

# METHODS AND TOOLS FOR SUSTAINABLE RENOVATION OF URBAN NEIGHBOURHOODS IN THE HQE<sup>2</sup>R PROJECT

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**Abstract** - Today cities are being reconstructed, buildings are being rehabilitated, and neighbourhoods revitalised. To assure sustainability this rehabilitation must, besides technical solutions, take social trends, changes in behaviour, environment and economic development into account. In the HQE<sup>2</sup>R project 14 neighbourhoods and 10 research institutes in 7 European countries are co-operating to provide methods and tools for use by local municipalities and their partners: government agencies, planners, landlords, local citizens and other users in sustainable urban renewal projects. The project is partly financed by the European Commission Programme for Energy, Environment and Sustainable Development (City of Tomorrow) and is lead by CSTB. The objectives of the HQE<sup>2</sup>R project are to promote sustainable development and quality of life in urban neighbourhoods. A methodology for sustainable neighbourhood analysis and development has been developed. The methodology describes 4 main phases (inventory, identifying priorities, defining and assessing scenarios and finally setting up an action plan) and is based on a set up of sustainable development targets, a set of indisputable indicators, and 3 new assessment tools. The project is using the 14 neighbourhoods as test case studies for the methodology and tools. The results are: -the methodology, -indicator sets, -3 tools, -guidelines for the use of the methodology and tools, -briefing documents for sustainable renovation of buildings, -14 neighbourhoods on a path of sustainable development, -4 international work-shops where the results are presented, discussed and brought in relation to other activities within this area. This presentation cannot cover the project in full and consequently is to be seen as an appetizer to the project.

## 1. INTRODUCTION

“Sustainable Renovation of Buildings for Sustainable Neighbourhoods” or HQE<sup>2</sup>R is a project partly funded by the European Commission under the Fifth Framework R&D Programme. The project started in September 2001 and will continue until January 2004. Co-ordinated by CSTB (Centre Scientifique et Technique du Bâtiment), France, it combines research and demonstration aspects with the co-operation of 10 European partners and is connected with 14 municipal case studies. The 9 other Research partners are: IOER (DE), Cenergia Energy Consultants (DK) CAATB & ITEC (ES), LA CALADE (FR), ICIE & QUASCO (It), Ambit (Ne), UWE (UK) - for a complete list with the coordinates of each partner see ref. 1. The results of the HQE<sup>2</sup>R project constitutes the combined effort of all these partners, which means that their representatives in the project all ought to have been mentioned as co-authors of this presentation.

The objective of the project is to develop a new methodology together with the necessary tools to promote sustainable development (SD) and the quality of life at the crucial and challenging level of urban neighbourhoods. HQE<sup>2</sup>R aims at providing decision aid tools for municipalities and their local partners, focussing on the goals of the inhabitants and users of neighbourhoods. With its

integrated approach it aims to provide a framework which can be generally applied in European cities. The project uses the case studies as model neighbourhoods in which the methodology can be tested.

The elements taken into account in the development of this methodology and its tools are :

- Improvements in the quality of the built environment, which are closely linked with needs expressed by the actors concerned (users), especially improvements in comfort and reductions in the costs-in-use and maintenance of residential and non-residential buildings (energy economies, reduced water consumption, optimisation of raw materials).
- Improvements in the quality of life through urban development which respects the environment: limits to urban sprawl, more effective use of public space, the creation of cycle-ways, pedestrian areas and green spaces. Developing coherence and synergy between the levels of the neighbourhood and the conurbation. Encouraging partnership working and building the capacity of the local community to achieve meaningful participation.
- Controlling costs and applying management methods which allow all categories of actor to share expenses.
- Controlling urban sprawl and commuting by managing the economy and environmental impact of space

use and also by managing mobility and the use of public transport at the scales of the neighbourhood, the town and the conurbation.

### *1.1 Background*

The main outcome of the research on existing tools is, that in detail a lot can be taken from them with respect to methodology and content of sustainability-assessment (“issues”) and that some tools can be utilised within a more comprehensive approach as for example energy calculation tools. Nevertheless there is no tool directly appropriate as a general basis of the HQE<sup>2</sup>R work. In general, the building related tools are too specific and detailed to serve within neighbourhood assessment. This means that – as expected and taken for a reason for the project – the special approach and methodology for the built environment within HQE<sup>2</sup>R had to be developed.

### *1.2 The neighbourhood scale*

Appreciating the neighbourhood as a life space is a strategic move towards developing policies of sustainable urban development. Significant neighbourhoods may be at the entrance to cities, or in leisure or activity zones, low-density housing estates, etc.

Policies of sustainable development can be implemented in each of these types of space. Particular policies involve transforming functional zones into living space, but also have to give a more systematic consideration to the environment and to social mix.

The value of a neighbourhood-by-neighbourhood approach can be understood more clearly when we consider the diversity of these districts – where the same response, in terms of sustainable development, cannot be uniformly applied. At the same time, the neighbourhood is not the only living space. The daily or weekly mobility of city dwellers means that they go about their business in the space of the conurbation. These two types of spaces can be highly contrasted and the approaches perceived as complementary.

So, the neighbourhood is important for:

- Neighbourhood life, providing urban activity, the existence of public space,
- Urban consciousness: in terms of landscape (a unified ensemble), cultural heritage as well as civic or “citizen’s” heritage (existence of shared urban space),
- Social and political participation: the concrete expression of local solidarity, fostering civic awareness in young people, the existence of participative dynamics,
- The collective management of public property or participation by the population in improving its living environment.

## **2. THE HQE<sup>2</sup>R METHODOLOGY**

The objective of the HQE<sup>2</sup>R project is to allow local authorities to implement plans of action for the renewal of their neighbourhoods and renovate their buildings in the light of sustainable development. It is a question of providing tools for a concrete analysis and evaluation, which are open to public (and private) debate and to action. But to define concrete plans of action, sustainable development requires an iterative way of achieving a decision, because of the necessity of taking the various principles of sustainable development into account at one and the same time. As the law of the market only takes account of economic factors, and principally only in the short-term, sustainable development demands the integration of the long-term, global impact of decisions on environmental and social factors, with less hierarchical forms of participation than the usual market practices. The diagram – fig.1, illustrates the HQE<sup>2</sup>R methodology to be used by the municipalities and their partners. This iterative way should, in return, allow major future economies of operation as well as avoid negative external factors, both socially and environmentally.

A comprehensive presentation of the HQE<sup>2</sup>R methodology is given in a specific publication from the project: “HQE<sup>2</sup>R Methodology for sustainable neighbourhood regeneration” (Deliverable 10), ref. 1.

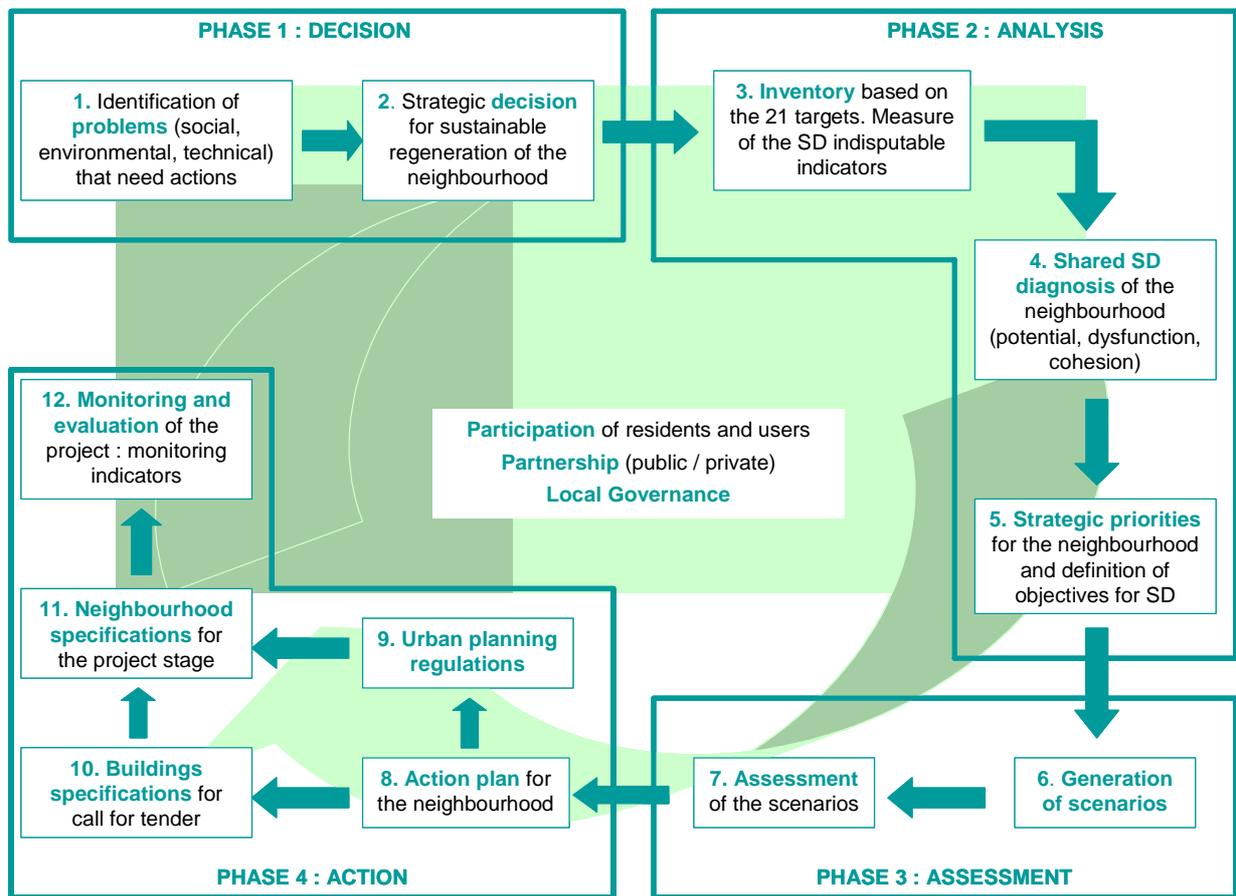
## **3. THE HQE<sup>2</sup>R TOOLS**

The main results of the R&D work on the HQE<sup>2</sup>R methodological framework for sustainable neighbourhood analysis and development as it is done until now are:

- The choice of 6 sustainable development principles for the city scale.
- The definition of 5 main global sustainable development objectives with 21 targets at the neighbourhood and buildings scales, and the definition of sustainability for the neighbourhood scale.
- A shared SD diagnosis method (with an integrated analytical grid for the previous inventory) adapted to the neighbourhood scale.
- Sustainable Development indicators
- An analysis of the different laws and practices about urban planning documents and their impacts upon the neighbourhoods with recommendations for taking into account SD in urban planning documents (for each partner country).
- An overview and analysis of best practices for participation in the Urban regeneration process.
- Development of pilot-versions for 3 models as decision aid tools for choosing the best Action plan for a neighbourhood: the INDI model with SD indicators, the ENVI model which assess the environmental impacts of the different scenarios and the ASCOT model about global costs.

- A drafting of SD briefing documents for choosing the right targets for building renovation.
- A drafting of SD briefing documents towards procedures and strategic decisions before the elaboration of the action plan for neighbourhoods.

In this presentation three of these tools have been selected for a description based on the documentation developed or currently under development.



Source: HQE²R Project (<http://hqe2r.cstb.fr>)

Fig. 1 The HQE²R project methodology for a development process towards sustainability in a neighbourhood.

### 3.1 The 5 main global sustainable development objectives with 21 targets

The sustainable development approach requires prior consideration of the objectives of sustainability for that city. It is a question of broad options which, at the present time, render the city desirable and liveable for its residents and users without compromising the abilities and quality of life of future generations.

The HQE2R project proposes the use of five global objectives of sustainable development for European cities as a point of departure for a thought process which does not, however, prejudge the specific and particular forms of each city, defined by its history, geography and the men and women who live and die there. These five global objectives of sustainable development for the city are as follows:

- To preserve and enhance heritage and to conserve resources, i.e. human resources, constructed or natu-

ral heritage, natural resources (energy, water, space), whether local or global, biodiversity, etc.

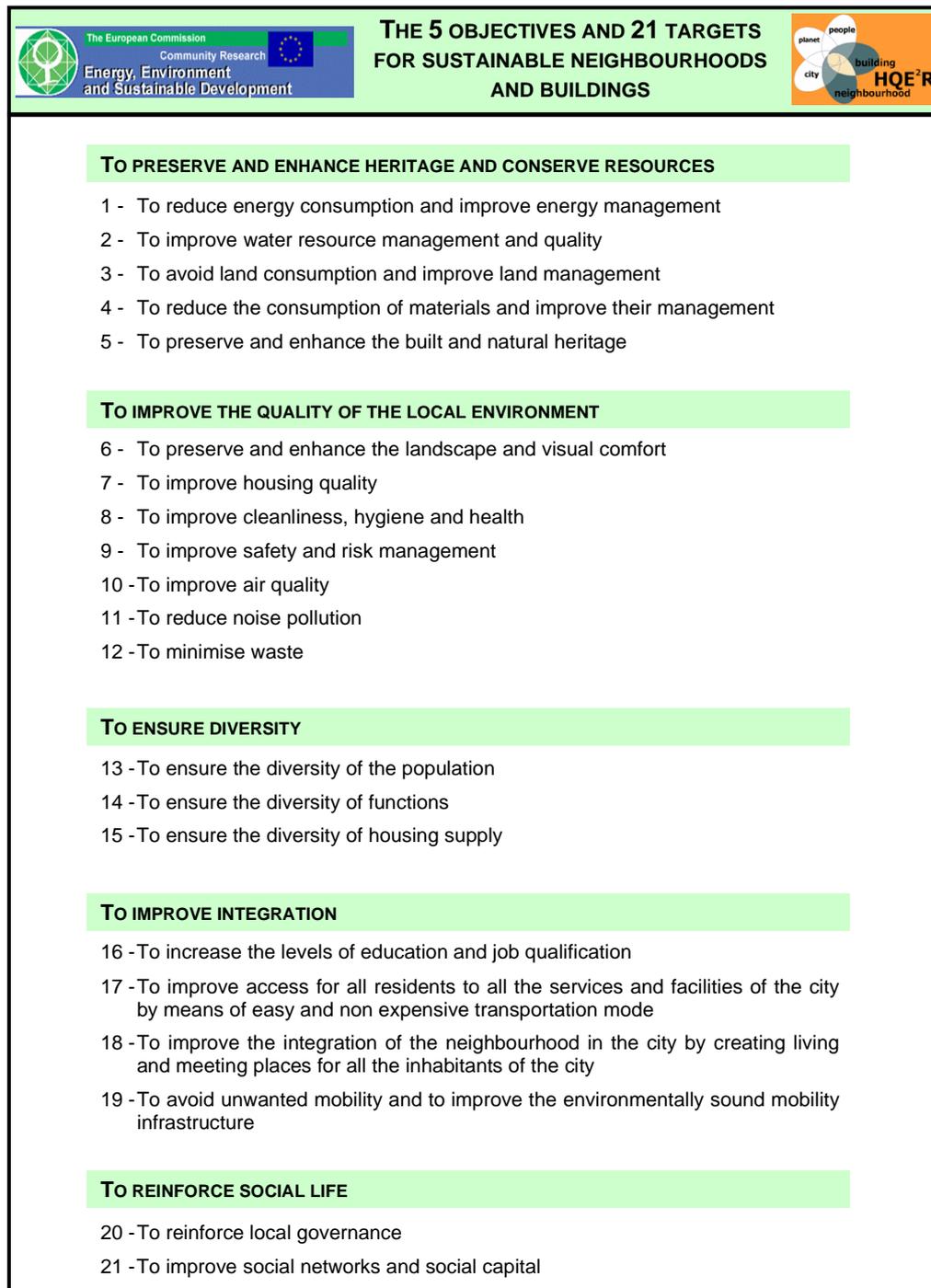
- To improve the quality of the local environment, for the residents and users of the city.
- To ensure diversity: diversity of the population, the habitat, human activities, space
- To improve integration: integration of the inhabitants in the city, in order that everyone feels he is both an inhabitant of and has a role to play in the city; integration of neighbourhoods in the city, with reference to the multi-centre city
- To reinforce social life through local governance, and relations of social cohesion and actions of social equity.

These five objectives must serve as the foundation for regeneration projects, development, and construction, whether for a city or a neighbourhood as well as for buildings. According to the scale and characteristics of

the area, the concrete form of these objectives will change. They will also vary according to the project to be handled, as the aforementioned principles do not apply in exactly the same terms to all projects. It is, in fact, a question of an analysis or grid, which allows an overview of all the problems to be tackled in an approach to sustainable development.

The analysis of these objectives consequently leads us to ask questions which correspond on the whole to the six

principles of sustainable development mentioned above, see ref. 1. These questions are just as much targets to be attained for projects of neighbourhood development or for the renovation of buildings. Thus, 21 targets have been chosen and approved by the project's 10 research partners and constitute the approach's operational dimensions. These targets are grouped according to each of the sustainable development objectives, see fig. 2.



Source: CSTB, La Calade with contribution of the European partners of the HQE²R project (<http://hqe2r.cstb.fr>)

Fig. 2 The 5 objectives and 21 targets.

### 3.2. Sustainable Development indicators

A comprehensive report on the system of indicators developed in the HQE2R project for sustainable development has been produced. Presented here is an extract of the abstract of the report, outlining the content:

The report is in two parts and is accompanied by appendices which give details of the systems of indicators of sustainability currently in use both by international organisations and within the principal European Union member states.

The first part presents the state of the art and discusses the origins and use of environmental indicators and the issues which have arisen in transforming these into indicators of sustainable development. The OECD indicators system (PSR) assesses Pressures on the environment from human activities, how these modify the State of the environment, and what Responses are made by the community to these changes. This part of the report, which gives examples of systems produced in the member states, argues that the main problems concerning the use of indicators are that it is difficult to create uniform methods of measurement and that there are likely to be disagreements on the interpretation of their significance.

The second part of the report gives detailed descriptions of the 65 indicators which have been selected in the. The indicators are grouped according to 21 targets which are considered relevant to the sustainable development of neighbourhoods and these in turn are derived from 5 main SD objectives (see fig. 2). The data sheets suggest how each indicator may be given a value for any neighbourhood which is being studied and also given a reference value for purposes of comparison (in some cases this value will be a threshold defined by regulations or directives). The standard forms provided include space for short descriptions of the principle methods by which a neighbourhood's performance against each indicator may be improved.

The last section of this part of the report suggests that the HQE2R indicators can be used in three ways:

- to assist in the preparation of a neighbourhood SD shared diagnosis;
- to support the evaluation of scenarios or plans for the improvement of a neighbourhood;
- and as a tool for communicating ideas about neighbourhood improvements to groups of people involved in putting planned changes into practice.

A diagram (in bar chart form) is included which shows how a neighbourhood profile can be drawn from a set or sub-sets of indicators, and how the profile may be expected to change over a period of time.

### 3.3 Overview and analysis of best practices for participation in the Urban regeneration process.

The Objective of the report is to analyse different methods and practices of participation by inhabitants in operational urban planning process for their neighbourhood and their buildings. The report, currently being com-

posed, will present an introduction to the concept of participation introducing different "ladders of participation" to describe at different levels of participation. A number of practical methods for participation will be described, some of these illustrated by cases and the report will end with recommendations to improve participation.

## 4. THE 14 HQE<sup>2</sup>R NEIGHBOURHOODS

The methodology and tools developed within the HQE<sup>2</sup>R project are being applied in 14 European neighbourhoods with two purposes. Firstly, to test and evaluate the methodology and tools and thereby obtain experiences that can be used for further improvement. Secondly, the application is intended as a necessary step toward the elaboration of an action plan in the neighbourhoods.

### 4.1 The typologies

For the purpose of the HQE<sup>2</sup>R-project 5 neighbourhood typologies have been identified. These 5 typologies constitute a framework for a somewhat rough characterisation of neighbourhoods. However, as chosen this framework allows for an analysis of the 14 neighbourhoods with some significance as to which typology they belong. For this relative small (14) sample a finer "resolution" of the typology grid would not have been of any added value. The 5 typologies are:

#### a) Inner City

Including the commercial and retail centre (city centre) and residential neighbourhoods adjacent to it.

#### b) Inner City – historical centre

The historical centre of the inner city.

#### c) Former suburbs

Former suburbs are primarily residential neighbourhoods constructed as suburbs but now surrounded by more recent developments (present suburbs). In some countries (e.g. Denmark) in these neighbourhoods - from the early industrialisation age between World War 1 and 2 - small local industries were often integrated with residential areas. This could also be areas now linking the first suburbs with the present suburbs, which means that they are likely to be post WW2 constructions, now surrounded by areas from the seventies and later.

#### d) Suburbs

Neighbourhoods lying on the edge of the city, mainly private housing or "edge-of-city" public housing estates.

#### e) Special areas to be rebuilt

"Harbour", industry (e.g. Vlissingen), railway and military land.

#### 4.2 The 14 neighbourhoods

The 14 neighbourhoods that take part in the HQE<sup>2</sup>R project have been categorised according to the above typology. This categorisation are as follows:

##### **Inner city:**

F1: Mimont – Prado – Republique – Cannes  
UK: Bristol - Barton Hill

##### **Inter city – historical centre:**

I2: Mantova – S. Leonardo  
E1: Manresa – Antic, Escodines, Vic-Remei  
E3: Barcelona – Raval / Ciutat Vella

##### **Former suburb:**

D: Dresden - Loebtau  
DK: Frederiksberg – Lindevangskvarteret  
E2: Barcelona - Bon Pastor  
F2 : Cite Viscose – Echirolles  
F3 : La Roseraie – Angers  
I3: Cinisello Balsamo – Crocetta-Cornaggia

##### **Suburb:**

I1: Melegnano - CIPES

##### **Special areas to be rebuilt:**

F4 : Centre Ville – Anzin  
Ne: Vlissingen - Scheldeterrein

## 5. WORKSHOPS AND WEBSITE

The results of the HQE<sup>2</sup>R project are presented to its target groups on a series of international workshops/conferences which also serve as important feedback to the project team. So far 2 conferences have been held – the first in 2002 in Vlissingen, The Netherlands which was a start-up event to inform the participating cities about the progress of the project. The second conference was held in March in Copenhagen, Denmark. A 3<sup>rd</sup> is planned in Mantova in September 2003 and the final event in Cannes in February, 2004. Another major dissemination activity is the project website, see below.

#### 5.1 The Copenhagen Conference

The objectives of the Conference were:

- to present the first results of HQE<sup>2</sup>R on the 3 selected topics (participation, methodology for a shared sustainable development (SD) diagnosis and SD indicators)
- to illustrate these topics by examples from case studies in different European countries
- to discuss the results and their potential use
- to collect feedback from delegates in order to improve our tools if necessary and to incorporate their needs in the further work of the HQE<sup>2</sup>R project

The Conference gathered from 9 countries (Denmark, France, Germany, Italy, Norway, Spain, Sweden, The Netherlands, and The United-Kingdom).

According to comments from several of the participants, "the conference achieved quite a good balance between informing people about HQE<sup>2</sup>R and hearing experience from other places", an example: the attendants from Manresa City expressed their interest in learning about experiences of different countries, even those not involved in the HQE<sup>2</sup>R project. The attendants were really engaged by the conference, shown by: questions, remarks, participation in the small group discussions, etc. This interest went on during coffee and lunch breaks throughout which people exchanged their experience and important feedback on the project was received.

The syntheses of the conference, condensed minutes of the discussions and the presentations can be found on the HQE<sup>2</sup>R project website, ref. 1.

#### 5.2 The Mantova Workshop

The international workshop "International Mobility, Urban Planning & SD Strategies for neighbourhood renovation - How Urban Planning can match Agenda 21, 8 – 9 – 10 September 2003 follows the other two international meetings organized by the HQE<sup>2</sup>R team: in Vlissingen (NL) and in Copenhagen (Dk). In both meetings the aim was to present the results of the work in progress of HQE<sup>2</sup>R project and to confront them with other experiences and European projects. This is the principal aim of this workshop, too. The research & demonstration work carried out until now allow us to define four different topics to discuss and present at the workshop:

- Sustainable Development, Agenda 21 and Urban Planning
- Methods and tools to evaluate the SD strategies at urban and neighbourhood level
- Tools for the SD renovation of built environment
- Sustainable mobility, waterway and urban development

At the workshop main results of International and European research on these topics will be presented during the sessions.

The conference is linked with Festivalletteratura, Mantova, 4-8<sup>th</sup> of September, 2003 and will be held at: Teatro Bibiena - Mantova (I)

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#### 5.3 The concluding conference in Cannes

A concluding conference will be held on February 2<sup>nd</sup> and 3<sup>rd</sup>, 2004 at the Palais des Festivals in Cannes at which the final results of the HQE<sup>2</sup>R project will be pre-

sented and discussed. The programme will be posted on the project website, ref. 1.

#### *5.4 The project website*

The project is still ongoing and the methodology and tools are continuously evaluated by the partners and through the use for the demonstration neighbourhoods.

This development is reflected in the project documentation which is updated accordingly. The project website, ref. 1, is offering the latest documents for downloading, enabling potential users to follow the progress of the project. Also available on the website are the Newsletters issued by the project, of which presently no. 1 and 2 have been completed, no. 3 & 4 are soon to follow.

#### **6. REFERENCES**

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