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CRITERIA TO BUILD A BICYCLE MASTERPLAN: THE EXPERIENCE OF THE PROVINCE OF PARMA

Barbara Badiani, Elisa Di Dio, Maurizio Tira – Università degli Studi di Brescia,
Dipartimento di Ingegneria civile, Architettura, Territorio e Ambiente
Via Branze, 43 - 25123 Brescia – Italy
tel.+ 39 030 371 1269
fax.+ 39 030 371 1312
e-mail: badiani@ing.unibs.it

Michele Zazzi – Università degli Studi di Bologna

ABSTRACT

The Province of Parma, like many others in the Po Plan (being Ferrara the most famous), shows better shares of the use of bicycle when compared to the Italian average.

In 2001 a research, financed by the Province of Parma (in Emilia Romagna Region, Italy), has been driven to build a methodology to reconstruct a network, as a base to implement a sustainable infrastructure to enjoy the environment.

The research aimed at finding criteria to plan a multi-purpose cycling network linked to the existing territorial planning tools.

The work has been developed in phases, starting from a look on the state of the art of the existing legislation and the main and most interesting experiences (from national to international level) about planning of cycling mobility.

The main aspects related to the planning choices have been analysed, especially the characteristics of mobility infrastructures (flows and level of service), the type of users and the compatibility between cycle-lines and users' exigencies, together with the continuity of the environmental elements.

The result of the work has been a methodology to set the elements to construct a cycling network frame, within a regional plan, including itineraries where the local cycling-line projects could be based on.

In the local planning, the cycling network is designed at a major scale, taking into consideration local itineraries related to specific environmental and cultural peculiarities.

The case study is an interesting example that shows a way to use a hierarchical planning procedure, inspired by the principle of subsidiarity:

- to find synthetic and shared criteria for territorial planning,
- to verify the offer and to single out possible itineraries in conformity with the chosen criteria,
- to carry out specific projects at a local level to improve, to integrate and to implement the territorial network.

NETWORK INFRASTRUCTURES FOR THE ENVIRONMENTAL USE OF THE DISTRICT

Among the various possible area representations, the formulation of a network interpretation of infrastructure layouts, of related economic and social processes and of ecological and environmental contexts ¹ would seem to be an increasingly more subscribed-to strategy within recent provincial plans.

The developments we intend highlighting here concern the transition from territorial programming on a European and national scale to an attempt to present local or supra-local solutions involving operative ideas such as to formulate possibilities of territorial infrastructuring with networking aspects ².

More specifically, attention focuses on the possibility of planning multipurpose itinerary networks for slow mobility at district level able to sustain the reconstruction of a network of specific and widespread environmental importance.

The opportunity to put these unusual planning topics to the test presented itself following the drawing up of the PTC (Territorial Coordination Plan) by the provincial administration of Parma. As part of the Plan adoption process, the Administration decided to promote research ³ aimed at defining planning contents and procedures in order to cater for what is one of the major goals of the PTC - to ensure high levels of environmental quality, made widely available and accessible to the public.

Interest in extending the protection concept to cover the topic of environmental continuity networks is linked to the need to ensure territorial use of countryside and environmental assets which is both quantitatively significant and correct in relation to the potential use of existing resources. In this respect, the Parma PTC acknowledges that a network capable of providing adequate territorial continuity to widespread environmental assets represents a cornerstone for an infrastructure-building process centred on the different ways of making use of the environment in the area. Such environmental-use project is organised taking into account a series of criteria for the planning of a multipurpose-itinerary network for cycling and pedestrian mobility based on the in-depth study of recent European and North-American experiences in this sector.

The aim of the plan is to find routes considered of provincial interest and to envisage their inclusion in the above-mentioned networks (national and European). Rules of selection are also identified for extending the network to local itineraries. To achieve this aim, the possibility has been considered of identifying the fruition plan with the cycling route network plan provided by Ministerial Decree 557/1999, *Regulations containing provisions for the definition of the technical characteristics of cycle paths*, which to all intents and purposes becomes a sectorial plan of the PTCP (Provincial Territorial Coordination Plan). Such plan takes on special importance in relation to the aim of fostering inter-modality, but its application at provincial level results in the achievement of major goals, for example in the tourist and recreational sectors, within the framework of the sustainable exploitation of countryside and environmental resources in the area.

¹ R. Gambino, "Luoghi e reti: nuove metafore per il piano", in *Asur*, year XXIV, n°. 51, 1994.

² The topics relating to the network interpretation of landscape structures are dealt with more extensively in the paper presented by Michele Zazzi at the 6th National Conference of the Italian Town-Planners Society: *I nuovi soggetti della pianificazione*, Naples, 24-25 January 2002, entitled: *Il progetto del paesaggio nella pianificazione di area vasta. Prime esperienze di infrastrutturazioni a carattere reticolare per la fruizione ambientale del territorio*.

³ Research agreement between the Territorial Planning Service of the Provincial Administration of Parma and the Department of Civil Engineering of Parma University: *Una rete di percorsi multi-uso per la Provincia di Parma. Concezione reticolare del territorio e tutela diffusa*, (Scientific Direction: Professor Maurizio Tira, Scientific Coordination: Ing. Michele Zazzi).

THE CYCLING ROUTE NETWORK CONCEPT

In the 1990s, the cycling route network concept encountered considerable success. Various national route network projects were presented and practically every manual for the planning and management of cycling mobility facilities contained a major section dedicated to criteria for devising and implementing a route network ⁴. Route networks are therefore considered a prime factor of any cycling mobility supporting policy. Which are the major points behind this concept?

For cycling networks to cater for general network requirements, all major points of a district must be made accessible, with acceptable conditions of safety and comfort for all categories of cyclists. The current system of interurban roads, notwithstanding the fact that bicycles are acknowledged by the highway code to be means of transport to all intents and purposes, does not cater for such requirements.

While, in terms of accessibility, all roads, except motorways and main interurban highways, are open to cyclists, thereby making it possible to reach all destinations, a general lack of safety and comfort must inevitably be acknowledged. As a result of what has been said above, we are faced with the need to select preferential routes, adequately equipped for cycling mobility, by defining suitable criteria.

Various points of view exist as to the concepts behind a cycling network plan. Some studies see the existing road network as a point of departure for designing a route network. In point of fact, a cycling network exists virtually throughout the district and consists of the road network. What remains to be provided are conditions of safety, which differ depending on the roads taken into consideration, their characteristics and their functions. Other positive experiences (north-European countries) consider that route networks are independent of road networks and that these should be superimposed on such road networks rather than becoming an actual part of them.

SPECIFICITY OF THE CONCEPT OF CYCLING ROUTE OF TERRITORIAL IMPORTANCE

The complementarity of cycling mobility facilities on a separate basis and the fittings provided to make the road network compatible depend in any case on potential users and on the number of district routes inasmuch as the route network can represent the upshot of a number of very different behavioural and functional requirements. The aim of the network plan is to identify the main categories of users within the specific territorial area and to foster multiple uses while preventing any possible conflicts.

Many people have tried to classify different types of cyclists using different criteria, based on riding experience, age, functional aspects and riding speed ⁵.

At the same time, there has been a lot of perplexity as regards rigid classifications and the excessive specialisation of cycling mobility facilities ⁶ because these appear to limit the possibility of satisfying the largest possible quantity of users at the same

⁴ A. Julien, *Comparaison des principaux manuels européens d'aménagements cyclables*, CERTU, Lyon, France, 2001

⁵ AASHTO, *Guide for the Development of Bicycle Facilities*, Aashto, Washington, DC, 1991; M. Cozzi et alii., *Piste ciclabili. Manuale di progettazione e guida alla moderazione del traffico*, Il Sole 24 Ore, Milan, 1999; F. Papon., "A threefold classification of French cyclists: a slight lessening of the down market image of the bicycle", in *Velo-city '99 Proceedings*, 1999, (www.kamen.uni-mb.si/velo-city99/Location.html, Slovenia, 20 December 2000); Scottish Executive, 1999, op. cit.; H. Verbruggen (UCI), "Plenary speech", in *Velo-city '99 Proceedings*, 1999, (www.kamen.uni-mb.si/velo-city99/Location.html, Slovenia, 20 December 2000).

⁶ Oregon DOT, 1995, *Oregon Bicycle and Pedestrian Plan*, (www.odot.state.or.us/techserv/bikewalk/obpplan.htm, USA, 5 October 2001).

time and using the same infrastructure. While agreeing that we should be careful to establish performance requirements for the weakest categories, we should not forget the profoundly different needs and consequent conflicts deriving from the various mobility requirements.

A number of recurring categories can be identified, which as regards territorial routes can be summed up as follows:

- *sports cyclists, or tourists on long-distance routes*, who often travel at speeds higher than 30 km/h and who are used to finding their own living space on the road;
- the *commuter*, who has experienced riding in traffic and likes fast and direct routes. At territorial level, this type of cyclist is less common. Belonging to this category are people who cycle to work in delocalised areas near the town and city centres where they live, or who cycle into city centres from suburban areas. or who take advantage of different means of transport from their home to their place of study or work (e.g., bicycle + train);
- *cyclists who use cycle paths for purely recreational purposes (every day...)*, who do not need to ride particularly fast or who do not require necessarily direct routes, but who simply wish to spend the odd hour enjoying themselves, possibly away from the traffic, in perfect safety;
- *vulnerable groups* (children, families, adults with motorial problems), *adult cyclists who are not too sure of themselves* and *elderly people*, who perhaps do not need to ride far, but do need high standards of network facilities in order to use especially enjoyable or appealing stretches of the network.

It follows that the specific functional aspects attributable to the various sections of an area route network can be grouped together in the following categories:

- *daily routes, mainly of a circuit type, with recreational function*: used in the spring and summer to enjoy the natural environment. These are restricted to the outskirts of towns and cities;
- *daily routes, mainly of a circuit type, with tourist and cultural objectives*: routes with destinations that comprise places of cultural interest. These should be linked to long-distance tourist routes, thereby representing access routes for visiting local contexts;
- *competitive or amateur sport routes*: preferred mainly by people whose prevalent interest is in physical exercise, these are used above all at weekends, with departure and arrival in the city/town of residence, along routes of varying length (including more than one hundred kilometres and which the cyclist knows and repeats fairly frequently);
- *off-road routes (mountain biking)*: these too are mainly sports routes along non-asphalted dirt roads. As regards off-road routes, two main problems exist: the ownership of country roads and paths and their correct insertion in the environmental contexts to which this activity applies;
- *medium and long-distance tourism-cycling routes*: this type of cycling activity is fast gaining in popularity and is often practiced by small groups of people. The main idea is to become better acquainted with cultural and environmental aspects of the area. It is often practised by people far away from their places of residence who are motivated by a desire to visit new places. The roads involved are chiefly of a secondary type, often dirt roads. Long-distance routes are sometimes indicated by specially-prepared theme maps, with the consequent problem of routes that have become customary and which do not necessarily coincide with those envisaged by plans which have come into effect

- subsequently. These are very definitely the sections of the network that offer the best opportunities for the growth of economical undertakings in the area;
- *functional links*: routes enabling bicycles to be used as a means of transport linking linear conurbations. The territorial interest of provinces in such routes occurs when these link different municipalities. Wherever nearby villages and hamlets depend on the main city for the use of common services, this is where municipal cycling networks come into their own. It is a good idea to assess the possibility of such routes representing medium and long-distance route or local circuit sections.

COMPLEMENTARITY OF TERRITORIAL CYCLING ROUTES FOLLOWING PRE-EXISTING ROAD OR SEPARATE PATTERNS

In the light of the general considerations made in the previous paragraph, the cycling route concept, in situations of newly-created territorial networks, must set itself the goal of providing direct, safe, convenient and pleasant point of departure-destination links, starting with the exploitation of all the chances offered by existing infrastructures.

Any approach to such a generalised territorial accessibility goal must necessarily focus its attention on a combination of different programming measures that first of all involve the existing road network. In fact, the creation of a cycling network that covers large sections of the district, that ensures linear routes that can be covered in a reasonable time and which is able to avoid the barriers represented by the existing infrastructure system and become totally independent of motorised traffic does not appear to be a feasible goal in the short/medium term. Any plan should envisage a series of facilities able to balance the forecast of new cycling mobility infrastructures with the development of existing road infrastructures and the completion of new ones complete with such facilities. The success of any such initiatives should be tied to a more general view of means of transport and their adaptation to ensure a better quality of the environment. This view must include strategies able to affect the community as a whole and not only bikers.

Significant in this respect is the hierarchy of cycling mobility planning measures adopted by the *Scottish Executive* ⁷ with a view to the existing and future road network representing the skeleton of the future cycling network:

- *reduction of traffic*:
Is it possible to reduce traffic to such levels that cyclists can use the existing road network? Is it possible to limit or find alternative routes for heavy traffic?
- *traffic control*:
Is it possible to change the speed of vehicles and the behaviour of drivers by introducing traffic control measures, so as to permit adequate cycling mobility?
- *traffic management and connection mapping*:
Can specific connection and road intersection mapping solve the current problems of cyclists, especially in those places most prone to accidents?
- *changing carriageway area design*:
Can carriageway areas be redesigned so as to provide additional sections for cyclists?
- *separate cycle paths or reserved lanes*:
After having, wherever possible, considered and planned the above measures, which additional cycling infrastructures actually become necessary?

⁷ Scottish Executive, 1999, op. cit.

In many cases, the overall success of a territorial cycling route plan - increase in levels of bicycle use in safety and comfort conditions - would seem to depend on the integration of the listed strategic measures, where the application of the principles identified in the top part of the hierarchy can help select subsequent ones.

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Guiding principles for the cycling route network of the PTCP of the Province of Parma

In the case presented, attention is placed on the specific problem of including a cycling route network proposal in the PTCP. The fact that the measures envisaged by the plan are mainly centred on territorial coordination, makes it possible to establish a simplified approach to the planning of cycling routes. Four aspects are considered to be of major importance and these involve both the criteria for identifying a framework of privileged routes and those for assessing single network development projects:

- 1 purpose of the provincial network and local networks;
- 2 inclusion of the provincial network project in the above-listed cycling route networks, with identification of a hierarchy of routes at national, regional and provincial level;
- 3 identification of measures in conformity with previously-defined performance criteria;
- 4 ways for the selection of routes of local interest.

This procedure refers us back to the choice of a model based on two main strategies:

- the immediate identification of routes of at least provincial interest, for which the involvement of the Province can be envisaged as regards planning and funding. This way, territorial routes can be involved in broader-scale programmes, including at European level;
- the establishment of rules for the definition of the performance criteria to be used for the development of provincial routes and for assessing the suitability of local-route plans to back provincial networks. This way, no rigid pre-figuration is made of scenarios that are hard to conceive as things stand at present in terms of goal sharing and funding opportunities.

The main reasons justifying the route network project first of all concern the need to anchor this to environmental continuity structures existing in the provincial district, which means considering the route network as the main chance of fruition for the provincial ecological network being set up. A further possibility stems from the recognition of special accumulations of naturalistic emergencies or cultural emergencies in general. It follows that the routes tend to form the framework of more or less consolidated tourist theme routes, with the availability of dedicated riding facilities.



Fig. 1 - The European cycling network, Fig. 2 - National Cycling Network envisaged by Bicitalia (www.fiab-onlus.it)

A second aim concerns the creation of a route network with a prevalently recreational function, strictly tied to the diversification of "leisure time" options. In this sense, the route network creates a system out of the different initiatives undertaken at local level and sets out the technical and financial priority criteria.

A third investigation determines the possibility of the route network being used to cater for transport requirements between towns and cities, where distances are such as to warrant the use of other means of transport.

Two ways are suggested of catering for the picture of presented goals: a route network that exploits to the full the compatibility with the existing road network, if necessary with the support of the extensive pattern of estate roads, in order to make the network project concretely feasible, and which is not over-affected by the chronic lack of resources. Secondly, the verification of the success factors of the *single high value added* routes separate from the road system which, considering their importance at European level as well – mainly from a tourist viewpoint – can represent a driving force for the network as a whole.

In the first case, all the possible functions attributable to cycling mobility are considered, with the aim of recognising a broader range of value factors compared to the recreational factor alone: long-distance tourism; competitive sports activities; transport aspects wherever tightly interlinked district conurbations exist.

In the second case, network building appears more of a problem because no extensive road network exists in the area and facility costs require heavy investments and strong motivation. But the remarkable success reaped by recreational multi-purpose routes, especially as regards experiences in the USA, testify to the viability of the approach and would appear to point to significant future prospects.

The project proposal contained in the plan represents a possibility of cycling routes in which approaches until now of an independent nature have come together: the

network approach to the protection of nature, with the recent legacy of studies dedicated to environment re-qualification and re-naturalisation processes; the promotion of a minor road network, desirable in places of major importance in terms of the landscape, where attracting holidaymakers plays a major role in developing alternative models of growth; the careful assessment of the compatibility of the existing road network for cycling use, with the undertaking to make anthropic and natural infrastructure networks more compatible.

More specifically, the criteria of selection of the routes constituting the provincial framework can be identified as follows:

| | |
|-----------------------------|--|
| <i>General Criteria</i> | <ul style="list-style-type: none"> - inclusion in the above-listed networks; - presence of routes already indicated, including unofficially, as these point to an interest in specific district areas and in their special characteristics and features; - presence of strong tourist attractions, already well established in the plans and programmes of the provincial Administration; - presence of significant concentrations of attractions for cycling mobility, of an environmental, cultural and recreational nature, for which a fairly large number of potential users is envisaged; - need to upgrade the safety standards of a number of home-work or school-work routes which are important at district level; - link with intermodal nodes, to extend the use of bicycles, wherever the integrated use of public transport and bicycles caters for efficiency requirements; - technical-economic feasibility in times compatible with plan life and identification of all possible synergies with available funding programmes; - potential use of road networks through the determination of their suitability for cycling use with opportune pointers (<i>BCI; Stress Level</i> ⁸) |
| <i>Performance measures</i> | <ul style="list-style-type: none"> - accessibility - route linearity; - continuity; - route appeal; - safety levels; - conflict levels between infrastructure users; - cost analysis; - ease of infrastructure implementation. |
| <i>Selection factors</i> | <ul style="list-style-type: none"> - cost and extension of jobs to be done for the realization of the network cycling mobility facilities; - comparative evaluation of the feasibility of the proposed solutions; - possibility of integrating cycling network forecasts in more general infrastructure programmes - multi-purpose features - degree of satisfaction of potential users faced with other possible options. |

The need exists to evaluate cycling route projects of local interest both during the provincial network formulation phase and during that of its construction over time and stems of course from the impossibility of finding all the necessary funds for the

⁸ W.L. Schwartz *et alii.*, *Guidebook on Methods to Estimate Nonmotorized Travel: Overview of Methods*, 1999, FHWA, USA, (www.tfhr.gov, USA, 20 December 2000).

adoption of the local plan as a whole. What could occur in the first case is that the network plan be structured through the coordination of projects already in operation on the part of various bodies; such projects require evaluation in order to determine whether or not they are consistent with the overall picture of the provincial network. In the second case, the need exists to select the new route proposals made by the single councils and which are not included in the originally envisaged network.

Two preferential ways can be distinguished for defining the selection criteria:

1. comparison with the criteria established in the network plan and with the cycling mobility opportunities provided by the existing infrastructure system;
2. assessment of internal project consistency in relation to declared objectives relating to administrative strategies and the technical-disciplinary contents of reference.

The first group of criteria establishes that the plan being verified should have features consistent with the existing network. That will be the case if the new route project envisages:

- implementation of route sections already included in the provincial network plan or in other planning tools;
- the partial inclusion of routes of national, regional or provincial interest. Such projects intend implementing routes of supra-local interest not adopted by the provincial network. In this case, the reasons must be determined that resulted in inclusion in the above-mentioned network at the time the original plan was drawn up;
- links to cycling mobility attractions of provincial interest. This step requires that for thematic emergencies relating to cycling mobility, assessment criteria be found in order to create a hierarchy of importance. The problem could have been addressed during planning of the provincial network in order to select points of departure and destinations of importance for the routes of provincial interest;
- the inclusion of the route in environmental corridors of provincial importance. In this case as well, a classification is required according to the order of importance of the factors representing environmental continuity within the provincial area. The provincial ecological network project could well back any decision, though attention must be paid to the specific criteria whereby the corridors have been identified, because the attribution of the same hierarchical level to ecological corridors and to cycling routes which insist on the corridors area-wise is not automatic. In this respect, the environmental fruition project requires more detailed study.

The second group of criteria refers to the project criteria adopted in the single proposals in order to justify realization. Such procedures are regularly used to pre-select projects in the preliminary phase so as to avoid unnecessary project costs for initiatives that do not possess the minimum requirements for inclusion in implementation processes of provincial interest. The usual method for making such selection involves defining checklists for singling out criteria, performances and results attributable to the proposed subject of evaluation ⁹.

Two fairly well tested procedures exist that seem to represent the different approaches adopted for project selection:

1. *Selection Criteria for Bicycle & Pedestrian Projects and Bikeway/Walkway Project*

⁹ See the consolidated evaluation diagrams covering projects developed by the Scottish Executive and the Oregon DOT, 1999 and 1995, op. cit.

Rating Sheet of the Oregon Department of Transportation, which is an appendix to the Oregon Bicycle and Pedestrian Plan ¹⁰;

2. *Evaluation of the Scottish Cycle Challenge Initiative* ¹¹ by the *Scottish Executive*, which consists of the monitoring of the *Cycle Challenge Initiative*, which envisages a national call for bids for the funding of cycling mobility projects.

To the pinpointed criteria, scores have been attributed so a comparison between the various factors taken into consideration and an overall assessment of the project can be made. The following table exemplifies the method of evaluation suggested in the case of the PTCP of the Province of Parma. The matters addressed have been adapted for more general application within the framework of Italian regulations and planning tools.

| CRITERIA (Questions) | EVALUATION (Scores) |
|---|--|
| Does the proposed plan adequately cater for the served corridor ? <i>The answer must follow the indications of a series of criteria characterized in enclosures</i> | Yes = 6 No = 0 |
| The plan meets the requirements: <i>Of national regulations</i> <i>Of the provincial cycling network Plan</i> <i>Of the local cycling network Plan</i> | A = 2 B = 2 C = 1 |
| Does the plan constitute a major part of a cycling infrastructure system? <i>Direct route linking network nodes</i> <i>Route essential for the cycling mobility of the entire system</i> <i>Route extending an existing cycling facility</i> <i>Initial route of a network project</i> <i>Isolated route without links with the network</i> | A = 6 B = 5 C = 4 D = 3 E = 1 |
| How is the road involved in the cycling facility project classified? <i>Main thoroughfare</i> <i>Main road</i> <i>Secondary road</i> <i>Local</i> | A = 5 B = 4 C = 3 D = 2 |
| How will the facility be mainly used? <i>Home-work, home-school movements and for recreational purposes</i> <i>Home-work movement</i> <i>Home-school movement</i> <i>Holiday-recreational trips</i> | A = 4 B = 3 C = 3 D = 2 |
| What is the expected average daily use level (considering comparable facility projects?) <i>Very high</i> <i>High</i> <i>Average</i> <i>Fairly low</i> <i>Low</i> <i>Very low</i> | A = 6 B = 5 C = 4 D = 3 E = 2 F = 1 |
| Are the existing conditions of the road involved in the cycling facility project a deterrent for cycling mobility? <i>Cycling facilities integrated in road</i> <i>Width</i> <i>Curving radii</i> | <i>For each factor:</i> High = 2 |

¹⁰ Oregon DOT, 1995, *Oregon Bicycle and Pedestrian Plan*, (www.odot.state.or.us/techserv/bikewalk/obppplan.htm).

¹¹ Scottish Executive, *Cycling by Design*, 1999 (www.scotland.gov.uk)

| | |
|---|---|
| <i>Other factors affecting safety (heavy traffic...)</i> <i>Treatment of junctions</i> <i>Speed</i> <i>Width</i> <i>Accessibility</i> <i>Other markers (oblique entrance, visibility distance, ...)</i> | Average = 1 Low = 0 |
| Have project standards established by official agencies or used for the provincial network project been adopted? <i>Adoption of maximum requirements</i> <i>Adoption of intermediate requirements</i> <i>Adoption of minimum requirements</i> <i>Failure to comply with requirements</i> | A = 5 B = 4 C = 3 D = 0 |
| Are estimated costs reasonable when compared to similar projects? <i>Within 80% of usual costs</i> <i>Within 20% up or down of usual costs</i> <i>More than 20%-50% of usual costs</i> <i>More than 50%-100% of usual costs</i> <i>More than 100% of usual costs</i> | A = 5 B = 4 C = 3 D = 2 E = 1 |
| BONUS POINTS | |
| Does the project envisage compatible facilities for use by cyclists and pedestrians? | Yes = 5 No = 0 |
| Does the project reduce movements along necessarily indirect routes? | Yes = 3 No = 0 |
| Does the project envisage links with other means of transport? | Yes = 3 No = 0 |

| CRITERION/SUB CRITERION | MEASURE/MARKER |
|--|--|
| PROJECT DESCRIPTION AND ANALYSIS | |
| Objectives Principal elements Reasons for the inclusion in the financing program | Declarations in conformity with the provisions of the financing notice |
| B. MANAGEMENT AND RESOURCES | |
| Project management | |
| <i>Work group and organization of involved collaborators</i> | Clarity and effectiveness in the management of resources and responsibilities |
| <i>Programming</i> | How much product compared to that initially envisaged |
| <i>Costs</i> | How much product compared to that initially envisaged |
| <i>Purchases</i> | Offer price evaluation approach |
| <i>Retroactive control and monitoring</i> | Effectiveness of the procedures used to identify project effects |
| Increase of expenditure capacity for cycling mobility | |
| <i>Total expenditure</i> | Currency unit |
| <i>Directory of expenditure sources</i> | Currency unit |
| <i>Percentage of expenditure on total programme funding</i> | Percentage value |
| C. ASSESSMENT OF EXPECTED EFFECTS | |
| Increase in biking activity levels | |
| <i>Increase in overall bicycle use levels</i> | Any increase in bicycle use levels based on best available statistics for the area affected by the project |

| | |
|---|--|
| <i>Effects on reference market</i> | Clarity in defining the group of reference users and estimation of effects on bicycle use levels for these groups |
| Increased awareness of cycling mobility topics | |
| <i>Overall advertising activities</i> | Contribution to the promotion of bicycle use in order to make this a prime method of transport, through forms of advertising, subscribing to supporting programmes... |
| <i>Effects on reference market</i> | Increase in reference group users made better aware of bicycle use and impact on general awareness of reference group |
| Integration with other mobility policies | |
| <i>Mobility on national scale</i> | Consistency of aims with national policies |
| <i>Mobility on local scale</i> | Consistency with local mobility policies, including all the cycling policies proposed by local groups |
| <i>Road safety</i> | Quality of cycling compatibility and safety inspections, including all those safety planning procedures involving projects and local points of view as regards changes in risk levels |
| <i>Social involvement</i> | Effects on socially under-privileged reference groups |
| <i>Economic growth</i> | Effects on economic growth policies, for example the extension of the tourist industry |
| <i>Health</i> | Involvement of the health authorities in the development and monitoring of the effects caused by the project and measurable changes in health statistics of the reference groups |
| <i>Education</i> | Coordination with schools, effects on home-school movements and support of training goals |
| <i>Protection and upgrading of environmental conditions</i> | Reduction in land area use for roads and car-parks together with the re-allocation of surface areas for cycling use, reduction in motorised traffic levels and ecological and landscape benefits |
| Cost-benefits | |
| <i>Engineering solutions</i> | Consistency with official building and project standards and level of adequacy of project solutions with respect to reference user groups. Reduction in bicycle thefts. Effects on the levels of perception of safety controls for cyclists. |
| <i>Advertising</i> | Determination of updating levels as regards the use of best possible bicycle use advertising methods, including cycling route maps and information leaflets. Verification of use of produced materials. |
| <i>Financial sustainability</i> | Determination of maintenance costs of new project infrastructures and levels of annual financing of equipment that is not part of infrastructures |
| D. PROJECT DEVELOPMENT | |
| Innovation | Mainly estimation of the amount of innovation at national and international level, but innovative methods at local level can also be deemed significant |
| Transferability to other projects | Transferability of techniques, practices, methods and materials |
| Sustainability of project over time | Verification that the concepts expressed in the project are still applicable at the date of selection and verification of any obstacles to project implementation |

The considered procedures make it possible to create a reference methodology easily applicable to local situations in regions and cities. The application of the same criteria also favours a comparison between the various local contexts as regards the inclusion of a network of cycling routes among existing area planning tools.

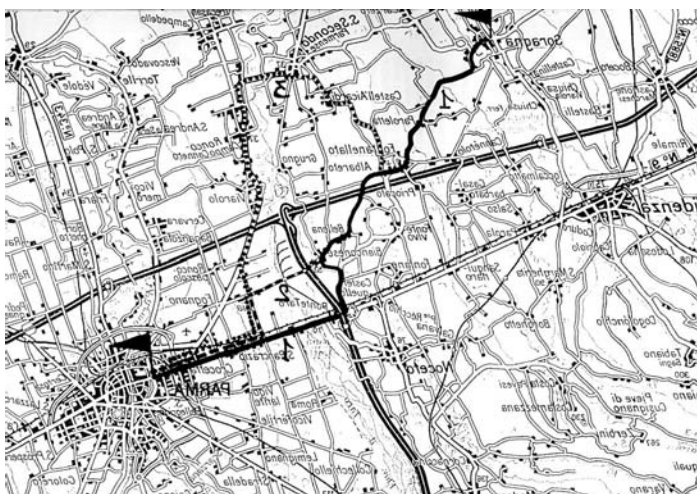


Fig. 3 Cycle path of Via Emilia
2nd track: Soragna - Parma
(www.regione.emilia-romagna.it)

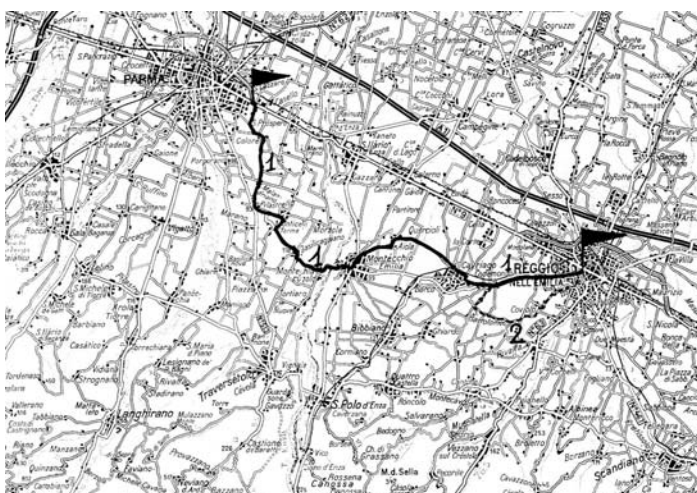


Fig. 4 Cycle path of Via Emilia
3rd track: Parma-Reggio Emilia
(www.regione.emilia-romagna.it)

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