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THE IMPACT OF THE PARENZANA RAIL TRAIL IN ISTRIA ON TOURISM DEVELOPMENT AND RURAL TRANSFORMATIONS

Natalija Krošnjak
Aleksandar Lukić

Abstract

Railway trails or greenways are a well-known phenomenon related to rural tourism development. The Parenzana Rail Trail, a famous pedestrian and bicycle trail, was created by converting a decommissioned historic railroad line that runs through Italy (13 km), Slovenia (32 km) and Croatia (78 km). Research objective of the paper is to examine the economic, socio-cultural and environmental impacts of Parenzana Rail Trail in the local rural context. The research methodology is primarily based on semi-structured interviews with representatives of tourist boards from Croatian and Slovenian Istria. In 2019, a total of 93,545 visitors were registered at four centres in Croatia, with monthly visitor numbers highest in the early and late tourist seasons. Businesses have been established to provide bicycle rental and repair services and other equipment, and dedicated accommodation facilities have opened. Parenzana has created links between the existing tourist products and supported the promotion and collaboration of municipalities. It also contributes to the improvement of local rural services, especially in the areas of leisure and transport. Furthermore, it supports the preservation of cultural heritage, the strengthening of spatial identity, and the enhancement and maintenance of the environment along the route. Future prospects include reducing spatial disparities in development trajectories, the need for greater promotion, and improving the surface of Parenzana to suit more visitors.

Keywords: Cyclo-tourism, Heritage revitalization, Istria, Parenzana, Rural tourism, Rail trails

1. INTRODUCTION

Rail trails are multipurpose trails lying along former railway lines, or that continuously run alongside active railway lines for most of their length (Rails-to-Trails Conservancy 2021). These trails are typically near flat, wide and with a hard surface, making them easily accessible and suitable for numerous activities outdoors, such as walking, cycling, rollerblading or horseback riding. The USA is considered the first country to establish a structured social movement to develop rail trails, and has the widest and longest network of rail trails in the world, with more than 2289 rail trails distributed over a length of more than 40,000 km (Reis and Jellum 2014; Rails-to-Trails Conservancy 2021). Since the 1990s, significant achievements have been made in Europe to develop similar multipurpose trails, such as the *Vías Verdes* in Spain, *Rèseau Autonome des Voies Lentes* (RAVeL) in Belgium, and the *Ecopistas* in Portugal (Oppido and Ragozino 2014). Germany has the largest network in Europe, with 795 trails covering a length of 5483 km (Bahnrassenradeln 2021). In Europe, these trails are often developed as part of greenways (Oppido and Ragozino 2014; European Greenway Association 2021).

Repurposing railway stations into hospitality facilities, info centres as additional offer, and facilities for bicycle rental and repair as new tourism facilities can largely spur employment, and drive the growth of tourism and socioeconomic growth (Di Ruocco et.

al. 2017). This contributes to the goal that is not only the transformation of the abandoned railway network, but the activation of the process of regeneration and local development, connecting local resources and increasing offer and services (Oppido and Ragozino 2014). When creating a new function for unused railway infrastructure, it is important to include the community that is already active in that area, creating opportunities for societies, small business owners and the residents themselves to become the main actors in the development process, with the adequate support of the institutional administrative structures. From the environmental perspective, rail trails have special significance in the sense of developing low-carbon tourism, such as cycling or walking as a recreational activity, and also in the sense of building the trails, as they imply the reuse of an existing resource (Willard and Beeton 2012). Walking and cycling trails have also become a pronounced tourism product in cross-border areas. Many advantages in developing tourism trails across administrative borders have been observed (Stoffelen 2018). Initiating cooperation and partnership between different local areas, regions, counties and even countries is viewed as an additional benefit from trail development (Briedenhann and Wickens 2004). In conclusion, the tourism impacts are often divided in economic, socio-cultural and environmental categories (Mason 2003; Mathieson and Wall 2006; Page 2009). An example of positive economic impact would be the creation of new jobs, and an example of negative would be additional destination management costs (Mason 2003). The sociocultural impacts of tourism are the ways in which tourism contributes to changes in quality of life and lifestyle, traditional values, and other components of society and culture (Mason 2003; Mathieson and Wall 2006). Environmental impact refers to tourism's relationship with the environment, as it is an important resource for tourism development. Thus, a relationship can be symbiotic when both parties benefit from each other, or conflictual when tourism harms the environment (Mathieson and Wall 2006).

The repurposing of railway corridors into cycling and walking trails in Croatia is still in its infancy. After the first trail, Parenzana in Istria in 2008, a European cross-border cooperation project between Croatia and Bosnia and Herzegovina was launched; from 2014–2016, the narrow track Gabela-Uskoplje-Zelenika was revitalized as part of the project “*Cycling through history – revitalization of the old narrow Čiro track*”. Since 2021, the former railway line Kanfanar-Rovinj, covering a length of 20.6 km, has been in function, and converted into a rail trail with the symbolic name *Štrika Ferata* (Rovinj Tourist Board 2021). In their review paper, Kos et al. (2021) examined the methodologies of creating cyclo-tourism routes in the corridors of the abandoned railway lines Bjelovar-Garešnica in Bjelovar-Bilogora County, and also gave an overview of the definitions and development of greenways in the world and in Croatia. Modesto et al. (2021) conducted research on potential conversion and possibilities of including the railway line Kanfanar-Rovinj into the green infrastructure, from the perspective of landscape architecture.

Research objective of the paper is to examine the economic, socio-cultural and environmental impacts of Parenzana Rail Trail in the local rural context. The paper examines the positive and negative effects and the perspectives for further development of walking/cycling trail that was created from the conversion of the abandoned Parenzana railway line. Parenzana is a decommissioned historic railroad line that runs through Italy (13 km), Slovenia (32 km) and Croatia (78 km). The railway line was

opened in 1902, during the period of Austro-Hungarian rule, when the transportation system of Istria was greatly improved due to the interests Austria had in this area. Though it only ran through northwestern Istria for 33 years, it played an important role in the economic development of the area (Zupanc 2002; Parenzana 2021).

2. RESEARCH AREA AND METHODOLOGY

The research area of the study includes 10 local administrative units through which the Parenzana railway line runs in Croatia, and three local administrative units in Slovenia (Fig. 1). In Croatia, the Parenzana route runs through the northern and northwestern parts of the Istrian Peninsula, mostly through the small rural settlements in the Istrian inland (Fig. 2). The route in Croatia is nearly fully preserved, and has been maintained along its entire length as an unpaved recreational trail. The sections near the coast are most altered, trampled by urban expansion and new roads (Černicki 2012; Parenzana 2021). In Slovenia, the route runs through the Coastal-Karst region, at the very southwest of Slovenia, and the only region that touches on the Adriatic Sea, running mostly through the urban areas of Piran, Izola and Koper. In Slovenia, the route is paved and forms part of the network of bicycle trails on the D8 route. The sections near the coast are most altered, covered by new roads, urban areas and industrial plants (Černicki 2012).

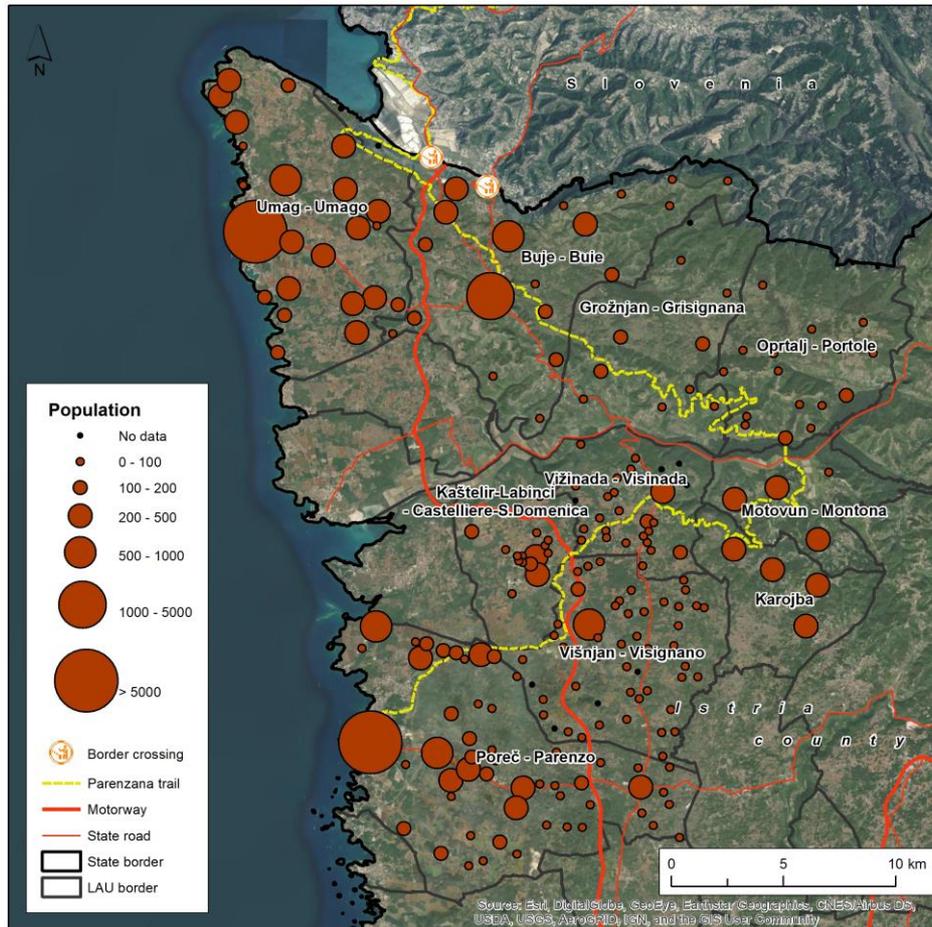
The paper is primarily based on semi-structured interviews with representatives of tourist boards of those municipalities or towns through which the Parenzana route runs. Interviews were developed using multidimensional approach since, as Page (2009) argues, the impacts of tourism are multiple and difficult to observe in a one-dimensional way because they are intertwined, both with each other and with other activities of economic development. Multidimensional approach involved researching three categories of the tourism impacts in the rural area, namely economic, socio-cultural and environmental impacts (Mason 2003; Mathieson and Wall 2006; Page 2009). The research was conducted in December 2021. Of the ten Croatian and three Slovenian local government units, six representatives of Croatian tourist boards (TB) (Motovun-Montona TB (TB1), Buje-Buie TB (TB2), Vižinada-Visinada TB (TB3), Oprtalj-Portole TB (TB4), Kaštelir-Labinci - Castelliere-S.Domenica TB (TB5), Grožnjan-Grisignana TB (TB6) and two representatives of Slovenian TBs (Izola (TB7) and Koper (TB8)) were interviewed. Interviews were also conducted with the Istria County Tourism Administration Office, as the main partner in the Parenzana project. The interview results were analysed using descriptive and analytical coding, and then codes were grouped into wider code groups that were set up in the analytical framework, and presented in the form of a code scheme.

Figure 1. Research area – Parenzana route



Source: DGU 2013; GURS 2017; MATTM 2017; Geofabrik 2022

Figure 2. Population (2011 census) of the settlements in the analysed local administrative units in Croatia



Source: GIS Data 2005; DZS 2013; GURS 2017; Geofabrik 2022; ESRI 2022

3. DEVELOPMENT, CHARACTERISTICS AND VISITATION OF THE PARENZANA RAIL TRAIL

At the end of the 20th century, the municipality of Koper began to revitalise the tourism and recreational trails in Slovenian Istria. On the 100th anniversary of the start of operations of the Parenzana railway line in 2002, one part of the repurposed trail was opened as part of the project “Pot zdravja in prijateljstva” (*Health and Friendship Trail*). This was a stimulus to revitalise the route over its entire length (Černicki 2012). In 2006, the Istrian County Tourism Administration Office together with the City of Koper started the project “Parenzana – put zdravlja i prijateljstva” (*Parenzana – a trail of health and friendship*). Thanks to the positive results, new content was added later in the projects

Parenzana II and Parenzana III (Table 1).

Table 1. Projects, partners, implementation periods and activities in the Parenzana projects

Project	Partners	Period	Activities
Parenzana I – Trail of health and friendship	Istria County, Koper municipality, Izola municipality, Piran municipality, MTB Istra-Pazin cycling club	2006–2008	<ul style="list-style-type: none"> • 60 km of the route from the Slovenian-Croatian border to Vižinada completed • Viaducts and bridges secured with railings • Solar-powered lightened installed in tunnels • Multimedia museum in Livade • 20 km of the route in Slovenia completed
Parenzana II – Revitalisation of the Trail of health and friendship	Istria County, Town of Poreč, Vižinada municipality, Oprtalj municipality, Town of Buje, Koper municipality, Izola municipality, Piran municipality	2009	<ul style="list-style-type: none"> • Restoration of the sections Vižinada-Poreč and Lama-Dekani • Construction of bridge at Livade • Real size model of Parenzana installed in Vižinada • Several rest areas built • Installation of signage and interpretation panels • Bike guides trained • Info-bike points installed • Expansion of the Parenzana Museum in Livade
Parenzana III – Parenzana Magic	Istria County, Town of Buje, Motovun municipality, Koper municipality, Piran municipality, Town of Poreč, Izola municipality	2014–2015	<ul style="list-style-type: none"> • Former school in building in Triban repurposed into a cyclist's inn • Outdoor exercise areas completed (in Motovun, Poreč, Izola and Piran) • Rest areas with panels installed • Two new events: Wine Run cross-border marathon and Parenzana Day - history on site

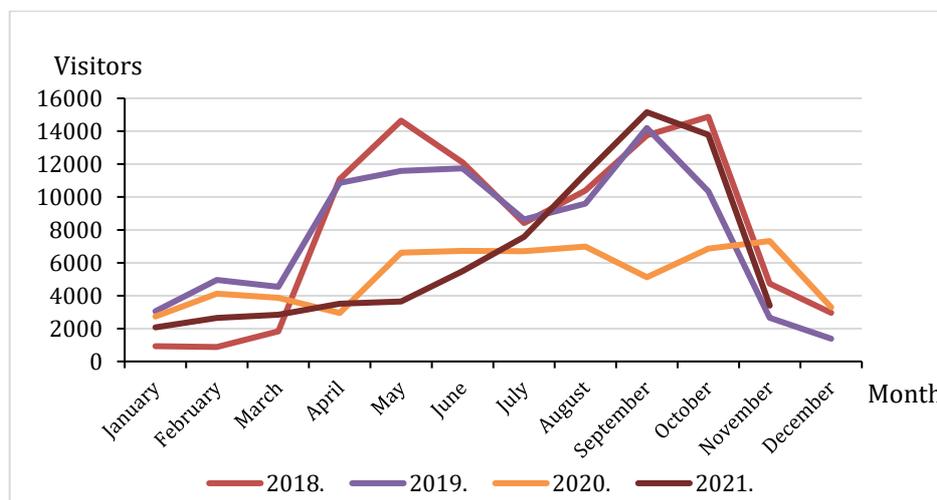
Source: Parenzana 2021

Visitor counters were installed on the Parenzana trail at four locations (Plovanija,

Vižinada, Grožnjan and Livade). In 2018, 96,590 walkers and cyclists were recorded. A somewhat larger number of visitors was seen in the northern parts of Istria (Grožnjan, Livade, Plovanija), than in the more southern Vižinada. With the onset of the COVID-19 pandemic in 2020, which severely hindered travelling, the number of visitors to the Parenzana trail dropped. However, the 2020 figures were two-thirds (67.7%) of the 2019 figures, while 2021 achieved 76.5% of the 2019 figures.

In examining visitation by months, it is evident that it is highest in the spring and autumn periods, which correspond with the tourism pre- and post-seasons (Graph 1). The highest numbers of visitors were recorded in May (14,644) and October 2018 (14,877). The number of visitors is also associated with the local events organised during those time periods, and also with the fact that the weather conditions during those months are most suitable for cycling and walking.

Graph 1. Number of visitors on the Parenzana trail recorded using visitor counters for the period 2018 – 2021 by month.



Source: Istria County Tourism Administration Office, 2021 (e-mail of 17 December 2021)

In the municipalities and towns through which the Parenzana route runs, several services and additional offer have been introduced as part of the development of cyclo-tourism (Fig. 3), in addition to specialised accommodation capacities (Fig. 4).

Figure 3. Number of other services associated with cyclo-tourism on the Parenzana trail in 2021, by local administration unit

Bicycle service	Equipment shops	Bicycle rentals	Transport	e-Bike charging stations	Bike-friendly points
<ul style="list-style-type: none"> • Poreč (5) • Buje (1) • Umag (7) 	<ul style="list-style-type: none"> • Umag (2) 	<ul style="list-style-type: none"> • Poreč (9) • Buje (2) • Umag (6) • Motovun (1) • Karojba (1) 	<ul style="list-style-type: none"> • Poreč (2) • Buje (2) • Umag (1) 	<ul style="list-style-type: none"> • Poreč (8) • Buje (2) • Motovun (1) • Kaštelir-Labinci (1) 	<ul style="list-style-type: none"> • Oprtalj (1)

Source: *Istra Bike* 2021; Parenzana, 2021

Figure 4. Number of accommodation facilities by Istria Bike&Bed accommodation categories on the Parenzana trail in 2021 by local administration unit

<i>Bike&Bed</i>	<i>Bike Boutique hotels</i>	<i>Bike hotels</i>
<ul style="list-style-type: none"> • Umag (10) • Buje (4) • Poreč (7) • Motovun (1) • Grožnjan (3) • Oprtalj (1) • Kaštelir-Labinci (4) • Višnjan (1) • Vižinada (2) • Karojba (1) 	<ul style="list-style-type: none"> • Umag (2) • Buje (1) • Motovun (1) 	<ul style="list-style-type: none"> • Umag (3) • Poreč (4)

Source: *Istra Bike* 2021; Parenzana, 2021

4. RESEARCH RESULTS AND DISCUSSION

4.1. Role of cyclo-tourism

Research objective of the paper is to examine the economic, socio-cultural and environmental impacts of Parenzana Rail Trail in the local rural context. Therefore, after the first introductory chapter on the role of cyclo-tourism, the text is organized according to these three categories of impacts.

According to the *Action Plan for the Development of Cyclo-tourism*, Istria is Croatia's most significant cyclo-tourism destination (Institute for tourism 2015). The development of cyclo-tourism in Istria began in the mid-1990s and has been advancing ever since. In 2020, there were 153 cycling trails covering a total of 5554.28 km in the territory of Istria County. Though most of these trails are in Central Istria (1425.11 km), the areas around Poreč (878.9 km) and Umag/Novigrad (861.12 km) are also highly interlaced with trails (Institute of Agriculture and Tourism 2021).

As stated by the representative of the Istria County Tourism Administration Office, cyclo-tourism is an economic driver of the area it runs through, as it spurs the

development of numerous other accompanying services, helps to lengthen the tourism season in the pre- and post-season, and contributes to the development of selective forms of tourism. Accordingly, it is often one of the main forms of rural tourism in Istria (code A1).

Cyclo-tourism plays an important role in the tourism development of the municipality, and is one of the main tourism development goals within the municipality. (TB4)

Riding along routes that were once railway lines is an attraction in its own right, according to Gardzińska (2018), attracting tourists to the destination and developing demand for other services. By developing cyclo-tourism as another form of tourism activity, the municipality has increased what its tourism has to offer (code A2), and since this implies the movement through space, it is also suitable for connections with other tourism offer (code A5).

We have a diverse tourism offer and are systematically working to raise all content to a higher level. (TB1)

When we developed the cycling trails, then we saw that it brought together all the other offer... we connected with accommodation providers, wine trails, and cultural sights of interest... (TB2)

Though Page (2009) stressed that seasonality is the main characteristic of tourism, the significance of cyclo-tourism for strengthening the pre- and post-season has also been observed (code A4).

When the young musicians leave Grožnjan, the post-season is quite empty... now we have cyclists riding around the Grožnjan area, I see them every day ... Parenzana has certainly been good for lengthening the season, especially in the post-season. (TB6)

With respect to the pandemic, our interviewees most often stated that the *initial expectations were quite low*, and also that the season *turned out better than expected*. They stated that rural tourism in Istria has continued to develop, though slowly, and the situation has even brought several positive consequences, such as an increase in the share of domestic guests, and care for health through increased recreational activities. This is where cyclo-tourism is particularly significant (code A3). Parenzana has proven to be a tourism product that is resilient to unpredictable situations like the pandemic, even though Mathieson and Wall (2006) claim that tourism is an unstable activity due to the accidental circumstances that may affect it.

Like everything else, cyclo-tourism dropped (at the start of the pandemic), but quickly recovered... primarily because foreign guests couldn't come... there was even an increase in the number of domestic guests. (TB1)

Parenzana became really popular in this area, because everyone was avoiding large gatherings, so there were many individuals or just small groups... cycling, at least in the Covid context, allowed for the retention of a large part of the desired number of visitors and consumption in the area. (TB6)

4.2. Economic impacts

The interviewees often stressed that Parenzana was responsible for increasing the tourism offer in the municipalities and overall, either directly or indirectly (code B2). Rural areas are ideal for the development of cyclo-tourism, as this implies the use of existing resources such as natural beauty, heritage and other characteristics that complement the primary tourism product – the trail (Broadway 2012). Due to its length and linear nature, Parenzana connects different tourism areas and offer within the municipalities (code B1).

Economically, it has certainly affected development, both directly and indirectly, especially for those renting equipment and those in hospitality. (TB6)

At one end we have very little to do with Parenzana, as it only touches us and passes through the municipality in the southern part, but we have our network of cycling and walking trails which are complementary, as users use both networks. (TB5)

It passes through numerous areas, connecting them... points of different services are found in all these areas the Parenzana passes through. (TB6)

As stated by the representative of the Istria County Tourism Administration Office, *Parenzana is a brand, the route is international, and is known in the European context, especially in the nearby countries.* Accordingly, its promotion is important, and this is performed by the Administrative Office through its official website and through other marketing activities. All municipalities benefit from this promotion (code B6). Gazzola et al. (2018) stated that cyclo-tourism increases the rate of filling destination capacities, their competitiveness and attractiveness, and makes them recognisable on the tourism market. The promotion of Parenzana increases the tourism recognisability of municipalities, which contributes to attracting tourists and finally increases the number of visitors to the municipality (code B7), thereby increasing revenues.

The fact that the very name Parenzana is associated with something is the biggest contribution... there is no direct effect, instead this is an indirect effect. (TB5)

There are other cycling trails in addition to the Parenzana, but Parenzana is the most popular because it is the most widely known. (TB7)

One of the important effects of the Parenzana is how visited it is, and those visitors then also visit other cultural, culinary and wine forms of tourism. (TB4)

Visitors to Parenzana also come in organised groups, not only as individuals, and this attracts both one-day and multi-day visitors.

There are more and more buses with bicycle trailers parked in Grožnjan ... cyclists are not only coming individually, but also in busloads. (TB6)

Lumdson (2000) stated that areas that develop cyclo-tourism have to develop a tourism product that is attractive and includes several products, such as guided tours or adapted accommodation, as those types of infrastructure can generate significant demand. The increasing visitation of Parenzana has spurred demand for functions associated with the provision of services for cyclo-tourism, such as bicycle rentals (code B4). The representative of the Istria County Tourism Administration Office stressed the

importance of the *Istra bike* section, which coordinates all cycling trails in the county, organises training for cycling guides and cycling tours.

One initiative, rent-a-bike, was likely stimulated by Parenzana ... we also have a tourist agency that offers outdoor tours, and this is certainly directly connected with the Parenzana, which has always been a base. (TB1)

We are currently developing the Urban Plan for the development of the Grožnjan bike park ... a site for adrenaline races, exercise trails, additional activities and offer... it is our intent to also build a bike camp that will be an integral part of the bike park... all of this is tied directly with the Parenzana trail. (TB6)

A part of the Parenzana project is also the adaptation of accommodation facilities to better receive cyclists, in the form of *Bike&Bed* accommodation. Though these types of accommodation are not equally available in all municipalities, the interviewees agreed that many local hospitality businesses and accommodation providers are following trends and adapting their facilities to meet the demand (code B3).

Some (B&Bs) are right on the route ... the Kanegra tourism village is just 200-300 m from the route ... the Parenzana rural hotel is also just 20-30 m off the route ... the entire area of Kaldanija, Plovanija. (TB2)

Most of them (accommodation providers) have bicycle storage areas, and if needed can also organise bicycle repairs... even if they have not signed up with the project to receive the Bike&Bed label, they are still ensuring that guests have everything they need at their disposal. (TB3)

Furthermore, other projects are also unfolding, like the *bike friendly point* and as mentioned above, the *bike camp*.

Encouraging cooperation and partnership at the local, regional and cross-border levels is viewed as an additional benefit of trail development (Briedenhann and Wickens 2004), and it also includes the perspectives of different stakeholders, which is key for the successful implementation of sustainable tourism development within the community (Reis et. al. 2014). The municipalities and towns along the route are all partners in the Parenzana project, together with the Istrian County Tourism Administration Office as the main partner. This project has achieved cooperation at the local, regional and cross-border levels, and has also stimulated networking among local businesses, the local community and the civil sector (code B5).

The county and municipalities are working together to maintain the Parenzana thanks to the shared interest... this is a link between two countries and all the municipalities gravitating to the trail, and in that sense has certainly contributed to better communication, agreements, aligning common actions, resolving shared problems... (TB6)

Sometimes, someone will leave trash in nature, especially around the Kanegra tourism village ... the cycling clubs then tell us the location when they see this on the route. (TB2)

The Society of Italians of Livade-Gradinje has organised several events, including clean-ups or walks along the Parenzana, organised outdoor trips... these are occasional events, and this year was the first. (TB4)

4.3. Sociocultural impacts

According to Mason (2003), some of the most common positive sociocultural effects of tourism are the revitalisation of poorly developed regions, raising the quality of life, and reviving the social and cultural life of the community. All these impacts have been recognised in the responses of the interviewees.

Together with other forms of rural tourism, Parenzana has generated interest for rural areas, not only in the tourism sense, but also generally for investments and development of those areas (code C2).

It has certainly stimulated new building and new interest for this area, entire abandoned villages have been reconstructed, such as the settlements of Biroslavi (Grožnjan), Antonci, Krti ... all of these were rebuilt thanks to Parenzana, and this trend of inland tourism development... Parenzana has certainly had an effect on this. (TB2)

In addition to this cooperation and networking, it should also be stated that the local community receives a great deal by participating in events associated with the Parenzana trail. Further, the arrival of tourists into sparsely inhabited areas enables their interactions with the locals, which has positive connotations and could result in the sale of local products (code C1).

Schoolchildren participate in these events, they have held art competitions and exhibits to celebrate jubilee years... there was a station in Triban, where an art exhibit was hosted on the theme of the Parenzana trail. (TB2)

Parenzana bypasses larger settlements (Završje, Kostajnica, Grožnjan), but passes through several villages, where visitors can engage in social contact, even by asking for some water... people appreciate this and take every opportunity to promote their work. (TB6)

Furthermore, well-maintained trails with additional offer contribute to the better maintenance of settlements, that the local population can also use for recreational purposes (code C3). Also, Parenzana is well connected with other bicycle trails in the municipalities, which is very favourable in the sense of safety of trail users, and from the aspect of preventing conflicts between cyclists and other road users (code C4).

Buje does not have any walking trails, since the configuration of the settlement Buje is hilly... with the revitalisation of the Parenzana trail, we have received a walking trail that is widely used by all, from young people to the elderly, even mothers with children... it is connected to the centre of Buje with a sidewalk... and this means a lot for the daily life of the settlement. (TB2)

From Motovun, you can go to (other) bike trails and virtually not enter onto the paved roads, for a mountain bike trail that is a fantastic thing, and this is thanks to the Parenzana. (TB1)

The role of the Parenzana trail today is different from the one it played in the past, when it served to transport agricultural products, raw materials, and even passengers. However, its role in preserving the spatial identity and as a symbol of connection remains prominent (code C5).

In the past, Parenzana was very important for the local population... serving for the transport of wine... today it also connects the cultures of Italy, Slovenia and Croatia as it did before... if the trail had not been revitalised, it would have become overgrown with thickets and forests, and all this would have been forgotten (TB3)

We are all aware of how the Parenzana has always been important (from the economic perspective) and of its history, and all that it means and how this is part of our identity. (TB7)

This identity is clearly visible in the names of the hospitality businesses.

Just in the Buje area, I can't say how many apartment providers have added the name Parenzana to their name... and we also have the Parenzana rural hotel in Volpia and the Parenzana bike hostel in Triban ... (TB2)

Parenzana has also stimulated the conservation of heritage. Though most railway structures have received new functions over time, including residential, near the track, there are facilities that revive cultural heritage, such as rooms in museums (code C6).

A model of the trail has been installed, just 10 metres from the old station, which has since been repurposed into a residential building. (TB3)

Restored bridges and viaducts, constructed in the early 20th century, reflect the architectural heritage of that age, and conserved intangible heritage is seen in the many events that are organised.

The quality of the construction, bridges and tunnels... are indicators of the architecture of the day, all of these tunnels are lined with beautifully cut stone. (TB2)

On the last Sunday in September, we hold the traditional Parenzana bike rally, in honour of the Parenzana trail. (TB3)

4.4 Environmental impacts and physiognomic changes

The advantages of repurposing the trail lies in the fact that existing and often unused resources can be used in planning the route and its content (Lumdsom 2000). Thanks to the Parenzana, many clean-up and landscaping campaigns were launched along the former railway line, to clean up the overgrowth...

Parenzana is not a burden on the environment, on the contrary... before everything was overgrown and you couldn't even enter into the tunnels, we had to go around them... and trees were already growing on the rail line. (TB2)

...later, new content was added in the area, with municipalities also investing to improve this (code D1). It should also be stated that part of this route serves as a road, which is beneficial for sustainability and conservation of the environment (code D3).

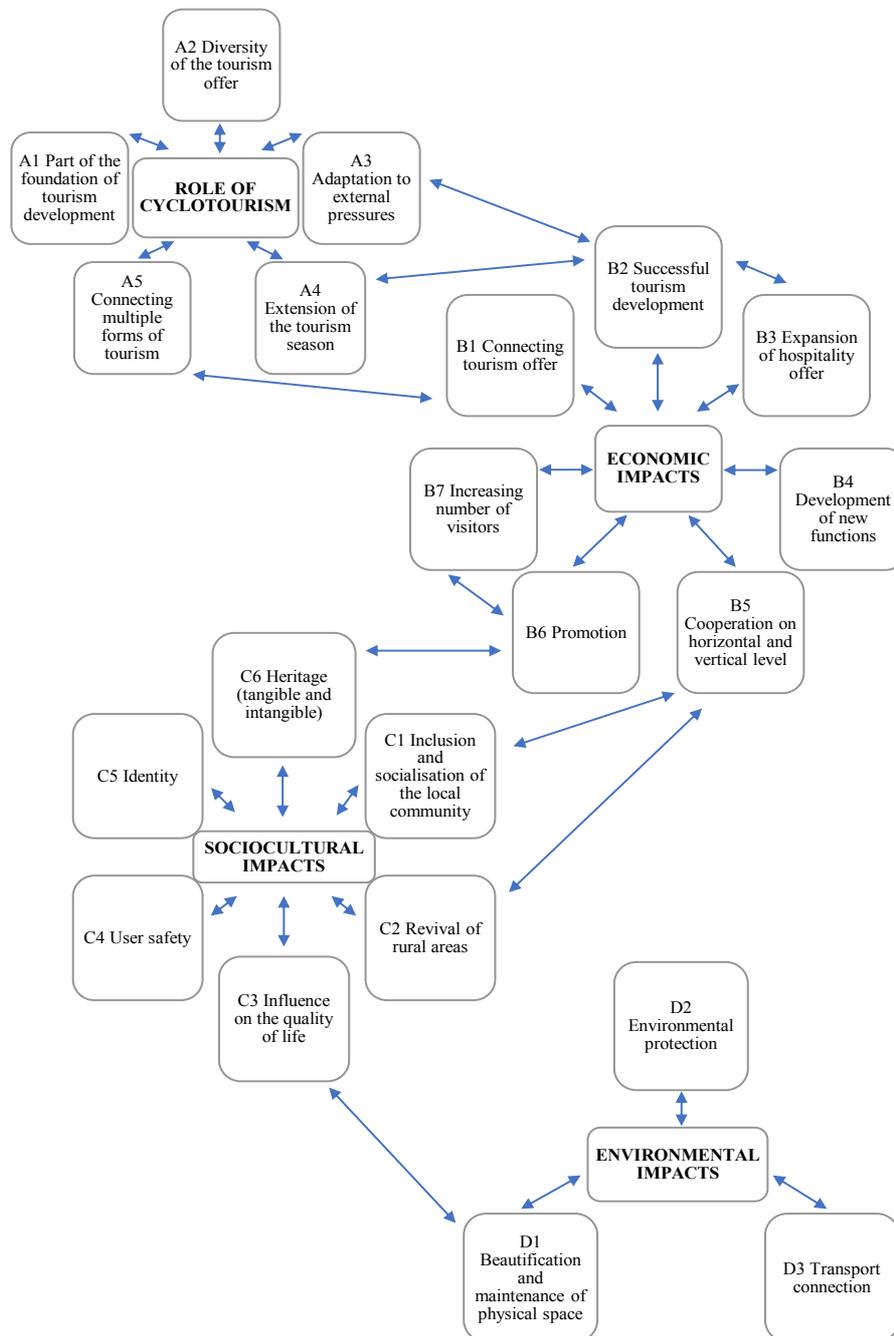
An outdoor exercise area has been installed, this is great offer for both guests and the local population... it has positive effects on the spatial improvement... funds were obtained to install lighting in the tunnels, and this has brought direct benefits. (TB1)
This connection between all these towns here in Slovenian Istria, is more important now than ever as a means of eco-friendly transportation. (TB7)

Further, the interviewees stated that this trail has none of the negative impacts of tourism on the environment, as outlined by Mason (2003) and Mathieson and Wall (2006), such as soil pollution, vegetation and noise pollution. There is a problem that was stated and that they cannot control, and that is the use of the trail by motorised vehicles. Though this is prohibited, there is no systematic control in place. The Parenzana corridor, after it was made passable, also served for *other types of tourism, including motorsports (TB4), and served as a road to dump garbage dump, because people come with vans or cars and trailers and dump their garbage here (TB5)*. This damages the surface, increasing maintenance costs, and endangers the safety of trail users and harms the environment. Page (2009) stated that it is necessary to establish an adequate means of visitor management in order to protect the environment, and this is something that still requires work on the Parenzana trail. However, these were the only “negative impacts” that the interviewees recognised.

Finally, the interviewees stressed the importance of protecting the environment, as an important resource in tourism, and of highlighting the role of the Parenzana as a desirable form of tourism because it *does not burden the environment (code D2)*. As stated by Briedenhann and Wickens (2004) and Stoffelen (2018), tourists are distributed along the trail, and so the negative effects on the environment are reduced, making it easier to manage the carrying capacity. On the other hand, the natural environment is part of the authentic experience that the Parenzana offers visitors as a panoramic trail, and herein lies its high attractiveness.

... this northwestern zone of Istria is very well preserved, particularly the upper area of Buje (Momjan, municipalities of Grožnjan and Oprtalj) ... this is ecologically the best preserved part of Istria. (TB6)
The most beautiful part of the trail is when it enters into Croatia, with the view over Piran Bay and its saltworks, and then from Grožnjan towards Završje ... this is more panoramic ... the whole time, you can see the sea and Mt. Učka and the Mirna River valley. (TB2)

Figure 5. Code scheme of the effects of the Parenzana and the role of cyclo-tourism



Source: Authors according to the interview results, 2021

5. CONCLUSIONS AND RECOMMENDATIONS

The Parenzana trail has shown that the repurposing of abandoned railway lines is one of the possible strategies for supporting the sustainable development of tourism in rural areas, as long as this is carefully planned. Integral and controlled development based on the resources at hand is also important. However, the research results have shown that the economic impacts of the Parenzana trail are moderate and more indirect than direct. The trail has not directly affected employment, but has resulted in an expansion of the hospitality offer. Furthermore, Parenzana has proven to be a tourism product that is quite resilient to unpredictable situations like the pandemic. Parenzana has created links between the existing tourist products and supported the promotion and collaboration of municipalities. It also helps to lengthen the tourism season. For the sociocultural impacts that are often shown in a negative way in the literature, the Parenzana trail has proven to be the opposite. It has helped a revival of the rural space and increased the popularity of the municipalities and towns along the route. It also contributes to the improvement of local rural services, especially in the areas of leisure and transport. It can also be concluded that the Parenzana trail does not negatively impact the environment, but that its relationship is more symbiotic. It helps the enhancement and maintenance of the environment along the route. For further development, property ownership issues will need to be resolved, as these are hindering the start of new projects. Also, the quality of the surface of the trail should be improved to make it more accessible to a wider circle of trail users. More shuttle services as well as greater investments in visibility are required. Finally, it is important to highlight the differences between Croatia and Slovenia. Though the trail in Slovenia also contributes to the diversity of the tourism offer, it mostly passes along the coast and through urban areas, oftentimes as a seaside promenade, perceived more as a city bicycle and recreational trail used by local population than a cyclo-tourism rail trail.

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