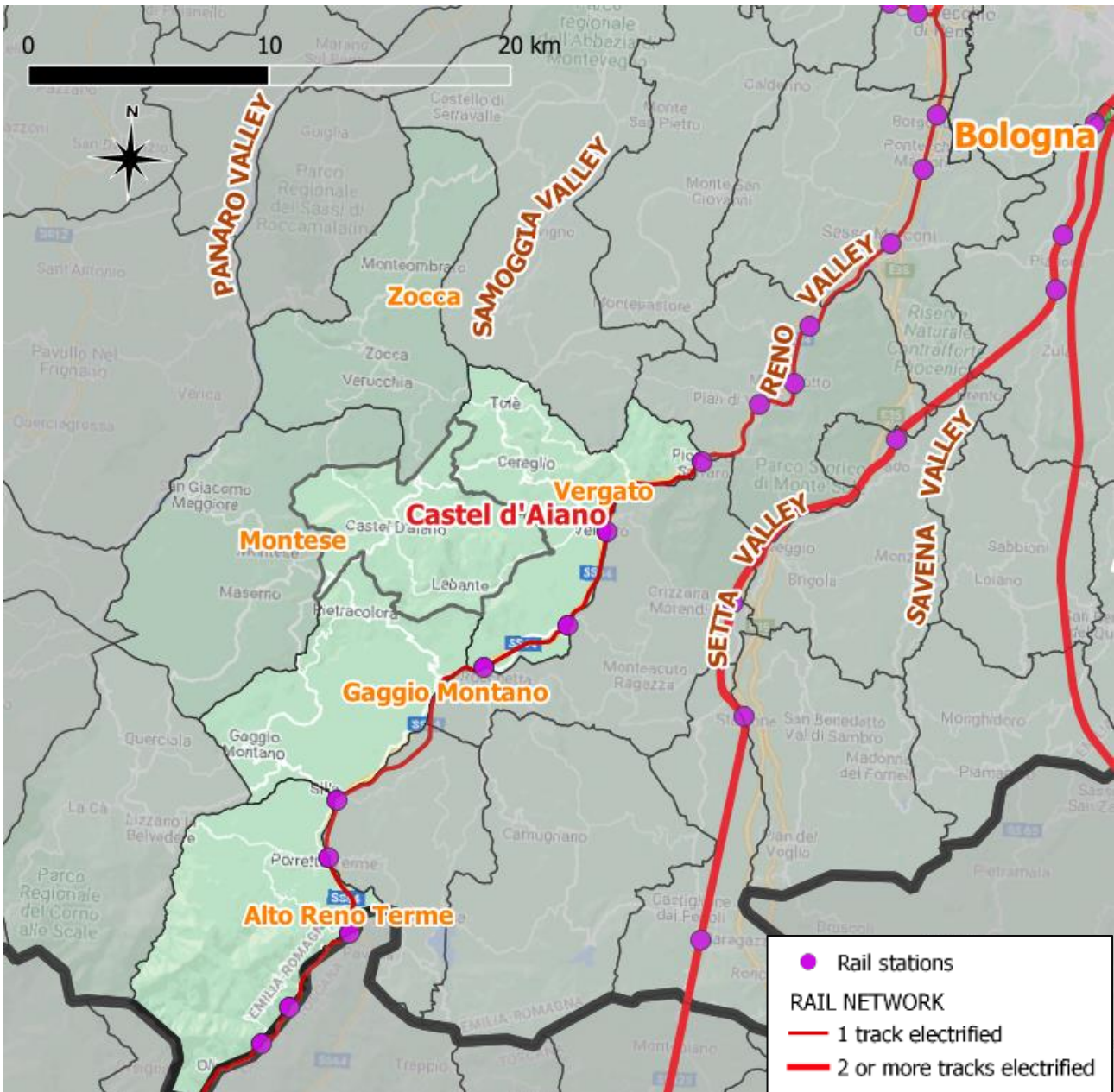


Figure 11. Multimodal transport network in the analysed area

Concerning the rail network, it is to register the presence close to the ETP core area of the “Porrettana” railway line, a single-track electrified line linking Bologna and Pistoia and running through the Reno valley;



Moreover, at a relatively close distance it is to report the two lines linking Bologna and Firenze, whose relevance is also certified by the fact that they are both part of the Mediterranean as well as the Baltic-Adriatic corridor of the TEN-T core network:

- The historical “Direttissima”, 2-tracks electrified line along the Setta valley;
- The High Speed, 2-tracks electrified line, which is, however, mainly running underground and without any stop between Bologna and Firenze.

Concerning the road network, the main connection across the Apennine in North-South direction is also going through the closely located Setta valley and represented by A1 motorway link Bologna-Firenze. Still in this case, its relevance is also certified by the fact that it is part of both the Mediterranean and Baltic-Adriatic corridor of the TEN-T core network, which is also presenting two branches (the historical one and the new variant “Variante di Valico”). However, more pertinent to the ETP area and surrounding is the national road SS64 “Porrettana”, whose path is connecting the main centres along the Reno Valley, such as Vergato and Porretta Terme (within the municipality of Alto Reno Terme). Furthermore, a network of provincial roads is ensuring the connectivity of minor centres, including this located on the ridges and mountainous areas, as Castel d’Aiano.

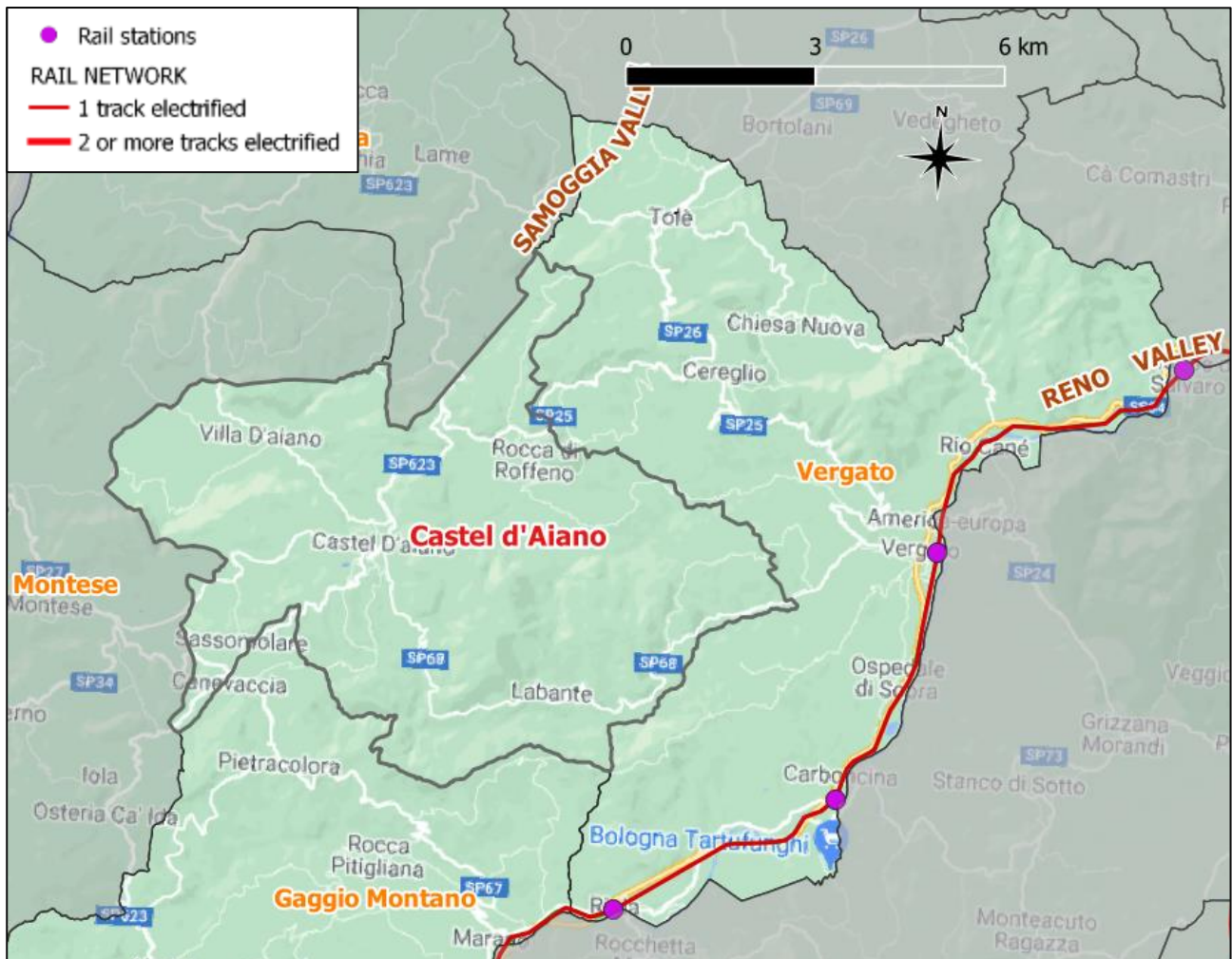


Figure 12. Multimodal transport network in the analysed area - zoomed view



Figure 13. Lines of the metropolitan Rail Service (reference year 2016) - zoomed view. Source Sustainable Mobility Urban Transport plan of the Metropolitan City of Bologna

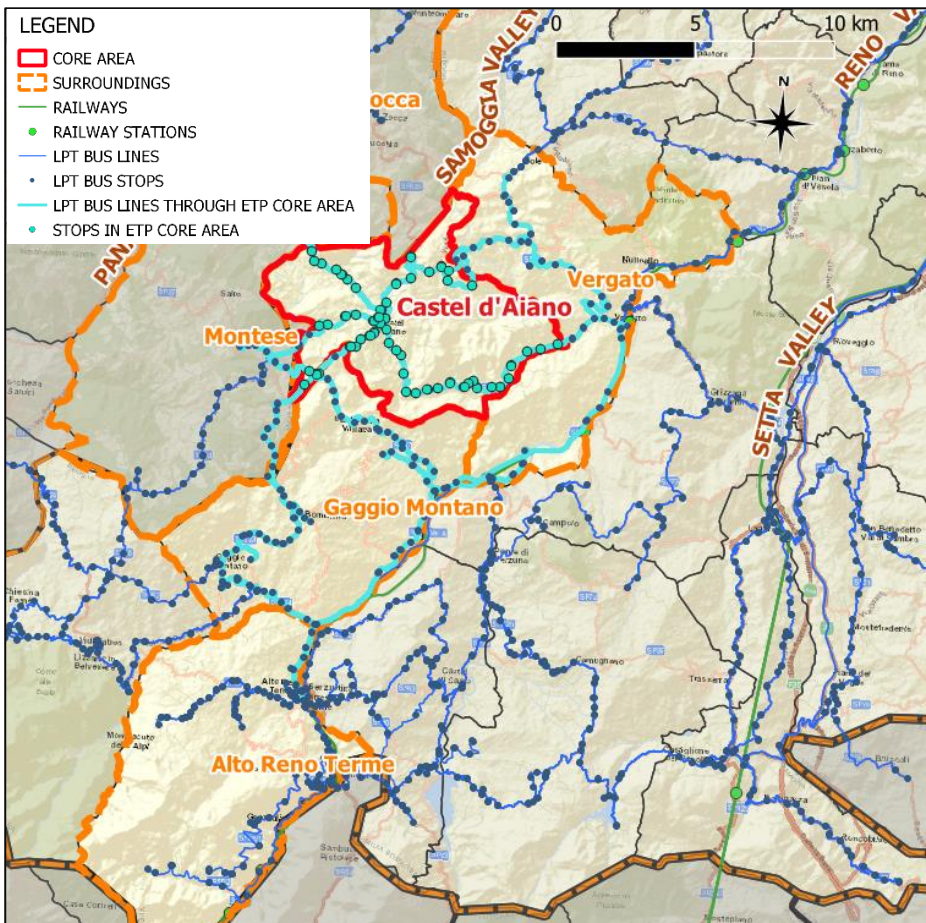


Figure 14. Local Bus Public Transport Network serving the ETP area (reference year 2019). Elaboration on data provided by SRM



The rail and bus public transport in the Metropolitan City of Bologna (both urban and extra-urban) is operated by TPB consortium<sup>4</sup> (“Trasporto Pubblico Bologna”) under the oversight of SRM - Reti e Mobilità Srl (which is also the LP of the Smacker project), the local Authority for Public Transport established in 2003 by the Municipality and the Province of Bologna. In particular, in the following figures are represented the lines of the rail metropolitan service (Figure 13) and bus services (Figure 14) providing the network that allows the multimodal accessibility to the ETP area.

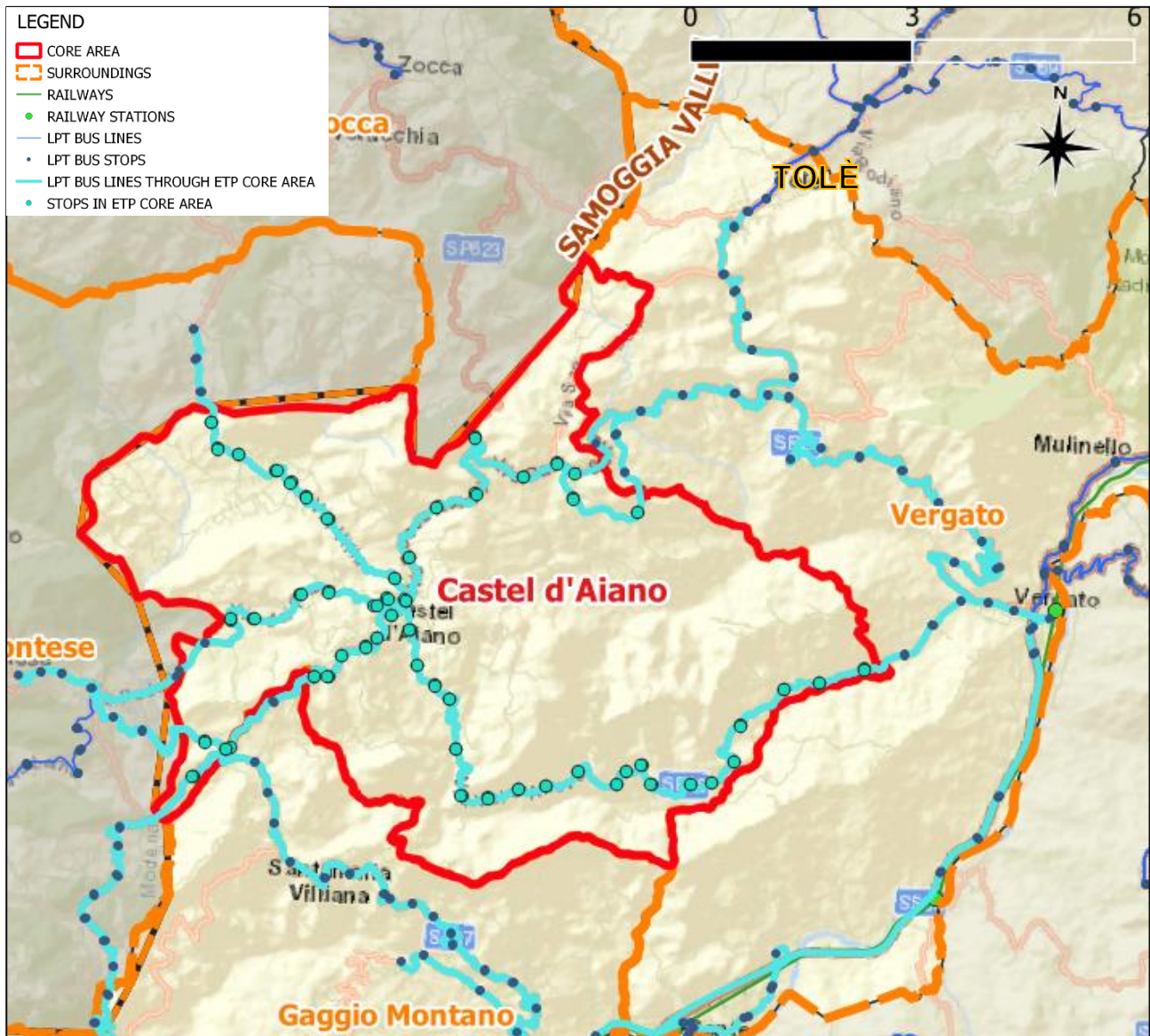


Figure 15. Local Bus Public Transport Network (reference year 2019) - zoomed view of the ETP core area. Elaboration on data provided by SRM

In general, the bus lines going through the ETP core area are providing connectivity especially towards/from the main centres of the surroundings located in the Reno valley floor (esp. Vergato and Porretta Terme). Limited connectivity, instead, is to be ascertained towards the neighbouring areas in Western (Montese and Zocca, in the Province of Modena) and Northern direction (beyond the settlement of Tolè, located in Vergato municipality on the watershed between Reno and Samoggia valley).

<sup>4</sup> <http://www.tplitalia.it/TPB/TPB.htm>



Moreover, a certain variability between different hours of the day is also to be underlined. In this purpose, the following Figure 16 represents the overall number of departures at bus stops located within each municipality within different 15-minute intervals between h 4 a.m. and 12 p.m. distinguishing between working days and holidays/Sunday.

Obviously, during working days it is to ascertain a peak in the morning, which is particularly significant and concentrated in the early-morning hours especially as well as (e.g. services for students coming back from school at about 14.30).

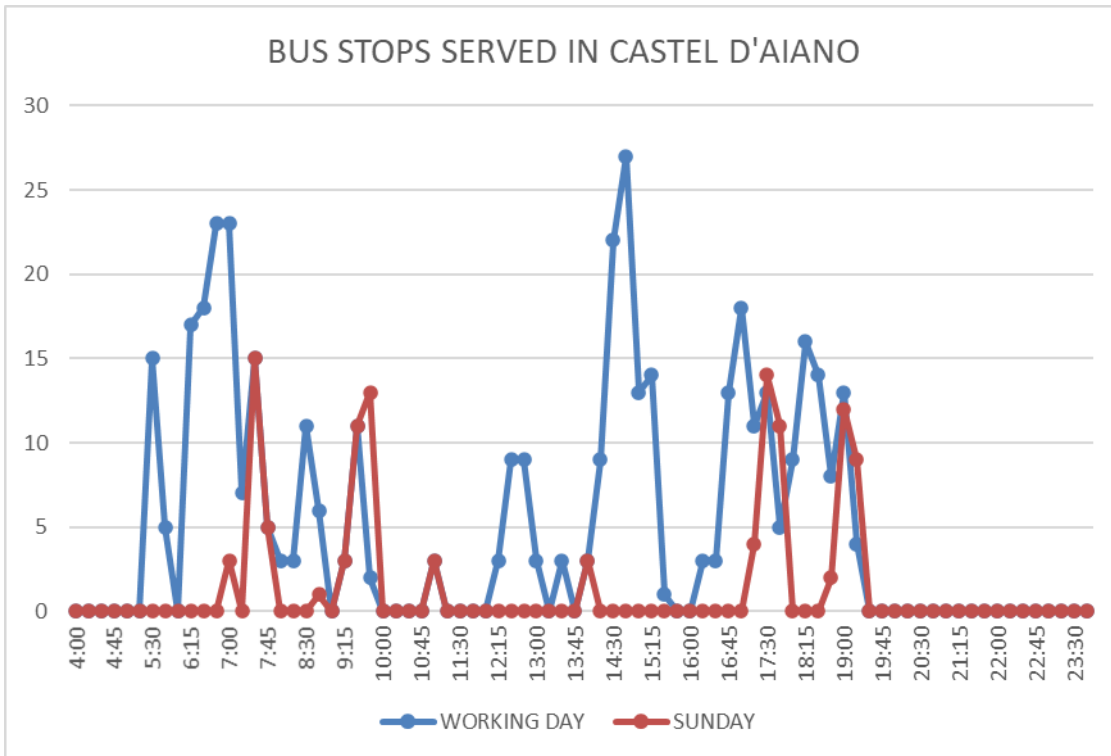


Figure 16. Number of departures from the bus stops in Castel d’Aiano during different 15-minute intervals on a working day and on Sunday (reference year 2019). Elaboration on data provided by SRM



## 4.2. Accessibility

The multimodal accessibility of the analysed area can be represented through isochrone maps (i.e. a thematic maps that show the areas reachable from a certain point within different time thresholds). In particular, the following figures show isochrone maps based on bus transit travel times computed using the routing engine OpenTripPlanner. In general, these isochrone maps show a remarkable variability between different parts of the day (for instance peak versus off-peak hours).

Hence, in the following Figures 17-20 different representations, related to various hours of a working day are provided with reference to isochrones centred in Castel d’Aiano and, for comparison, in the settlement of Tolè, located within the municipality of Vergato on the watershed between the valleys of the Reno and Samoggia. In this purpose, it is to report relevant differences between peak (e.g. 6-7 a.m.) and off-peak hours (e.g. 11 a.m.). In particular, peak hour services are ensuring a certain level of connectivity towards the closely located centres in the Reno valley, especially Vergato and, to a less extent, Marzabotto as well as to Porretta Terme (i.e. the main centre of Alto Reno municipality). In this purpose, it is to observe, that reaching these centres implies linking to the rail lines and eventually linking up to Bologna centre. On the other hand, it is to observe that in a great part of the day (esp. off-peak hours) multimodal accessibility is quite limited.

Instead, the representations in Figure 20, which are centred in Tolè, provide a higher coverage of reachable areas through bus services, especially along the direction towards Casalecchio di Reno and Bologna.

The representation in Figure 21, instead, is obtained by applying the same methodology and tools to car-only trips. Obviously, the resulting representation is covering wider areas due to the higher speed especially if compared to the different steps to be carried (reaching the bus stop and waiting and running times).

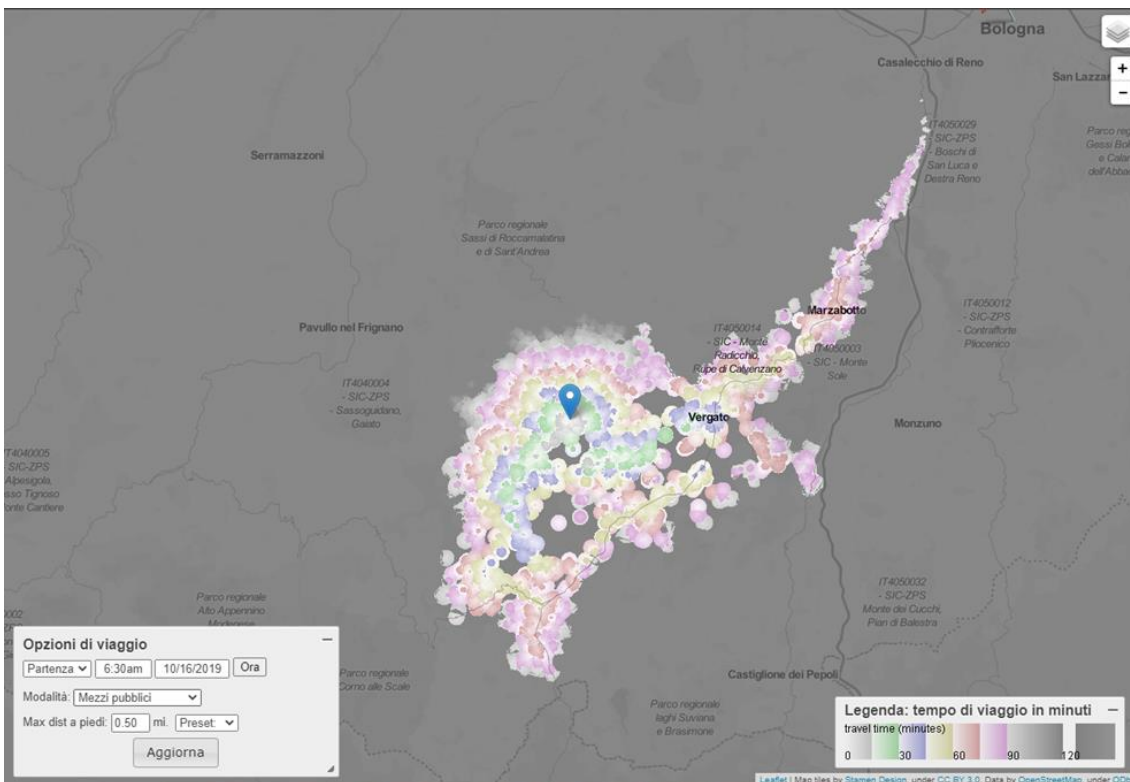


Figure 17. Example of isochrone map of the accessibility of Castel d’Aiano using bus service during the morning peak-hour (reference year 2019). Elaborations using OPENTRIPPLANNER on data provided by SRM and OpenStreetMap

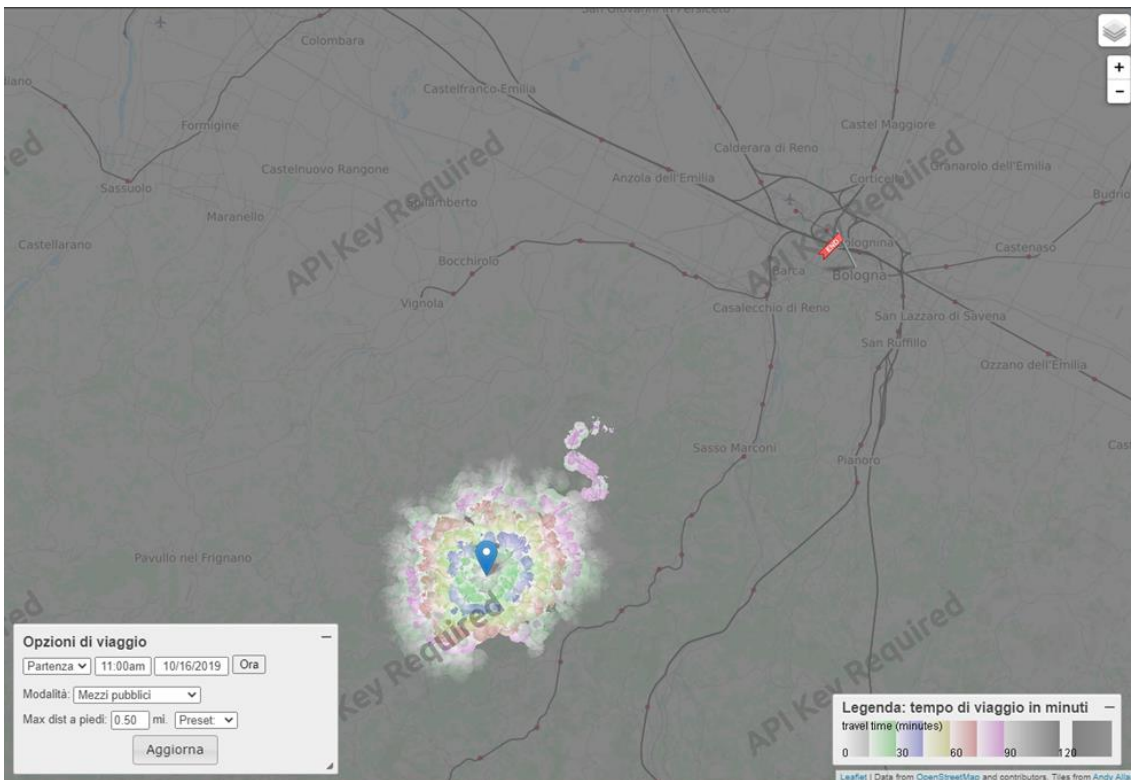


Figure 18. Example of isochrone map of the accessibility of Castel d'Aiano using bus service during the morning off-peak hour (reference year 2019). Elaborations using OPENTRIPPLANNER on data provided by SRM and OpenStreetMap

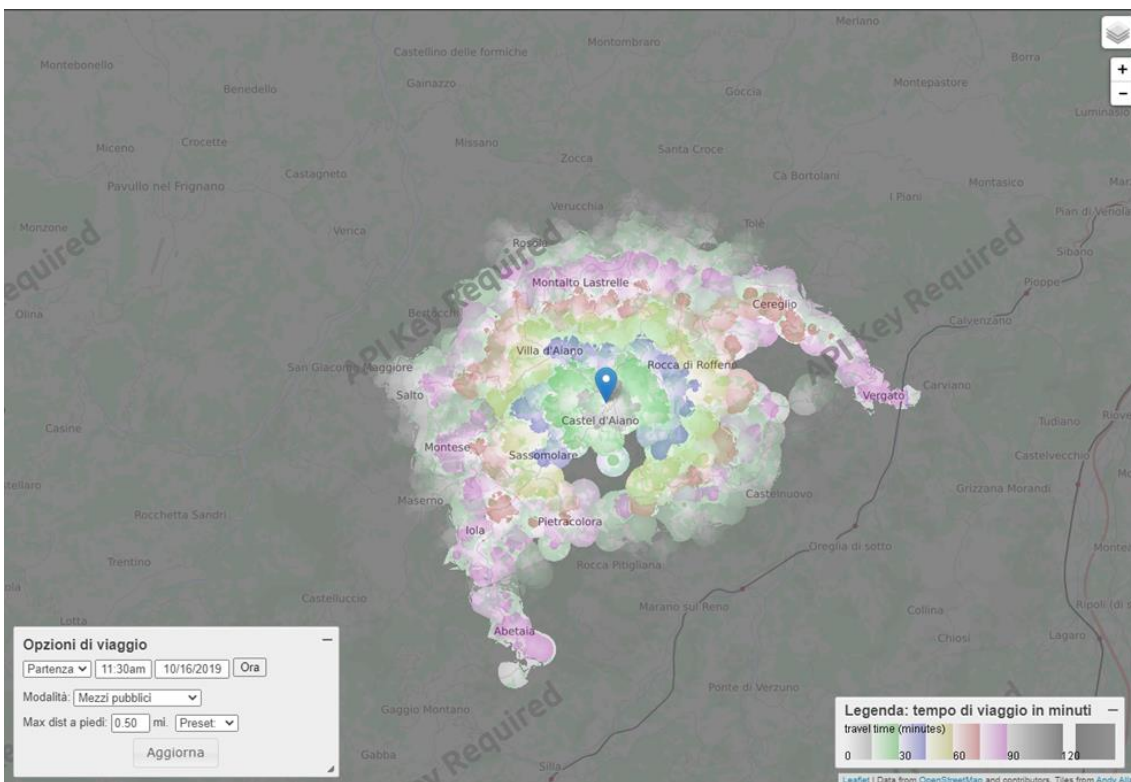


Figure 19. Example of isochrone map of the accessibility of Castel d'Aiano using bus service during the morning off-peak hour (reference year 2019) - zoomed view. Elaborations using OPENTRIPPLANNER on data provided by SRM and OpenStreetMap

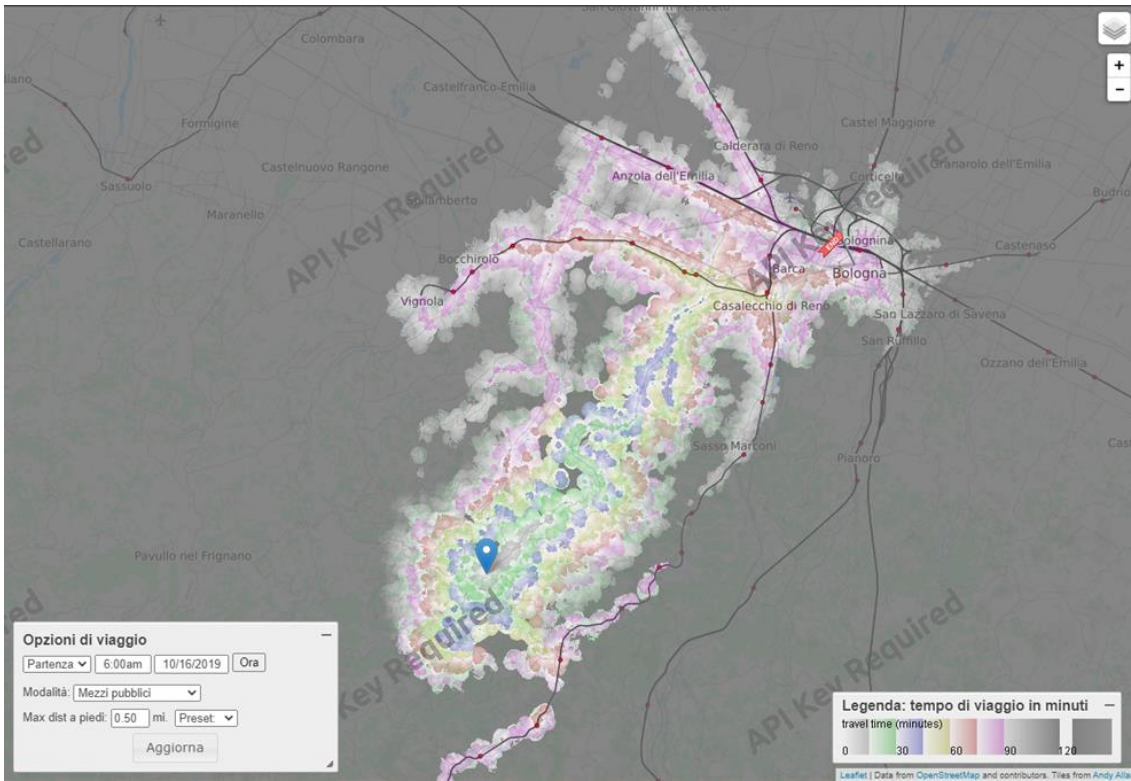


Figure 20. Example of isochrone map of the accessibility of Tolè using bus service during the morning peak-hour (reference year 2019). Elaborations using OPENTRIPPLANNER on data provided by SRM and OpenStreetMap

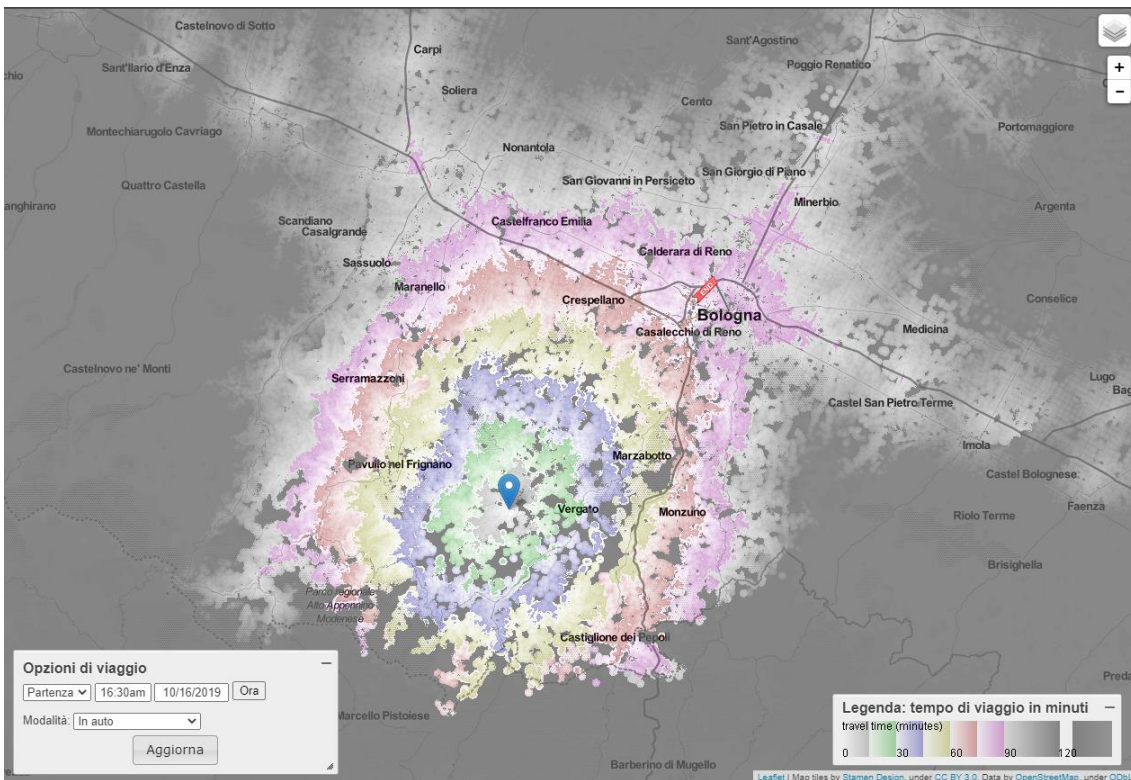


Figure 21. Example of isochrone map related to the accessibility by car of Castel d'Aiano (reference year 2019). Elaborations using OPENTRIPPLANNER on OpenStreetmap data



## 5. Mapping the governance framework and relevant actors

### 5.1. Planning and regulatory framework

As far as the regulatory framework is concerned, first of all, it is to recall that it is the result of a complex and still ongoing reform process that in Italy the Public Transport sector, which started in 1997 with the National Acts (law 59/1997 and Legislative Decree 422/1997), implementing the EU Directive 1831/1991. In Emilia Romagna, at regional level the key milestone is provided by the **Regional Law 30/1998** (“**Disciplina generale del trasporto pubblico regionale e locale**”).

A key goal of the reform was shifting from a concession-based system to a competitive tendering one, to be managed by Regions and the Local Administrations. Through the years such reform process has been accompanied by various national and regional provisions implementing the subsequent EU regulations (e.g. EU Reg. 1370/2007 and EU directive 2012/34).

Within this overall framework, SRM Reti e Mobilità, as local Authority for Public Transport, has specific competences with particular reference to tendering and overseeing both urban and extra-urban bus PT services in the metropolitan area, which are currently operated by TPB - (“Trasporto Pubblico Bologna”) - on the basis of a year contract signed in 2011.

With reference to the planning framework, starting from the regional level, it is to underline the general framework provided by the **Integrated Regional Transport Plan** (“Piano Regionale Integrato dei Trasporti - PRIT2025”), foreseen by the above-mentioned Regional Law 30/98, and whose updated release has adopted in July 2019. In order to meet with relevant and ambitious sustainability goals and emission reduction targets, pivoting on the functional integration of difference modes and services it is fostering relevant innovations and enhancement public transport system also with reference to extra-urban contexts.

At metropolitan, level, it is to mention the recently approved (2019) **Sustainable Urban Mobility Plan of the Metropolitan City of Bologna**, a strategic plan that addresses sustainable mobility according to a comprehensive vision on a medium-long time horizon. In particular, the SUMP envisages relevant improvements and re-organisation of integrated PT services based on network made-up of three main components:

- Main network (1<sup>st</sup> level) including the Metropolitan Rail System, the new Bologna tramway network as well as the high-traffic suburban lines.
- Complementary network - consisting of 2<sup>nd</sup> and 3<sup>rd</sup> level urban buses of the main centres (Bologna and Imola) as well as suburban and extra-urban lines.
- Integrative network - made of the so-called low frequency or flexible services/DRT service.

In this purpose, it is to recall that the line connecting Castel d’Aiano and Vergato (passing through Rocca di Roffeno) is foreseen as an enhanced 3<sup>rd</sup> level extra-urban bus line (corresponding to a 60’ frequency in peak hours).

Pivoting integration is calling for smooth interchanges taking place at nodes, also with reference to minor centres. In this purpose, it is to mention the planned realisation of 30 hubs of sustainable mobility at local level (“Centri di Mobilità”). With particular reference to the ETP addressed by the present report, it is worth mentioning that Vergato is one the first two hubs being developed (see Figure 23).

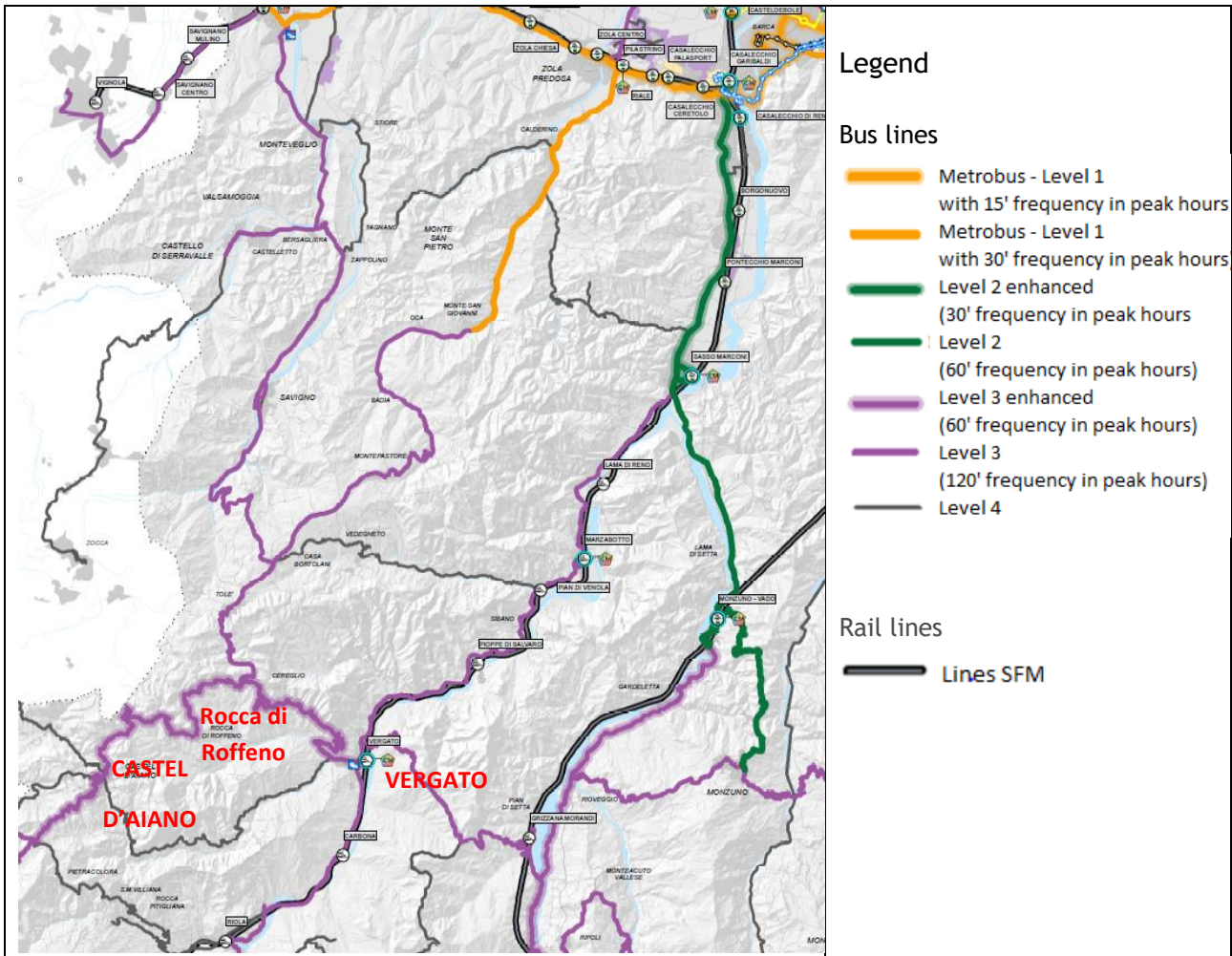


Figure 22. PT network as foreseen by the SUMP. Source: Metropolitan City of Bologna SUMP

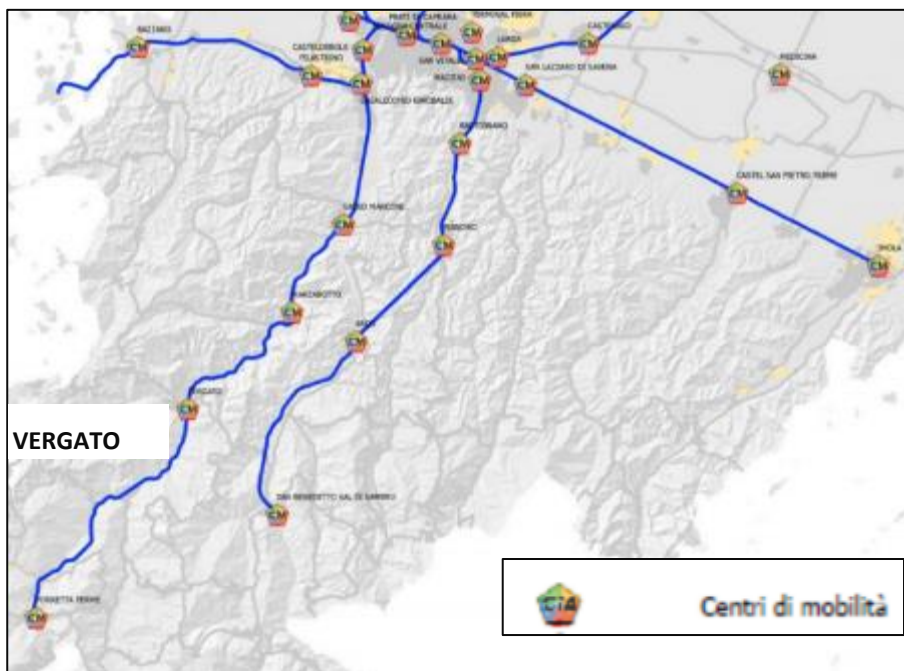


Figure 23. "Centri di Mobilità" foreseen by the SUMP and the metropolitan rail network (in blue). Source: Metropolitan City of Bologna SUMP



Moreover, the deal paid to DRTs solutions is also concretely testified by the existing **Prontobus** service (<https://www.tper.it/percorsi-orari/prontobus>), which is operated by mini-van and according to a schedule and a predefined route. The service is carried out in different areas of the Metropolitan city of Bologna.

With particular reference to the mountainous area addressed by the present ETP, it is to mention the **ColBus** service, which is characterised by a specific focus on touristic mobility and developed within the pilot activity of the SMACKER project Work Package I1. It represents a new version of a service previously tested in Summer 2019 (with 3 lines), which is made up of 5 lines also serving part of the surroundings of the Castel d’Aiano ETP area.

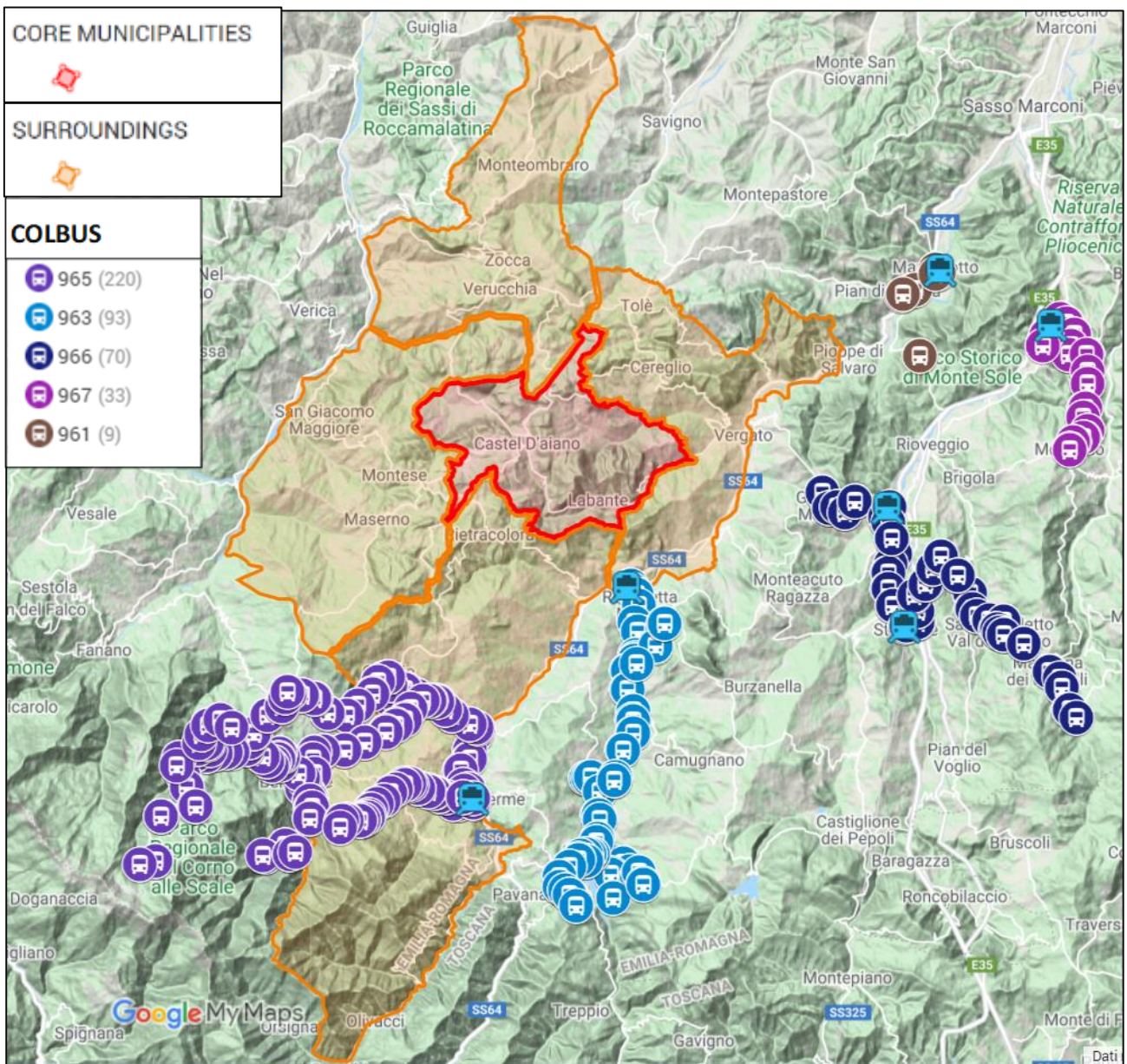


Figure 24. ColBus service of Summer 2021 with respect to the Core area (in red) and surrounding area (in orange) of the ETP.



## 5.2. Identification of Stakeholders and key target groups

With reference to the stakeholders to be involved as to ensure a successful development of the action plan and possible follow-up service, different categories are to be considered (see the following table).

First of all, the institutional level includes, in addition to key actors represented by the Municipalities, from the one of Castel d’Aiano, and in case, (i.e. depending on the actual development of the action plan), also other ones belonging to the surroundings. Another relevant institution is undoubtedly the Metropolitan City of Bologna, given its role in coordinating the overall public transport service and the specific provisions foreseen in the new Sustainable Urban Municipality Plan. From a more general perspective, the Emilia-Romagna Region administration is also a key player to mentioned, considering its role in coordinating public transport policies.

Obviously, the actual implementation will require a close cooperation with the public transport authority, SRM (which is involved as LP in the Smacker project) as well as the public transport operator TPB (“Trasporto Pubblico Bologna”).

Moreover, taking into account the specific goal of addressing the needs of specific user category users (e.g. elderly), players and associations operating in this specific fields are likely to provide a relevant contribution to the further steps.

| SMACKER TARGET GROUPS                        | REPRESENTATIVES   |
|--|---|
| LOCAL PUBLIC AUTHORITY                       | Municipalities in the ETP area, especially Castel d’Aiano           |
| REGIONAL PUBLIC AUTHORITY                    | Emilia-Romagna Region, Metropolitan City of Bologna                 |
| INFRASTRUCTURE AND (PUBLIC) SERVICE PROVIDER | SRM Reti e Mobilità Srl   |
| GENERAL PUBLIC                               |   |
| EDUCATION/TRAINING CENTRE AND SCHOOL         | Istituto comprensivo di vergato, scuola secondaria a Porretta Terme |
| OTHER  | /   |
| SME  |   |
| HIGHER EDUCATION AND RESEARCH                |   |
| SECTORAL AGENCY                              | /   |



|   |   |
|---|---|
| INTEREST GROUPS INCLUDING NGOS                      | / |
| NATIONAL PUBLIC AUTHORITY                           | / |
| LARGE ENTERPRISES                                   | / |
| INTERNATIONAL ORGANISATION, EEIG UNDER NATIONAL LAW | / |

Table 5. Key target groups and stakeholders.



## 6. SWOT analysis

Summarising what previously described, a SWOT analysis (see the following table) allows to provide a synopsis of different aspects (strengths, weaknesses, opportunities and threats), thus paving the way following ETP Smacker technical activities related to the Action Plan development.

First of all, it is to mention the existing multimodal network providing a relevant backbone for the development of further services. In this purpose, it is also to recall the presence of the rail line Bologna-Pistoia and, in particular, of the rail station in Vergato (e.g. about 15 km far from the main centre of Castel d’Aiano).

| STRENGTHS   | WEAKNESSES  |
|---|---|
| <ul style="list-style-type: none"> <li>Existing multimodal transport network with connectivity, especially along the Reno valley, towards to Bologna</li> <li>Railway station in Vergato municipality</li> <li>A certain basin of (also potential) demand specifically related to certain time slots and typologies of trips (e.g. commuting esp. for studying purposes or visitors to the hospitals in the ETP neighbouring municipalities)</li> </ul> | <ul style="list-style-type: none"> <li>Appeal and accessibility of the private car alternative</li> <li>Difficulties of traditional public transport in matching the need of (potential) users (e.g. frequencies and travel time) with particular reference to off-peak hours</li> <li>Limited multimodal accessibility from/to Castel d’Aiano, esp. during off-peak hours</li> </ul> |
| OPPORTUNITIES   | THREATS   |
| <ul style="list-style-type: none"> <li>Synergies with services for commuters for studying purposes</li> <li>Novelties being brought-in by new PT organisation according to the recently issued SUMP Metropolitan City of Bologna</li> <li>Addressing the impaired and elderly potential users and/or tourists</li> </ul>  | <ul style="list-style-type: none"> <li>Declining demographic pattern</li> <li>Future developments of COVID-19 pandemic</li> </ul>   |

Table 6. SWOT analysis

Obviously, a key weakness point for the choice of intermodal solution is related to the higher accessibility and performances associated to the car alternative. In this regard, it is also to report some internal weaknesses of the current bus service in terms of frequency and timing, especially with reference to off-peak hours and connectivity towards Tolè and other destination in northern direction (see isochrones map in previous part of this report). Obviously, this situation is also related to inherent criticality due to the orographic characterisation implying high tortuosity and long travel times, as well as to the low-demand character of the analysed area. Furthermore, it is to underline that the limited distance of many trips (in many cases carried out with the same municipalities and/or with a travel time of less than 15 minutes) as well as disperse settlements pattern do not represent a favourable condition for setting up appealing PT services (esp. in comparison with the car alternative). Moreover, it is also to recall the absence of those limitations to usage of the car (and related parking), which represent a key driver for the usage of PT in other context as main urban centres.

Among opportunities to be underlined, there is the possibility of exploiting synergies and complementarity with services for commuters or visitors to specific point of interests (e.g. schools and hospitals), which could provide a certain (initial/basic) demand basin to new services to be developed. In this purpose, possible



improvements are also related to further addressing the needs of specific (potential) users' category such as the elderly people, thus giving also a particular relevance from the social point of view to the present initiative, and/or tourists.

Potential threats could worsen specific weaknesses related to in the medium-long term to the further declining demographic pattern. The higher appeal of car-related alternatives. More in general, and with reference to the short term, an element potentially bringing some uncertainties in the following months is obviously related to the future developments of the COVID-19 pandemic.



## 7. Policy challenges

The policy challenges are mainly associated with the issues that motivate the participation of the Municipality of Castel d’Aiano in the Smacker ETP programme. In particular, they are related to the need of addressing the limited accessibility of the ETP core area, which is also due to the geo-morphological characters of such mountainous context with a quite disperse settlement patterns. In this context, affected by low levels of overall mobility demand, keeping a certain level of multimodal accessibility, as to limit car-dependency is particularly challenging. Furthermore, the importance of these objectives is twofold: fostering the sustainable tourism in the area (mainly related to trekking and biking) and, above all, providing sustainable solutions for the mobility and accessibility needs of the local population (even when traveling out of the peak hours). To this end, a well-structured PT system supply should envisage a synergic network different modes of transport and typologies of service could maximise the attractiveness and efficiency of the PT solutions through well-tailored solutions according to the specific characteristics and level of demand of each specific connection/area. In this purpose, it is to consider the importance of linking to the railway network (especially to the Vergato station) as well as to the Tolè settlement, which is served by bus lines linking to the Samoggia valley as well as others destinations (indicatively) in northern directions up to Bologna.

In this overall framework, DRT services could efficiently complement the network of “conventional” PT services (with a fixed timetable and route) by providing the degree of flexibility that could allow the development of viable solutions in those cases where a traditional service is not feasible. Conventional PT services, instead, can provide the connectivity along the main lines providing the backbone of the PT system also including the intermodal interchanges. In this purpose, it is also to consider that with particular reference to mountainous area, the legislation allows some exceptions to the rules on local PT to encourage a different organization of the service. Last but not least, a specific aspect, that could be further explored and tackled through a DRT service, is the need for facilitating the usage of the services by the elderly and impaired people.

Therefore, the development of new flexible services should (synergically) consider, on the one hand, the existing traditional PT lines as well as related future development as envisaged in the SUMP, such as the enhancement of the intermodal role of Vergato node and the relevance given also to its connection to Castel d’Aiano (foreseen to become a Level 3 enhanced line).



## 8. Conclusions and addresses for the Action Plan development

The present deliverable has addressed the ETP area of Castel d'Aiano municipality within the SMACKER project, as to provide a synthetic description of the state of play as well as of the issues to be addressed in the next steps. Hence, the carried-out analyses have allowed to underline the challenges and accessibility needs of Castel d'Aiano. In particular, it is to underline the socio-demographic characteristics as well as multimodal accessibility situation of the analysed area, which is strongly related to its mountainous rural character and disperse settlement pattern. In fact, the municipality is characterised as a low transport demand area, which typically do not lend themselves to being served by conventional public transport systems such as busses (as they would be expensive and not efficient for the level demand of the area).

However, improved multimodal accessibility, especially along certain directions and, possibly, also during off-peak hours is a key goal in order to car-dependency and provide accessibility to categories (e.g. elderly, impaired, youngsters, etc.). In particular, this accessibility needs are related to fostering an enhanced connectivity with the neighbouring municipalities located in the Reno Valley (esp. Vergato).

To this end, the development of flexible and well-tailored solutions represents a promising opportunity to be further developed in the Action Plan and which need to complement the existing supply represented by conventional services.



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## 9. References

- ISTAT national census data
- Emilia Romagna Region Statistics Unit
- Metropolitan City of Bologna Sustainable Urban Mobility Plan (2019)
- OpenStreetMap



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## 10. Annexes

### 10.1. Annex 1 - Stakeholders list

See attached file [ANNEX\\_1\\_Stakeholder\\_List\\_en\\_CDA.xlsx](#)