Comments to WP10 Indicators of Success

Case-study: River Fervença in the city of Bragança, north of Portugal

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1. 1. INTRODUCTION

The aim of this report is to test the application of the URBEM WP10 methodology, Indicators of Succes, to the case study developed in Portugal under the Polis urban renewal Programme, in the city of Bragança. This project intended to rehabilitate the urban reach of Fervença river, either other actions more directed to enhance the urban fabric, rehabilitate urban heritage elements and create new facilities and opportunities to this city located in one of the most interior regions of Portugal far from the more developed coastal areas. This intervention took place between 2000 and 2003.

2. CASE STUDY – CITY OF BRAGANÇA AND FERVENÇA RIVER REHABILITATION

Bragança is a city located in the northeast of Portugal, with 22.463 inhabitants. Due to its location, it has been plagued with a depopulation process and loss of economical dynamism. Agricultural decline and abandonment in the region has been the cause of population decrease and emigration. The distance from important centres has been the reason of recent investments on accessibility, and also on projects of urban renewal and rehabilitation, such as the case of the Polis Programme, described below. .

Bragança is crossed by river Fervença, a tributary of river Sabor, which is tributary of the Douro River, one of the 4 larger cross-border rivers of the Iberian Peninsula. This city is located in a region of high thermal amplitudes, with a stifling heat in the summer. In a case like this, the importance of a river, in a city with an predominant continental climate, acquires a relevance that surpasses the aesthetic limits, achieving the domains of bioclimatic comfort and enhancing the urban environment. The Bragança Polis Programme intervention refers Fervença's river as an environmental structural element, not only in the intervention area, but for the entire city. As the budgets presented in the Strategic Plan of Bragança, the rehabilitation of Fervença Rio and its reintroduction to the city, defined the main objective of the urban rehabilitation:

"an assembly of interventions of urban rehabilitation and environmental development, that itself connect and complements, returning to the river its historical importance in the life of the city"[1]

[1] Estudo de incidências ambientais na zona de intervenção do Programa Polis na cidade de Bragança

2.1 General Objectives of the Requalification Polis Programme

This programme has been developed in 2000 by the Portuguese Government with the following general aims:

- Develop big operations integrated on urban rehabilitation with a strong component of environmental development;
- Develop actions that contribute to the requalification and revitalization of urban core and promote the multifunctionality of those cores and reinforce his role in the region in which they are inserted;
- Support other actions of rehabilitation that aim to improve the quality of the urban environment and value the presence of structural environmental elements, like river fronts;
    - Support initiatives that are going to increase the green areas, promote recreational paths and condition the traffic car in urban core.
    - Create spaces of quality and provide socio-economic opportunities to the population.

"…requalify the cities, improve its competitiveness, reinforce its paper in the organization of the territory and improve the quality of life of its inhabitants…"[2]

2.2 Specific Objectifs of the Requalification Project – Bragança Polis

"….is understood like an integrated intervention of urban rehabilitation with a strong component of environmental enhancement that aims to improve the quality of the urban environment and value the presence of structural environmental elements (as the Fervença river) connecting it with the Historical Zone"[3]

The main objective of the Polis Program consists on the improvement of life quality in cities, through interventions of urban and environmental character, increasing actractivity and competitiveness in the national urban system.

Specific objectives of the Polis Bragança Programme – Rio Fervença:

- Return Rio Fervença to the city conferring it a structural character;
- Creation of a "green corridor" (strategy of environmental landscape integration of the city);
- Enhancement of the natural and architectural heritage;
- Rehabilitation of degraded urban areas (construction of quality public space)
- Restructuring of the road network, encouraging the reduction of the automobile traffic and establishing pedestrian and cycle paths linking the historical district to the river.

These objectives can be described, in more detail in the following specific aims:

The construction of parking lots next to the Castle and in the Historical Zone, the establishment of pedestrians and cycle paths and the pedestrian linkage between the Historical Zone and the "Fervença's Green Corridor" allows the rehabilitation of the public space, increasing the areas reserved to pedestrians and improving the quality of urban life;

[2] Idem
[3] Idem

The rehabilitation of Fervença's river, with the creation of a "green corridor" and of pedestrian and a cycle paths in the margins of the river, the concern about landscape and the construction of several recreation and leisure equipment, transform this zone in the new "public walk" of the city;

Enhancing the natural, architectural, archaeological and industrial heritage, in a perspective of urban rehabilitation, awake inhabitants for the respect of heritage, the tourist development and the improvement of the quality of life in the city.

The definition of a green corridor at Fervença integrated on Bragança's urban and natural rehabilitation, with the possibility of river fruition, the enhancement of the environmental and cultural values, the renewal of the Historical Public Space, implies restructuring the existing traffic networks systems and presumes the creation of environmental, cultural and heritage paths.

3. BRIEF CHARACTERIZATION OF THE INTERVENTION

3.1 Intervention in the City of Bragança

On the northeast of Portugal, Bragança's distance from Oporto is 255 km and from Lisbon 515 km. The city is located in the mountains of Tras-os-Montes, with an altitude of 700 meters and a scarce 22 km from the Spanish border.

The city of Bragança is inserted in a region of specific climate, the "Terra Fria Transmontana" (*Transmontana cold land*), with climate rigorous conditions (continental climate), characterized for long and cold winters, and hot and short summers, with big annual thermal amplitudes that mark the region.

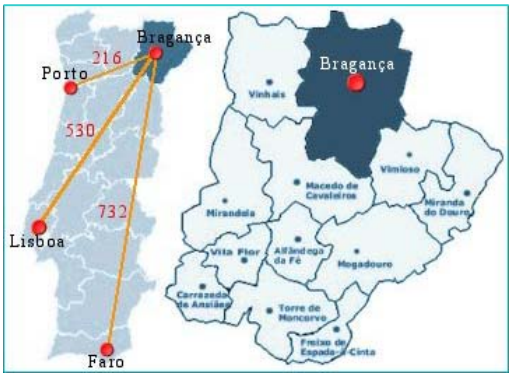

Fig. 1 – Location of Bragança in a national and regional context

3.2 The Fervença River Basin

The areas of the river basins considered are:

Fervença river - 206 Km2

Sabor river - 4.000 Km2

Douro river - 99.000 Km2

Rio Fervença is a tributary of Rio Sabor (that drains in to Rio Douro) .

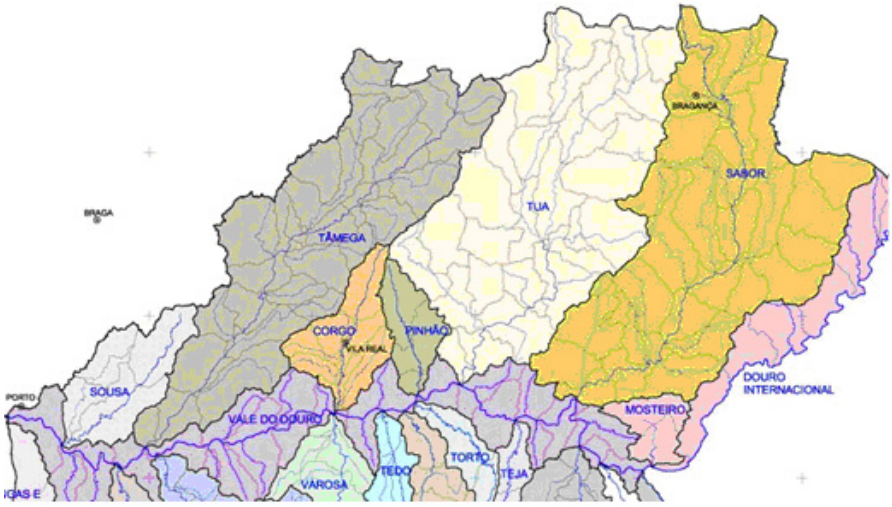

Fig. 2 - River basin Of Sabor river and Fervença river. Source – www.inag.pt

3.3. Rehabilitation Project of Fervença River

The intervention in Bragança can be defined like an assembly of interventions of urban requalification and environmental enhancement, intending to returni to the river his historical importance in the life of the city.

The intervention area integrates the Historical district, two residential neighbourhoods and Rio Fervença River Front (Fig. 3).

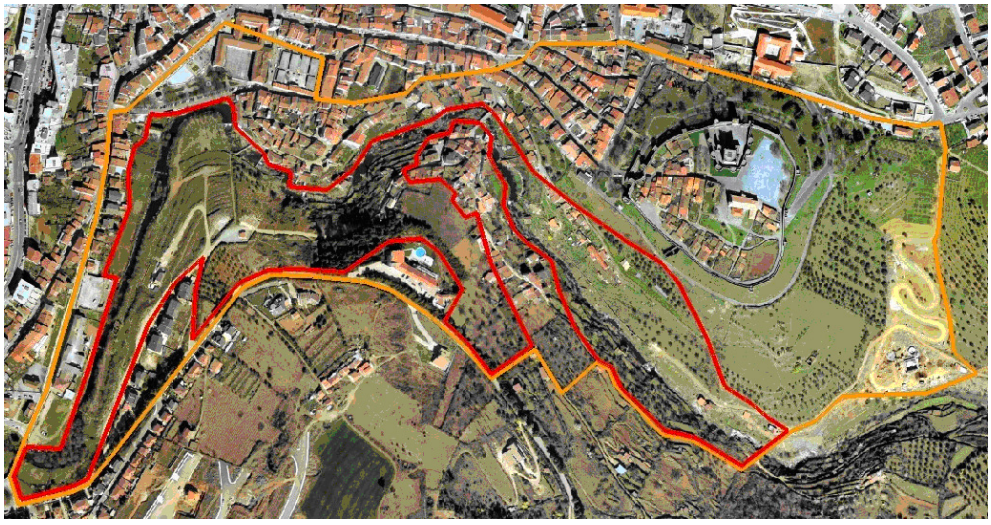

Fig. 3 - Delimitation of the Intervention Area Source: Bragança Polis Programe

Fervença river crosses the city of Bragança, showing different characteristics along its course. Sometimes hidden, other times visible and more linear, the presence of the river in the city has not been always a reality. In fact, in a recent past, before of the program Polis intervention, the river was a nonexistent element in the urban structure, in the urban experience. Municipality, institutions and even the population ignored the fact that a so important potential awaited an intervention.

With the Polis project, Rio Fervença acquired an importance never reached in past, when the river sustained the population. In fact, the river will be one of the structural parts of the intervention.

This fact helps to promote the use of both the margins of the river, integrating this privileged space in the urban city space.

The intervention seeks to facilitate the access of the population to the river, by what proposes the opening of three new accesses of the urban pattern to the margins, the improvement of pedestrian paths near the margins, and the construction of three new bridges.

Some of the more positive aspects of the project of rehabilitation of Fervença riverfront are the following:

- Return the river to the city;
- Create a new centre of leisure;
- Endow the city of some infrastructures and sports;
- Widen the green spot of the city;
- Widen the pedestrian area.

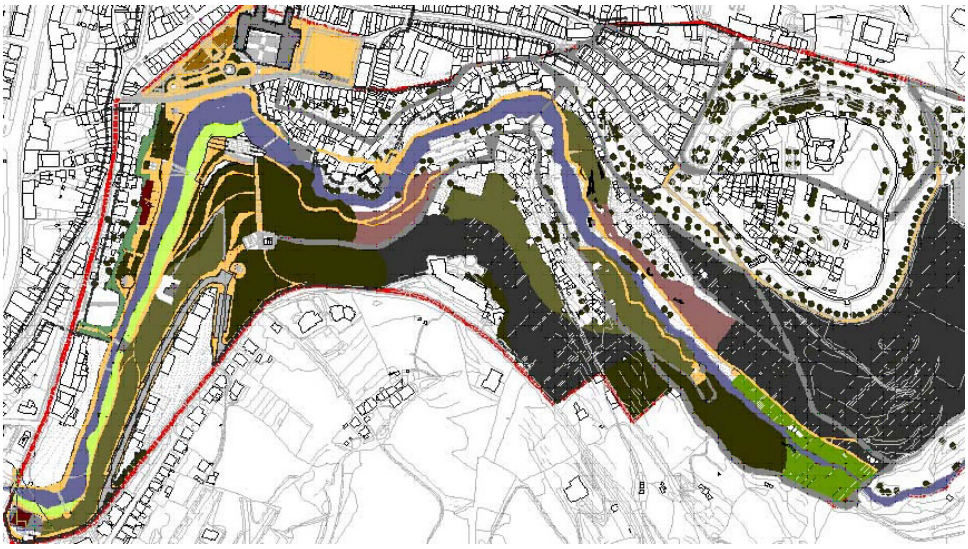

Fig. 4 - Polis Programme final proposal Source: Bragança Polis Programe

The urban intervention at the Fervença's river (1ª and 2ª Phases) integrates the main green structure of Bragança as a environmental and landscape value of the city.

It presents strong natural characteristics and high landscape quality. Because of this, it should represent a space of high public use, with environmental education and pedagogical functions, equipped for activities of leisure, contemplation and recreation.

The project took into account the intrinsic local characteristics, in particular the land morphologic, the view points, the vegetation, and the built elements, drawing a contemporary project according to the biophysical conditions.
The intention was to promote the interactivity between Fervença River and the people, integrating this privileged space in the urban pattern. According to this, the access to the river and the linkage between booth sides of river have been considered important aims.
The intervention has been on the enhancement and cleaning of the river and it banks, and in the construction of a pedestrian path (See the following images).

URBANISTIC INTERVENTION AT GREEN CORRIDOR OF FERVENÇA RIVER (1ª phase)

4. EVALUATION OF THE PROCESS OF APPLICATION OF INDICATORS OF SUCCESS

The application of the set of indicators identified in the WP 10 was tested in this case study. Only few indicators were possible to apply, due to lack of data and also to the type of intervention, which mostly focused on the social and urban aspects.

4.1. Methods

The results obtained after application of the URBEM WP 10 methodology are presented in the two following tables (Table1 and Table 2).
This process had given some ideas of the intervention impact on the city, for the public and for the river, and performs a tentative evaluation of Polis Program intervention.
The elaboration of the final table was a result of the following sequence of steps:

4.1.1. Selection of indicators presented on the WP 10 reports that would be applicable to the Fervença case-study

The first phase consisted on a previous selection of the set of indicators that would have applicability to the case-study PolisBragança – Fervença. The indicators that were not calculated are indicators for which no information could be found or that were too complex to process (with a limited amount, in time, of resources).
Indicators were selected according to an applicability scale, which is presented in Table 1. Indicators classified with the value 0 or 1 and in specific situations with the value 2 (when the data acquisition is difficult or depends on further information) were eliminated (not calculated).
The ecological indicators were found more difficult to apply due to non existent data or data that was too difficult to acquire. At any rate, the intervention had little impact on the ecological processes.

TABLE 1: APPLICABILITY OF INDICATORS

	INDICATORS OF SUCCESS		
	ECOLOGICAL	ECONOMIC	SOCIAL
APLICABILITY			
0	E48, E44, E45, E46, E16, E8		
1	E47, E40, E37, E38, E31, E27, E28, E19, E17, E15, E13, E9	EN5, EN6, EN7	S38, S39, S40, S41, S42, S34, S35, S36, S23, S24, S25, S26, S27, S28, S29, S30, S31, S32, S21, S19, S12, S10, S1
2	E43, E42, E41, E32, E33, E34, E35, E36, E30, E24, E25, E26, E23, E22, E21, E20, E12, E11, E10, E7		S43, S37, S33, S22, S20, S14, S13, S11, S5
3	E29, E14, E7		
4	E39, E18	EN1, EN2, EN3, EN4, EN5	S15, S16, S17, S18, S9, S8, S4, S3, S2
5			

E – Ecological indicators
EN – Economic indicators
S – Social indicators

4.1.2. Studying the contribution of selected indicators for achieving the objectives proposed in the project

After understanding the applicability of each one of the indicators, we proceeded with the study of their contribution to achieving the rehabilitation objectives. Following specific objectives defined in the Polis Program for Fervença River were used:

- Return Rio Fervença to the city attributing it a structure character;
- Creation of a "green corridor" (strategy of environmental landscape integration of the city:
- Enhancement of the natural and architectural heritage;
- Rehabilitation of disqualified urban zones (construction of a quality public space)
- Restructuring of the network road, encouraging the reduction of the traffic car and establishing a pedestrian and cycle paths linking the Historical core to the river.

We attributed a scale with the values 0-5, that shows the rank of contribution of the indicator for achieving those objectives.

4.1.3. Calculation of the indicators values and the maximum and minimum value, for the case of study (Mesurability)

The application continued with the calculation of the selected indicators.
With the guidance of URBEM study, it was possible to calculate the exact values for each indicator. The results are presented in Table 2.

The calculating of these values was only possible with the classified indicators in the scale of applicability, with values 4 or 5. In some situations, where we could not find any data available, it was possible to calculate indicators with the classification of 2.

A comparative analysis between the indicator results, before intervention and after the intervention, can be made. The table shows additional columns with the values of the indicator before and after the intervention.

For the ecological indicators we could not find any data available (although it may exist) to enable before and after comparisons.

The parameter Measurability after the intervention is subdivided in 3 values (minimum, score and maximum). Score values show the present state (after intervention), and maximum values show an ideal situation.

7. FINAL NOTES

In order to reach more meaningful conclusions, it would be necessary to assess two distinct situations: before and after the intervention. In this way, it would be possible to compare the indicators and infer about the rehabilitation process.

On the other hand, we also concluded that is necessary to have reference values, to compare with the calculated score. For example, the indicator *River crossings* (number of bridges), by itself, does allow us to reach any particular conclusion. Thus, it is necessary to have a minimum and a maximum value, to situate the value of the indicator obtained.

The Annexes include the WP10 indicator sheets with Fervença's information in blue. Whenever possible the value of indicator was calculated and is shown in the field "Operationalisation". Comments on the application of the respective indicator to the case study is shown in the field "Example".

8. BIBLIOGRAPHIC REFERENCES

Estudo de incidências ambientais na zona de intervenção do Programa Polis na Cidade de Bragança, Programa Polis – Bragança, 2000

Estudo Hidrológico e Hidráulico de um Trecho do Rio Fervença na Zona de Intervenção do Programa Polis na cidade de Bragança, Bragança – Polis, Estudo Final, ProSistemas, Consultores de Engenharia SA, Fevereiro de 2002.

Silva, J.Batista; Saraiva, M.G.; Ramos I.L.; Bernardo, F.; Monteiro, F. & Câmara, C., 2003 – *Classification of the aesthetic value of the selected urban rivers - Methodology*. Deliverable 4.2, URBEM (Urban River Basin Enhancement Methods) EC Research Project, CESUR, IST, Lisbon.

Silva, J.Batista; Saraiva, M.G.; Ramos I.L.; Bernardo, F.; Monteiro, F. & Câmara, C., 2004 – *Classification of the aesthetic value of Jardas stream. Application of the methodology to the study area*. Deliverable 4.3, URBEM (Urban River Basin Enhancement Methods) EC Research Project, CESUR, IST, Lisbon.

Tourbier, J.T; Gersdorf, I. ; Schanze, J. & Olfert, A., 2005 – Indicators of Success, work Package 10, URBEM (Urban River Basin Enhancement Methods) EC Research Project, Dresden University of Technology (TU Dresden) and Leibniz Institute of Ecological and Regional Development, Dresden (IOER), Dresden.

ANNEXE

SOCIAL INDICATORS

Category Settings Subcategory	Existing Conditions and Quality of River and River Site Public Accessibility to River and River Site	SOCIAL
Quality Element	**Access from City to River Site**	
Name of indicator:	**Parking Lots**	No: **S 2**

Operationalisation

Measured parameter:

1) Available parking lots per river length

2) Number of parking lots related to number of visitors coming by car

Unit:
1) 80 number/ 2 km = 40 parking lots/Km
2) n/ visitor

Benchmarks:

1) best achievable minimum

2) 0,5 - 0,25 (URGE)

Tendency:

individual

Temporal scope:

with implementation

Spatial scope:
River site and adjacent neighbourhood

Potential classification:
individual

Rational

Rational:
Reduction of parking lots may forces people to use public transportation and may decreases quantity of private traffic. In turn this may reduces noise and air pollution close at the site.

References:
Silva et. al. (2003) URBEM - Classification of the aesthetic value of the selected urban rivers – Methodology – Deliverable 4.2., CESUR-IST/UTL, Portugal
Urge, 2003

Data enquiry

Enquiry method:
On site visit, desk study

Potential sources of data:
Aerial pictures, tourist service, city planning department

Application

Application and Applicability:
Only relevant if river site has a city wide importance and a big percentage of visitors are likely to access the site by car. The need for parking lots will be influenced by the availability of public transportation. In general number of parking lots may be kept as small as possible.

Relation to other Indicators:
influenced by Indicator Public Transportation Stops (S3)

Example

This indicator was only considered above ground parking lots. We excluded the parking lots in underground parking, near by the river.

This indicator shows a relevant number of parking lots which results in increased traffic.

Category Settings	Existing Conditions and Quality of River and River Site	SOCIAL
Subcategory	Public Accessibility to River and River Site	
Quality Element	**Access from City to River Site**	
Name of indicator:	**Public Transportation Stops (PTS)**	No: **S 3**

Operationalisation

Measured parameter:

1) Number of Public Transportation Stops/river length

2) Average frequency of stops per hour (at weekends)/river length

Unit:
1) 0 number / 2 km = 0 PTS/Km
2) average number/hour /km

Benchmarks:

individual

Tendency:

stable or increasing

Potential classification:
individual

Temporal scope:

with implementation

Spatial scope:
River site and adjacent neighbourhood

Rational

Rational:
A high density of public transportation and a high frequency of stops increases attractiveness to use public transportation, instead of a car to reach the site. Public transportation is especially important for user groups with limited mobility abilities (elderly, children and others).

References:
Silva et. al. (2003) URBEM - Classification of the aesthetic value of the selected urban rivers – Methodology – Deliverable 4.2., CESUR-IST/UTL, Portugal
Urge, 2003

Data enquiry

Enquiry method:
1) On site visit, desk study
2) Calculation: number of public transportation stops times average frequency of stops

Potential sources of data:
Public transportation companies, schedules of public transportation

Application

Application and Applicability:
The indicator may only be relevant, where river and river site have a high importance for recreational use. In addition to the quantitative assessment of public transportation, a qualitative appraisal of accessibility by public transportation may be conducted, considering the connection to other city centres, dense settlement areas etc.
Relation to other Indicators:

Example

We concluded that there is no Public Transportation Stop near by the river. This may indicate that there has no visible concern of regarding the increase the use of public transportation.

In other hand, intervention area is near by Historical District and people walk through the space.

Category Settings Subcategory	Existing Conditions and Quality of River and River Site Accessibility	SOCIAL
Quality Element	**Access from City to River Site**	
Name of indicator:	**Access Points for Soft Modes**	No: **S 4**

Operationalisation

Measured parameter:

Access points to river site / river length

Unit:
6 n / 2 km = 3 APSM/Km

Benchmarks:

Minimum: 2 - 4/km

URGE: one entrance per 100 m edge length of river corridor

Tendency:

stable or increasing

Temporal scope:

with implementation

Spatial scope:
River site and adjacent neighbourhood

Potential classification:
< 6/km very good
5-6/km good
2-4/km acceptable
> 2/km unacceptable

Rational

Rational:
The more access points to the river site exist, the easier it is accessible. A low number of access points may control accessibility and function as a indirect measure to control the number of visitors. This may be relevant for ecological sensitive areas.

References:
URGE, 2003

Data enquiry

Enquiry method:
On site visit, desk study

Potential sources of data:
Arial pictures, topographical maps

Application

Application and Applicability:
Access points determined based on topographical maps should be verified on site. Quality of access points may be taken into account and evaluated.
Relation to other Indicators:
Reverse to Soft Mode Access Barriers (S 1)

Example

We calculated three access points for soft modes per Kilometre. According to the Potential classification, this is an acceptable situation. But, thinking on the extension of cycle paths, this number seems lower.

Reflection on the three indicators Parking Lots, Public transportation Stops and Access points for Soft modes, we concluded that this project has not seem to present an adequate answer to improve ecological solutions of transportation and traffic.

Category Settings	Existing Conditions and Quality of River and River Site	SOCIAL
Subcategory	Public Accessibility to River and River Site	
Quality Element	**Physical Access to the Water**	
Name of indicator:	**Water Contact Zones**	No: **S 5**

Operationalisation

Measured parameter:

a) Access points to water / river length

b) Direct (touchable) accessible reach of river / river length

Unit:
1) number (per type) / km
2) km/km, % = 26,93%

Benchmarks:

1) individual

2) 100 or achievable maximum %

Tendency:

stable or increasing

Temporal scope:

with implementation

Spatial scope:
River

Potential classification:
individual

Rational

Rational:
Water Contact Zones enable sensorial interaction with the water. This may include visual, physical and acoustic contact. Contact points may include soft access over graded banks or hard access over steps, bridges, ladders ramps, stairs, and piers and others. Continuous pathways along the water may be included in the assessment. For a typology of contact zones with water, see Silva et. al. (2003), p. 49.

References:
Silva et. al. (2003) URBEM - Classification of the aesthetic value of the selected urban rivers – Methodology – Deliverable 4.2., CESUR-IST/UTL, Portugal

Data enquiry

Enquiry method:
On site visit, desk study

Potential sources of data:
Arial pictures, topographical maps

Application

Application and Applicability:
Depending on the physical layout of the site either parameter 1) or 2) may be more relevant. It is an easily accessible indicator through on site visits or even interpretation of aerial pictures. Assessment may be done by volunteers.

Relation to other Indicators:
Anchorage points (S 6), River Crossings (S 8) may be a part of the indicator
Indicator may also be part of subcategory Sensorial Conditions

Example

Physical contact with water was a concern in this project. Although, this question is different in the two banks of river. To calculate this indicator, we only considered areas on the right bank because the left bank was changed into a concrete wall.

The other points included in Water Contact zones, like visual interaction, were not considered because they were impossible to measure. On right bank almost every space implies a visual contact with water.

Category Settings	Existing Conditions and Quality of River and River Site	SOCIAL
Subcategory	Public Accessibility to River and River Site	
Quality Element	**River Crossings**	
Name of indicator:	**River Crossings**	No: **S 8**

Operationalisation

Measured parameter:

1) Number of crossings / river length

2) Number of soft mode crossings / river length

Unit:
7 number/2 km = 3,5 river crossings

Benchmarks:

individual

Tendency:

stable or increase

Potential classification:
individual

Temporal scope:

with implementation

Spatial scope:
River site

Rational

Rational:
Accessibility of both river sites will increases with the number of possible crossings and the river will become more of a connecting than a dividing element in the city structure. A high number of pedestrian bridges increases accessibility of surrounding facilities through decreasing walking distances.

References:
Silva et. al. (2003) URBEM - Classification of the aesthetic value of the selected urban rivers – Methodology – Deliverable 4.2., CESUR-IST/UTL, Portugal

Data enquiry

Enquiry method:
On site visit, desk study

Potential sources of data:
Arial pictures, topographical maps

Application

Application and Applicability:
Indicator is easily to enquire. An increase of river width and a lower density of inhabitant in the river corridor correlates to a lower number of river crossings.
Relation to other Indicators:
may be a part of the indicator Water Contact Zones (S 5)

Example

River crossing was a strong idea to achieve the objective to increase the mobility of the space. There are several bridges along the river in the intervention area.

This is possible because of the narrow width of the river and to link the right bank at the city, allowing the use of this space by people.

Category Settings	Existing Conditions and Quality of River and River Site	SOCIAL
Subcategory	Open Space Extend and Quality	
Quality Element	**Extend of Open Space**	
Name of indicator:	**Public Utility of River Site**	No: **S 9**

Operationalisation

Measured parameter:

area of public open areas/overall area of intervention site

Unit:
km2/km2, % = 18,34%

Benchmarks:

individual

Tendency:

stable or increase

Potential classification:
> 80 % very good
60 - 80 % good
40 - 60 % acceptable
< 40 % unacceptable

Temporal scope:

with implementation, long term

Spatial scope:
Intervention area/ river corridor

Rational

Rational:
A high ratio means that there is a non-restricted access to the watercourse in benefit of people.

References:
Silva et. al. (2003) URBEM - Classification of the aesthetic value of the selected urban rivers – Methodology – Deliverable 4.2., CESUR-IST/UTL, Portugal

Data enquiry

Enquiry method:
Desk study

Potential sources of data:
Topographical maps, land registry offices

Application

Application and Applicability:
The indicator is easy accessible if a GIS System exists. It may be used as a proxy indicator for the Subcategory Accessibility. In addition to the quantitative assessment a qualitative assessment of the public open areas may be done. This will be assessed by the quality element Quality of Open Space.
Relation to other Indicators:
as proxy indicator for sub-category Accessibility, integral part of Carrying capacity

Example

Comparing the result with the Potential classification we concluded that this is an unacceptable value.

A relevant question can be raised: How can a project where one of the main objectives is “Rehabilitation of disqualified urban zones (construction of a quality public space)“ have a so lower % of public space?

Category Settings Subcategory	Existing Conditions and Quality of River and River Site Open Space Extend and Quality	SOCIAL
Quality Element	**Visual and spatial quality**	
Name of indicator:	**Landmarks**	No: **S 11**

Operationalisation

Measured parameter:

1) Number of landmarks visible from intervention area

2) Number of landmarks visible from intervention area/river length

Unit:
1) n = 9 Landmarks
2) 9 n/ 2 km = 4,5 Landmarks/Km

Benchmarks:

individual

Tendency:

stable or increase number

Potential classification:
individual

Temporal scope:

with implementation, long term

Spatial scope:
Landmarks visible from river site or intervention area

Rational

Rational:
Landmarks are remarkable points in the landscape of the river corridor, which provide for orientation and identification with the site. Landmarks may include architectural points such as prominent landforms, structures, monuments or architecture.

References:
Silva et. al. (2003) URBEM - Classification of the aesthetic value of the selected urban rivers – Methodology – Deliverable 4.2., CESUR-IST/UTL, Portugal
LYNCH K, HACK G (1998) Site Planning. Third edition. MIT Press, Cambridge, Massachusetts and London, England

Data enquiry

Enquiry method:
On site visit, desk study

Potential sources of data:

Application

Application and Applicability:
The assessment may require some mapping experience. An onsite visit has to be combined with analysis of maps, to determine landmarks potentially visible from the site after implementation of the project.
Relation to other Indicators:
influences Quality Element Perception of Place Identity

Example

The intervention area included an historical area (Historical District of the city). In the area we can see water mills, traditional bread oven and a church. We are surrounded by some heritage elements , and we can see from intervention area, for example, the magnificent castle and the ancient village, a historical garden, and a main church.

This is an issue which is explored in the Fervença's project because of the many landmarks detected in the area.

Category Settings Subcategory	Existing Conditions and Quality of River and River Site Cultural components	SOCIAL
Quality Element	**Spatial Qualities of Open Space**	
Name of indicator:	**Viewpoints**	No: **S 12**

Operationalisation

Measured parameter:

Number of viewpoints with views to or crossing the river/ river length

Unit:
13 n/ 2 km = 6,5 Viewpoints/Km

Benchmarks:

individual

Tendency:

stable or increase

Potential classification:
individual

Temporal scope:

with implementation, long term

Spatial scope:
Intervention area

Rational

Rational:
Viewpoints with view to and across the river increase interest for the river corridor, raise connectivity with the city fabric and therefore increase integration of the site. Views stimulate curiosity and a sense of exploration. It stimulates emotional experience of the site. Assessment may include viewing points with vistas, panoramas and with overviews.

References:
Silva et. al. (2003) URBEM - Classification of the aesthetic value of the selected urban rivers – Methodology – Deliverable 4.2., CESUR-IST/UTL, Portugal

Data enquiry

Enquiry method:
On site visit, desk study

Potential sources of data:
Arial pictures, topographical maps, existing 3D-models

Application

Application and Applicability:
View points should be considered in the intervention area (where they are likely to change in number). A consideration of viewpoints in the river corridor may be done. Those may be impacted through spatial changes in the intervention area.

Relation to other Indicators:
will influence Subcategory Perception of Site

Example

The method to calculate this indicator is very subjective because, in this case, we can not define only points of views. In fact, on the right bank of the river, almost every area is an open view space.

Therefore, the value could be misleading.

Category Settings Subcategory	Existing Conditions and Quality of River and River Site Quality and Extend of Recreational and Cultural Facilities	SOCIAL
Quality Element	**Quality and Amount of Recreational Facilities**	
Name of indicator:	**Recreational Facilities**	No: **S 15**

Operationalisation

Measured parameter:

number of recreational facilities / river length or river side area

Unit:
7 number/ 2 km or km2 = 3,5

Benchmarks:

individual

Tendency:

stable or increasing, for ecological sensitive areas eventually decreasing

Potential classification:
individual

Temporal scope:

with project

Spatial scope:
River site

Rational

Rational:
A diversity of recreational facilities will provide for different user groups. This indicator will consider punctual elements and may include playgrounds, sitting areas, bars, restaurants, museum, sport centre etc.

References:

Data enquiry

Enquiry method:
On site visit, desk study

Potential sources of data:
aerial pictures

Application

Application and Applicability:
The indicator does not say anything about the use of the provided facilities, therefore it may be accessed in combination with Recreational Activities.
Relation to other Indicators:
influences Visitor Frequency (S 36), Recreational Activities (S 37)

Example

Category Settings	Existing Conditions and Quality of River and River Site	SOCIAL
Subcategory	Quality and Extend of Recreational and Cultural Facilities	
Quality Element	**Quality and Amount of Recreational Facilities**	
Name of indicator:	**Recreational Paths**	No: **S 16**

Operationalisation

Measured parameter:
length of paths/ river length

Unit:
6,02 km/ 2 km = 3,01

Benchmarks:
approximately 1 or 100% (continuous pathway)

Tendency:
stable or increase

Potential classification:
individual

Temporal scope:
with implementation

Spatial scope:
River site

Rational

Rational:
This indicator will considers linear elements used for recreational purposes and may include biking, walking, riding trails etc. Continuous pathways along the river increase the recreational usability of the site.

References:

Data enquiry

Enquiry method:
On site visit, desk study

Potential sources of data:
Arial pictures, topographical maps

Application

Application and Applicability:
The indicator is easily to enquire. The indicator does not say anything about the use of the provided facilities, therefore it may be accessed in combination with Recreational Activities.

Relation to other Indicators:
influences Visitor Frequency (S 36), Recreational Activities (S 37)
may be part of Water Contact Zones (S 5)

Example

Category Settings	Existing Conditions and Quality of River and River Site	SOCIAL
Subcategory	Quality and Extend of Recreational and Cultural Facilities	
Quality Element	**Sites of Cultural Events**	
Name of indicator:	**Cultural Events**	No: **S 17**

Operationalisation

Measured parameter:

1) number of continuous events related to the river/year

2) number of single events related to the river/year

Unit:
3 n/ 1year = 3 cultural events/year

Benchmarks:

individual

Tendency:

stable or increase

Potential classification:
individual

Temporal scope:

short - long term

Spatial scope:
River site

Rational

Rational:
Local events in connection to the river or river site create temporary contact zones for people, may promote place identity, awareness and stewardship. The number of events may depend on size of river, importance of site and resident density. Events to be considered include boat races, paddling tours, fishing competitions, markets any festivals related to the river etc.

References:

Data enquiry

Enquiry method:

Potential sources of data:
local calendars, neighbourhood councils, interest groups, city administration

Application

Application and Applicability:
The indicator is easily to enquire. It may only be applicable for rivers of bigger size.
Relation to other Indicators:
influences Visitor Frequency (S 36), Recreational Activities (S 37)

Example

ECONOMIC INDICATORS

Name of indicator: REHABILITATION INVESTMENT
Criterion: context
Type of indicator: context
Measured parameter:financial budget relative to area or length of rehabilitation reach
Unit: 2.371.526,96 euros EURO/ 2000 m or m2 = 1185,76 €/m
Relativity: context
Benchmarks: from WP 2???
Classification: individual
Temporal scope: n.a.
Spatial scope:
budget devoted for project implementation and maintenance reflects the position and importance of the site. The higher the budget, the more important the site is.
Comments :
References:URGE Project, 2003
enquiry
Enquiry method:
Potential sources of data: implementing companies, final account/bill/local authorities
Application and Applicability: during project
Relation to other Indicators: Quaggy River, London

Category Subcategory	Utility Values Direct Use Values	ECONOMY
Quality Element	**Economic Activities and Employment**	
Name of indicator:	**Activities to create income**	No: **EN 3**

Operationalisation

Measured parameter:
public income from public activities at river corridor/maintenance costs river and river corridor

Unit:
% = 0

Benchmarks:
-

Tendency:
100%

Temporal scope:
short - long term

Spatial scope:

Potential classification:
individual

Rational

Rational:
A sustainable integration of activities in the river corridor may support economic self sufficiency of the site, e.g.: concerts, boating tours, swimming days, rental for bikes, boats, celebrations, cafés etc.

References:
URGE Project, 2003

Data enquiry

Enquiry method:
local enquiry

Potential sources of data:
city administration

Application

Application and Applicability:
Relation to other Indicators:

Example

We concluded that there are no activities to create income in the intervention area. This may result in a problem of economic sustainability of the site.

Name of indicator: RIVER DEPTH AND WIDTH VARIATION
Theme: ECOLOGY
Criterion: Morphological conditions
Type of indicator: state
Measured parameter: WFD, on course of definition
Unit: quality classes = 8m
Relativity: Morphological conditions
Benchmarks: to come
Classification: improving; official scales
Temporal scope:
Spatial scope:
Rational
Comments :
References:
Data enquiry
Enquiry method: in course of elaboration
Potential sources of data: environmental protection agencies onsite samples
Application
Application and Applicability:
Relation to other Indicators:
Example:
This value is an average value, because of the variability of width river. We can point as maximum the value of 19,23m, and as minimum the value of 1,26m.

Name of indicator:

PERCENTAGE OF STREAM LENGTH WITH RIPARIAN VEGETATION

Theme: ECOLOGY
Criterion: connectivity
Type of indicator: state
Measured parameter: percentage of stream length with riparian vegetation
Unit: % = 8,32%
Relativity: connectivity
Benchmarks: individual; 100%
Classification: increasing
Temporal scope: short - middle term
Spatial scope:
Rational It is assumed that existentence of riparian vegetation can indicate a more or less intact river-valley relationship which is highly beneficial to the overall integrity of the water
Comments :
References: reference: Alexandra 1998 p. 62
Data enquiry
Enquiry method: document analysis
Potential sources of data: project documentation; onsite inspection; map analysis
Application
Application and Applicability:
Relation to other Indicators:
Example:
This is an unexpected value, because the percentage of stream length with riparian vegetation is smaller, after the intervention, than before the intervention.
This question is essential, in a project which one of the main objectives is the „*Creation of a "green corridor"* (strategy of environmental landscape integration of the city).
May this solution be affected by aesthetics values?

Name of indicator: WIDTH OF RIPARIAN FRINGE
Theme: ECOLOGY
Criterion: connectivity
Type of indicator: state
Measured parameter: mean width of riparian vegetation along rehabilitated river section
Unit: 5 m
Relativity: connectivity
Benchmarks: 12 meters is ecological benchmark
Classification:
Temporal scope: short-middle-long
Spatial scope:
Rational
The existence of a vegetated fringe along the river banks is highly beneficial to the reduction of urban/ human influences such as surface water discharge, noise disturbance it furthermore is source of shade and organic litter
Comments :
References: WP 4, Indicator R 11 Rheinhardt et al. (1999), p. 246
Data enquiry
Enquiry method: onsite survey
Potential sources of data: onsite survey
Application
Application and Applicability:
Relation to other Indicators:
Example:
We only can see riparian fringe on right bank of the river. The other bank was changed into a big concrete wall, so there is no any vegetation there.