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The development and promotion of the inland areas of the metropolitan city of Reggio Calabria through the enhancement and restoration of the Calabro-Lucane railway line - The greenway project, train-hotel and valorization of former railway stations

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Abstract

The idea of recovery of a railroad section of the Calabro-Lucane railways is based on trying to reuse neglected and now useless structure, with the intent to promote a railroad which is the identity of the local communities. The main objective is the re-appropriation by the community of its cultural heritage in order to support sustainable processes of endogenous growth and improve the quality of life in rural areas. The paper, using a multidisciplinary approach, hypothesizes the possibility of the railway enhancement. Choosing among alternatives by proceeding lexicographically through a sequence of criteria is a common description of practical decision-making.

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Keywords: Greenways; lexicographical order; analysis costs and revenues; financial economic plan.

1. Introduction

This project proposal is part of a broader research program which aims to demonstrate a potential system of conveniences and opportunities for the territory. The future metropolitan city of Reggio Calabria is a subject crucial

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to the development of the surrounding territories, and an opportunity to rationalize and to network various aspects; including economical services for citizens and businesses by improving competitiveness and the 'attractiveness' of the territories, involving all the productive, cognitive and innovative capital in this wide area.

The new institutional entity may delegate, from the municipal level, the wide area programming functions, able to interpret the new needs of the economy and society and to boost new and expanded projects (*LaborEst* n°9 - www.laborest.org).

The project considers, therefore, the need to tie-in to the strategic plan for the Metropolitan City of Reggio Calabria. It intends to do this by providing realistic forecasts on the impact of future operations, which are coherent with the plans aims and expected strategic axis.

The study includes an estimate and identification of necessary resources, which may help to ensure the successful execution of operations. It is the hope of this study that such an awareness will prove vital in the selection and prioritization of actions going forward.

The idea of the valorization project was born, not by attempting to hide an infrastructure in a complete state of neglect, (which had in time become unusable and unproductive.) Instead it arose from the intent to promote and upgrade a railroad which has become a source of identity for the local communities. This railway possesses a special beauty in its contrast between, the engineering solutions of steel bridges and tunnels in stones and bricks, made in the early XX century, and on its location, nestled within the unspoilt natural environment; an area suited to agriculture and to the use of local resources.

The Calabro-Lucane railways, designed in the first decade of the 1900s and built, reduced gauge, in a period between 1910 and 1934, ran between Calabria and Basilicata. They were constructed to meet the local demand for transport over a total distance of 764.864 km.

After several historical events the Calabro-Lucane railways become Railways of Calabria, with an overall outcome, in the province of Reggio Calabria, of two lines, which connected the inland areas through the routes: Gioia Tauro-Cinquefrondi (Km. 32) and Gioia Tauro-Sinopoli (Km. 26). Especially significant is the Gioia Tauro-Sinopoli route, reduced in size in 1994 and finally closed in 2011. It passes through an area with a natural and cultural heritage of particular interest, closely connected to the local economy. The main objective of its restoration is the re-appropriation by the community of its cultural heritage (tangible and intangible) and its identity in order to promote, encourage and support sustainable processes of endogenous growth. It is hoped that the project will ultimately also improve quality of life in the rural areas. This study, through a multidisciplinary approach, wants to contribute to the hypothesis' for the development of the railway line through five stages:

- 1. An analysis of the Local Development Plan proposed by G.A.L. Ba.Ti.R. - Local Action Group of the Lower Tyrrhenian Reggio (a local development agency committed to promoting, encouraging and supporting endogenous growth processes and improving the quality of life of rural areas - *LaborEst* n°10 - www.laborest.org). This will mainly focus on the exploitation of existing environmental, cultural and social resources, with the aim of structuring a rural system suitable for the eco-sustainable development of the area. Investment in environmental and cultural tourism will be included in this;
- 2. The study of various possible re-uses of the abandoned railway, which can become an innovative means of developing and valorizing the territory. This could incorporate telling the story of the region's places and the production of local specialties;
- 3. The identification of an evaluation system that can evaluate not only the tangible benefits but also intangible ones through even the qualitative criteria;
- 4. The use of techniques of conservation of the built heritage, consistent with the historical importance of the artifacts that have now become part of the local population's identity;
- 5. The application of a system of valorization and management of the project hypothesis, which only through the integration and participation of the population and local institutions can restore the old ways of the train. The line, which runs through territories of considerable importance in terms of agricultural production and of exceptional natural beauty, can be revived through an integrated system of tourist development and promotion of local products.

2. Study of the different hypotheses for re-using the railways buildings on the former Calabro-Lucane line for the development of the area

DEFINITION OF EVALUATION CRITERIA HIERARCHY

PROMOTION development PROTECTION PARTICIPATION knowledge

THREE INTEGRATED OPERATIONS

	SCENARIO 1 - ECOMUSEUM	SCENARIO 2 - HOSPITALITY	SCENARIO 3 - SCHOOL OF CRAFTS
OPERATION 1	GREENWAY	GREENWAY	GREENWAY
OPERATION 2	TRAIN HOTEL	—————	TRAIN HOTEL
OPERATION 3	RAILWAY STATION OF SINOPOLI*	RAILWAY STATION OF SINOPOLI*	RAILWAY STATION OF SINOPOLI*

FUNCTIONAL PROGRAM RAILWAY STATION OF SINOPOLI*

	SCENARIO 1 - ECOMUSEUM	SCENARIO 2 - HOSPITALITY	SCENARIO 3 - SCHOOL OF CRAFTS
	MM - Eco museum of the oil industry of Sinopoli	MM - Interactive - computer center	MM - Dining area
ALTERNATIVELY USE	FV1 - Point of sale and tasting products	FV1 - Storage and equipment rental - Bar	FV1 - Storage and equipment rental
	FV2 - Educational workshops - Offices	FV2 - Bed and Breakfast	FV2 - School of wood crafts

Fig. 1. The three integrated operations – The functional program.

The possibility of reusing the buildings of the former Railways of Calabria has been defined on the basis of existing resources and the objectives identified by G.A.L. Ba.Ti.R. for the development of the territory. There have been three integrated operations proposed to make best use of the railway from Gioia Tauro to Sinopoli (Fig. 1):

- 1. The greenway project, planned for the entire stretch of the railway line, is structured as a multi-functional linear park designed with the following purposes in mind: protecting natural resources, upgrading landscaping, offering environmental education and as a place for people to spend their leisure time. Hence Railway infrastructures have a significant role to play in the creation of a green network, able to connect cities with rural areas, making the least possible contact with other forms of traffic.

The concept of a greenway arose from a process of evolution that has involved the green areas over the years. From a purely aesthetic element, the green spaces, have taken on new roles, such as the control and regulation of urban expansion. In 1999, the then Vice President of the United States Albert Gore stated that "...bad urban interventions, both at regional and local level, have virtually erased (...) the open spaces. To oppose the effects of the messy sprawl of urbanized areas, many local communities see the greenways as a tool to curb uncontrolled growth".

The network also has the function of connecting with the elements of interest in the area, combining beautiful landscapes with historical sites, artistic and cultural heritage, traditions and the existing infrastructure.

The New Code of Cultural Heritage has established the principle of landscape protection as well as guiding interaction between individual assets and the environment. It has also been instrumental in offering a reference point for dealings between; architecture and its surroundings, art and society, and even before the U.N.E.S.C.O. world body had focused the attention on all those landscapes in which, historically human action organized and shaped the space. This has created a fusion of nature and culture and has led to landscapes recognized by UNESCO in the cultural landscapes category.

The greenway promotes the development of slow tourism, soft mobility and a cultural system, able to complement the traditional mobility system and provides the possibility to offer tours along the most picturesque routes and endow them with unique comforts, in step with tourist market demands. The factors used for the characterization of the operations were: municipal housing density, indexes of the degree of urbanization and indicators of potential demand, and the sites of tourist interest (historical and architectural resources, areas of natural interest and accommodation). The investigation has also shown that the seat rail is still present on approximately 80% of the track; it is armed to 30% with the old railway service structure, available for new functions and in a generally good state of conservation.

- 2. The train-hotel project on the railway stations of Palmi, Seminara and Sinopoli, concerns the conversion of railway wagons in alternative hospitality systems, through the use of 6 carriages with 6 beds each, and entrusts its hotel management to the partners of places already active in the sector, or other possible partners. The cars remain outside the original structure while within them lie all the comforts of a small apartment, able to attract the foreign market with the offer of an alternative and innovative hospitality system.

- 3. The project of valorization and conservation of buildings of the former Calabro-Lucane Railways on the route, represented by goods stores and former manufactured travelers. Such properties, currently owned by the Region of Calabria, are in good condition and may be able, after the restoration, to host functions in support of the valorization projects on the route or activities which have a positive impact for the territory, the environment and its citizens. The study analyzed, in particular, the buildings of the former railway stations on the line between Sinopoli - St. Procopio, assuming for each a number of uses, which led to the formulation of three main scenarios :

- Scenario 1 - ECOMUSEUM - The Eco Museum of the olive oil industry of Sinopoli with its point of sale and tasting products, and educational workshops.

- Scenario 2 - HOSPITALITY - A system of hospitality enhanced by an interactive-computer center and specific services for network users of the greenway (storage and equipment rental).

- Scenario 3 - SCHOOL OF CRAFTS - A school of wood crafts, a dining area with a canteen and services to support the greenway network (storage and equipment rental).

2.1. Evaluation Method - The "lexicographic" method

**MODEL OF MANAGEMENT
THREE INTEGRATED OPERATIONS**

	GREENWAY	TRAIN - HOTEL*1	RAILWAY STATION
	17 Km	six train wagons - thirty-six beds	332 mq (indoors) - 700 mq (outdoors)
OWNERSHIP	PUBLIC	PRIVATE	PUBLIC
MANAGEMENT	PRIVATE	PRIVATE	PRIVATE

Fig. 2. Management plan of the three integrated operations.

To evaluate the different scenarios proposed, we faced the problem of how to assess certain intangible benefits such as: development, protection or knowledge.

The choice for the Evaluation Method fell on the "lexicographic" method devised by J. Holmes, chiefly because it is often used in cases where the data is not quantifiable or assessments compiled and every cardinal scale is unsatisfactory. The lexicographic method is in fact used to try to assess the intangible benefits, in the same way as those which are tangible, without using arithmetic operations that don't satisfactorily lend themselves to the evaluation of intangible values that should have equal objective importance.

Each scenario received an analysis in terms of the advantages and disadvantages of not having to assess in quantitative terms but qualitative, based on the chosen assessment system, it has been submitted to a panel of experts

(an urban planner, architect, curator of the architectural heritage and environmental, agro-forestry expert, an economist, a sociologist, a local historian, a city administration representative, one representative of local associations, a representative of the local Action Group). These experts have decided that Scenario 1 - Ecomuseum, as the most beneficial intervention, because it is consistent, in its entirety, with the objectives, which in the second phase determined the financial plan.

The social objectives of the management plan (Fig. 2), in the short, medium and long term, respectively, will be researched, specifically in the area of cooperative relations on common projects, to create a center of cultural activities that communicate consistently and regularly with the representatives of the territories social and cultural interests and to strengthen and consolidate the museum as a "place" of social meeting.

3. Verification of the economic feasibility of the three integrated projects - The Financial Economic Plan

3.1. Financial Economic plan

Table 1. Investments

Greenway		Train - hotel		Railway station	
removal of vegetation	23.000,00€	acquisition of train carriages (FS' gift)	0,00€	restoration cost	350.000,00€
removal of the rails and carriage in the disposal site	8.500,00€	transformation of train carriages including the furniture	150.000,00€	tools and furniture	240.000,00€
construction of the runway in "white ground"	102.000,00€	creation of a WiFi network	100,00€	creation of a WiFi network	100,00€
cleaning, leveling and making of flooring	2.000,00€	whites	3.500,00€	marketing	1.500,00€
installation of eight wooden and iron benches	2.400,00€	plant of gas, electricity and telephone	8.000,00€		
road signs	1.500,00€	marketing	1.200,00€		
realization of a wooden fence	1.500,00€				
streetlamp complete of a photovoltaic module	12.500,00€				
marketing	5.400,00€				
technical costs related to the findings, geological surveys and structural analysis of bridges and tunnels	20.000,00€				
technical costs related to the preliminary, final and executive project, construction management and safety in planning and execution's phase	70.000,00€				
connections	17.000,00€				
creation of a WiFi network	1.000,00€				
unforeseen and rounding	8.000,00€				
Total 1	274.800,00€	Total 2	162.800,00€	Total 3	591.600,00€
Total investments					1.006.200,00€

3.2. Analysis costs and revenues in the management phase in the year up to speed

Table 2. Annual costs

Greenway		Train - hotel		Railway station	
WiFi network	668,00€	WiFi network	468,00€	WiFi network	468,00€
surveillance and service	14.000,00€	ordinary service	800,00€	ordinary service	1. 000,00€
ordinary service	1.500,00€	extraordinary service	1.500,00€	extraordinary service	1. 500,00€
extraordinary service	1.500,00€	provision	500,00€	provision	200,00€
provision	800,00€	insurance	1.000,00€	insurance	800,00€
insurance	4.000,00€	cleaning and laundry service	12.000,00€	cleaning	6.000,00€
water	1.000,00€	water	3.000,00€	water	1. 000,00€
marketing	1.400,00€	marketing	1.000,00€	marketing	1. 200,00€
		electric energy	5.000,00€	electric energy	2. 400,00€
		breakfast	700,00€	staff	54.000,00€
		goods for personal hygiene	900,00€		
		staff	50.400,00€		
Total 1	24.868,00€	Total 2	77.268,00€	Total 3	68.568,00€
Total annual costs					170.704,00€

Table 3. Annual revenues

Greenway		Train - hotel		Railway station	
		stay guests	300.000,00€	prices of tickets, tours	25.000,00€
				sale of typical products	50. 000,00€
Total 1		Total 2	300.000,00€	Total 3	75.000,00€
Total annual revenues					375.000,00€

4. The Techniques Regarding Building Restoration

The hypotheses of reusing buildings have taken into consideration, both as regards the intervention projects and the formulation of the three scenarios, the possible impact of the intervention of restoration. The restoration proposes the conservation of the figurative and material character of the properties through the use of tools and technologies which take into account their formal and material consistency. The hypotheses also speculate on the decision to involve, in the project, social and economic aspects, as well as formal and performance, in relation to local resources.

Specifically, the restoration project concerns the recovery and redevelopment of a cultural center located in the two buildings of the former Calabro-Lucane Railways, dated 1928, abandoned in 1995, and located on the border of

the City of Sinopoli in the province of Reggio Calabria, which underwent, in the 1970's, upgrades and maintenance conducted by the State Railways. The structures, the former goods shed (84 mq.) and the former passenger building (248 mq.), are characteristic features of poor architecture but with historical-functional witness value. For this characteristic, the goods warehouse and the former passenger building stored and retrieved, can make it appropriate to undertake cultural activities (Fig. 3).

The belief that drives the project is that the good practice of restoration must be a dynamic process. Restoration of urban systems is not to freeze an identity or fix authenticity but to intervene at an unstoppable dynamic change. Thus, in the Greenway project, issues of protection are combined with the issue of environmental sustainability, social and economic concerns and conservation also become integrated in the restoration and evolution of the territory. To ensure the preservation of forgotten values it is necessary to affirm the validity of these values and thus make room for a possible future, perhaps derived by local quality and anticipate different scenarios to prevent physical and cultural degradation.

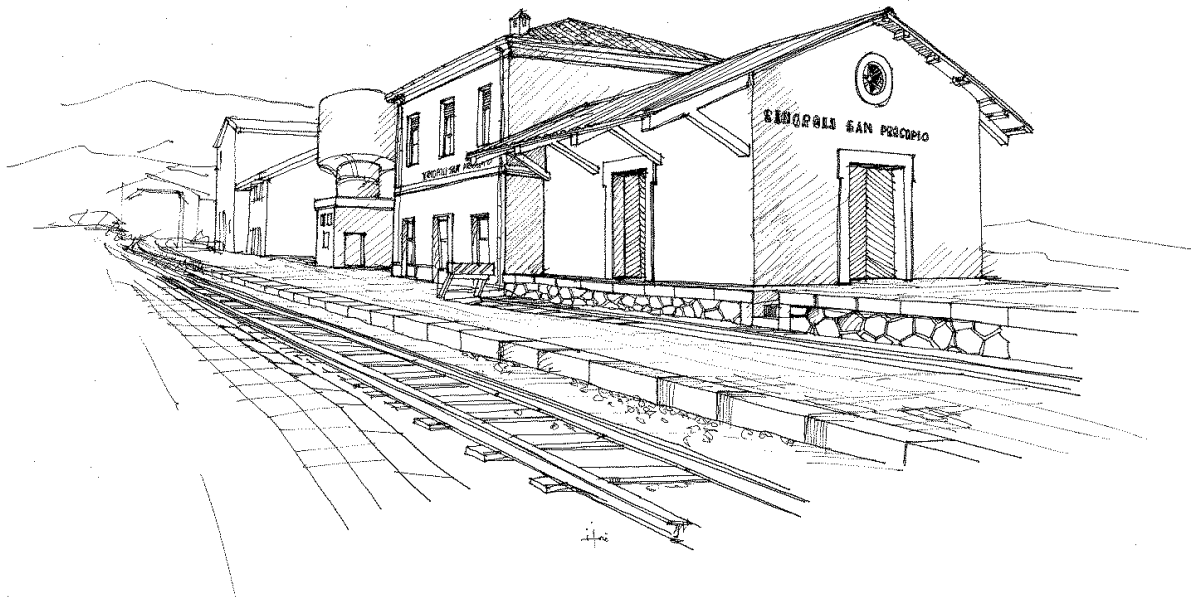


Fig. 3. The railway station of Sinopoli - The former goods shed and the former passenger building.

5. Conclusion

For many years tourism, with the goods and services connected with it, is has been recognized as one of the major instruments of European economic development, so much so that in 2013, in Europe, the tourism sector was the only growth industry with a significant increase in demand. Indeed it has been estimated that "in 2013, 38% of European citizens spent their holidays outside their country of origin, but always in an EU country, an increase of 5% compared to 2012 "[10].

Studies on tourism trends highlight on the one hand, a rapid increase in both production and consumption of cultural attractions and on the other hand forecast how, in the next two decades, tourism activities will be directed to an aging, educated population who will try forms of ecotourism, cultural travel and other forms of relaxation.

Therefore tourism will expand with a trend towards forms of "slow tourism", with art, culture and the environment at the center of interest.

The goal of this project is to revive the long-abandoned railways by committing to their recovery, reuse and exploitation, in order to provide a great adventure to the inner city residents of the metropolitan city of Reggio Calabria. It aims to offer both locals and tourists a unique opportunity to rediscover the places, through providing innovative itineraries, and to encounter regional cultures and traditions, allowing stations to return to perform their original purpose at the time of the railroad: marking a break during travel. The strength of the idea lies in the attempt to create interactions and synergistic links which are competitive and innovative between the area's resources through the greenway project and train-hotel.

The goal is to build a solid network, based on the Sinopoli intervention model, which allows for a program of activities of true valorization and promotion through affirming the concept of "a diffused museum." It will thus rebrand the province as a unique museum, by means of the greenway project and the interpersonal skills of public and private entities. It chooses to start from the valorization of local tradition focusing on the innovation of ideas.

References

- Fumagalli N., Rovelli R., Senes G. (2004). *Disused railways and Greenways. The recovery of the railway lines not used for the realization of green paths*. Milano: KROMA.
- Fusco Girard, L. (1997). *Sviluppo sostenibile ed aree interne: quali strategie e quali valutazioni T*. Milano: Franco Angeli.
- Ministry of National Heritage and Culture, the National Commission UNESCO sites and local tourist systems (2004). *The model management plan of Cultural Heritage registered to the World Heritage list*. Guidelines. Paestum.
- Fusco Girard L (1987). *Risorse Architettoniche e culturali: valutazioni e strategie di conservazione*. Milano: Franco Angeli.
- Calabrò F., Della Spina L. (2015). *Città Metropolitana*. LaborEst n° 9, 3-4.
- Calabrò F., Della Spina L. (2014). *The public-private partnerships in buildings regeneration: a model appraisal of the benefits and for land value capture*. In: 5nd International Engineering Conference 2014 (KKU-IENC 2014). Advanced Materials Research, Vols. 931- 932 (2014) pp 555-559. Switzerland: Trans Tech Publications.
- Cassalia G., Ventura C. (2014). *Challenges and Opportunities for Assessing Cultural Landscape: An Ecomuseum for Cultural-Based Local Development*. In the 1st International Symposium "New Metropolitan Perspectives-The Integrated Approach of Urban Sustainable Development through the Implementation of Horizon/Europe 2020" (ISTH 2020).
- Calabrò F., Della Spina L. (2014). *The cultural and environmental resources for sustainable development of rural areas in economically disadvantaged contexts. Economic-appraisals issues of a model of management for the valorisation of public assets*. In: 3rd International Conference on Energy, Environment and Sustainable Development (EESD 2013). Advanced Materials Research Vols. 869-870 (2014) pp 43-48. Switzerland: Trans Tech Publications.
- Carbonara G. (1997). *Avvicinamento al restauro. Teoria, storia, monumenti*. Napoli: Liguori.
- Brandi C. (1963). *Teoria del restauro*. Roma: History and Literature editions.
- Camagni R., Russo M., Stanghellini S. (2015). *Il futuro delle città metropolitane. Contributi multidisciplinari per la fase costituente delle Città Metropolitane nelle Regioni Obiettivo Convergenza*. Università Mediterranea di Reggio Calabria, LaborEst.
- Roy B. (1996). *Multicriteria methodology for decision aiding*. Dordrecht: Kluwer.
- Calabrò F., Della Spina L. (2005). *La selezione dei progetti nelle trasformazioni urbane: un'applicazione dell'analisi multicriteriale*. Milano: Franco Angeli.
- Regione Calabria, Dipartimento Trasporti (2007). *Studio di fattibilità. Recupero a pista ciclabile della tratta dismessa della ferrovia: Soverato-Chiaravalle Km23; Vibo-Pizzo-Maierato-Mileto Km28; Marina di Gioiosa-Mammola Km15*. Catanzaro.
- Mollica E., Della Spina L., Calabrò F. (2006). *Valutazione di scenari generabili da ipotesi di riuso di Centri storici abbandonati: il recupero di Pentidattilo*. Firenze: University Press.