



MARKET IMPACT EVALUATION

ERRAC was set up in 2001 and is the single European body with the competence and capability to help revitalise the European rail sector :

- To make it more competitive
- To foster increased innovation
- To guide research efforts at the European level

ERRAC Project Evaluation Working Group (EWG)

Objectives:

- Determine the market impact of previous rail research to improve use of research funding
- Ensure a strategic approach to the prioritisation of rail research

Project Evaluation

- Individual projects are evaluated after they have been completed to ensure successful dissemination of project results
- To ensure that the results of previous rail research can be taken into account for future projects
- To avoid weak market uptake of results by learning the lessons of previous research
- The EWG will provide intelligence based on the project evaluations for input into future European Framework Programmes



ERRAC Project Evaluation Group

Sustainable Bridges

EVALUATION FROM JANUARY 2008

Project acronym:	Sustainable Bridges	
FP:	6	
Programme acronym:	FP6-SUSTDEV	
Project Reference:	TIP3-CT-2003-001653	
Call identifier:	FP6-SUSTDEV-2	
Total Cost:	€ 10,251,360	<input type="checkbox"/> Presented by: A. Lindner
EU Contribution:	€ 6,890,000	<input type="checkbox"/> Date evaluation: 28.05.08
Timescale:	December 2003 - November 2007	<input type="checkbox"/> Market uptake: Strong
Project Coordinator:	Ingvar Olofsson (Skanska Sverige AB)	<input type="checkbox"/> Follow up projects: None
Web references:	<u>http://www.sustainablebridges.net/</u>	<input type="checkbox"/> Other related Projects: UIC masonry arch



European Rail Research Advisory Council

ERRAC Project Evaluation Group

Sustainable Bridges

Sustainable Bridges – Assessment for
future traffic demands and longer lives



Sustainable Bridges

Objective:

- **to increase the transport capacity of existing bridges by allowing axle loads up to 33 tons for freight traffic with moderate speeds or for speeds up to 350 km/h for passenger traffic with low axle loads**
- **to increase the residual service lives of existing bridges**
- **to enhance management, strengthening and repair systems for existing bridges**



Sustainable Bridges Background

Details

- FP 6
- Total Cost: **10 235 000 €** .
- EU Contribution: **6 900 000 €**
- Start and duration: **12/2003 – 48 months**
- Scientific Coordinator: **Prof. Lennart Elfgren LTU Sweden**



Sustainable Bridges Background

Partners

- **Skanska Teknik, Banverket, Lulea University, Swiss Geotechnical Institute, BPE Systems AB, Designtech, Vägverket, Chalmers University, KTH, Lund University (SE)**
- **Networkrail, City University, University of Salford (UK)**
- **BAM, Deutsche Bahn AG, Universität Stuttgart, RWTH Aachen (DE)**
- **COWI (DK)**
- **EMPA, EPFL (CH)**
- **LCPC, SNCF (FR)**
- **North Finnish BC, University of Oulu, Finnish Rail Administration, Finnish Road Administration (FI)**
- **Wroclaw University, PKP (PL)**
- **Norut Technology (NO)**
- **Universidade de UMinho (PR)**
- **Universitat Politecnica de Catalunya (SP)**
- **Cervenka Consulting (TC)**



Sustainable Bridges Background

Tasks:

- **Develop new methods for the structural assessment of existing bridges to better estimate the real structural capacity**
- **Preparation of a guideline and background material for a new “code” for assessment**

- **Evaluation of echo techniques (impulse radar, ultrasonic echo, impact echo) for condition appraisal**
- **Produce a manual for bridge engineers helping to use NDT methods**

- **Develop new monitoring and measurement systems using modern IT**
 - **cost effective**
 - **multi-functional, easy to implement**



Sustainable Bridges Background

Tasks:

- **Develop and evaluate new repair and strengthening methods**
- **Develop easy-to-handle systems for quality assurance of repair and strengthening**

- **Demonstration of developed methods and prototypes on existing bridges**
- **Arranging workshop and seminars that focus on applying the new methods**



Sustainable Bridges EVALUATION

Links to other Projects:

- UIC masonry arch project

Follow-up Projects:

- Sustainable Bridges II ??
 - The consortium will answer FP7 calls

Sustainable Bridges EVALUATION

Achievements:

- Guideline with recommendations for assessment of railway bridges
- Toolbox with NTD methods to help the bridge engineer to better evaluate the bridge condition
- Monitoring guideline introducing techniques and giving advice on how to implement the system to get the relevant data
- Toolbox for repair and strengthening

Sustainable Bridges

Evaluation criteria:

1. Were the results implemented in the design of the new products and services? Were these new products/services put into commercial operation – **some of the repair techniques and monitoring systems will soon be commercially available**
2. Is new legislation and standardization based on findings from this research project – **not yet**
3. Are the results of the project implemented across Europe or only in a small number of Member States – **we expect that the guidelines or parts of the guidelines will be used all over Europe (especially in the “new” member states)**
4. Are the results of the project implemented outside Europe before being accepted in Europe – **unknown**

Sustainable Bridges

Evaluation criteria:

5. Did the projects increase competitiveness of the European railway sector abroad with regard to products, services, standards and system design – **not applicable**
6. Did the project increase competitiveness of the railway transportation compared to other transport modes – **generally bridges that allow higher axle loads and faster trains increase competitiveness but**
7. Are the results of the project taken into consideration when preparing public tenders – **no**
8. Does the implementation of the project results help facilitate cross-border operations by problem-solving in the domain of interoperability – **not right away : but if all European countries use the results to assess their bridges classification of bridges will be unified and bridges become interoperable**



Sustainable Bridges

Evaluation criteria:

9. Does the implementation of the project results help facilitate inter-modal operations by problem-solving in the domain of inter-modality – **no**
10. Can benefits be assessed in financial terms – **the results will help to prolong service lives of bridges and therefore save**
11. Applicability of results to future scenarios – **yes**
12. Usefulness of research procedures for future projects (incl. modeling) –

Sustainable Bridges - Reasons for outcome

- The existing railway network needs to meet the requirements of the growing market. The freight traffic will become heavier and higher axle loads will travel the lines with speeds up to 120 km/h, passenger trains with light wagons and speeds up to 350 km/h are planned. The lines are categorized but the bridges might not stand the higher loads. Assessing all existing bridges will be necessary within the next years; to be able to keep most of them in service new and reliable methods to determine the structural capacity are needed.
- There was a need to give advice on step-wise assessing bridges, considering condition assessment, re-calculation methods and parameters and repair methods.

Sustainable Bridges: Lessons learnt

- Having the survey with the relevant bridge data and definition of the objectives in more detail should be available before the project launch.
- Integrated projects work best if only a few partners are involved. Otherwise re-organization and re-allocation of money are very difficult for the consortium. It takes a long time before the partners can react on findings and/or changing demands.
- To incorporate UIC or CEN would be helpful for both better implementing the results in the member states and using the new findings in the standardization.
- In future research the maintenance aspects of the network should be looked at in more detail.