RESTRAIL

REduction of Suicides and Trespasses on RAILway property

Collaborative project

Assessment of suitable measures (technical and soft measures) for the prevention of suicides and trespasses

Merged Deliverable D2.3 & D3.2

Summary and Conclusions

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1. EXECUTIVE SUMMARY

a) Aim, objectives and scope:

This deliverable aims to present the most suitable soft and technical measures to prevent trespassing and suicides on railway property.

The objectives of the work conducted were to assess these measures taking into account the experience of infrastructure managers, railway undertakings and other users.

The output from WP1 was a range of different preventive measures that had been identified as potential solutions across the world. By applying the methodology developed in tasks 2.1/3.1, different types of approach were classified and potential measures were compared and assessed. The assessment took into account factors and information that could impact the success of measures if they were applied in different European environments, and drew conclusions on a list of measures defined as recommended and promising.

Since measures geared towards preventing suicide cannot always be clearly distinguished from those aimed at preventing trespassing, and as those measures were reviewed and assessed using the same process, experts and criteria, the decision was taken to make the output from tasks 2.2, part of 2.3 and 3.2 a joint deliverable. Discussions between experts and extended analyses and lessons learnt from participants' experience have revealed and/or confirmed that for IMs and RUs, suicide and trespassing are problems that are addressed together.

b) Method:

The assessment method common to WP2 and WP3 (cf. merged D2.1 and D3.1) was applied using WP1 results as input. WP1 results initially consisted of a set of 83 preventive measures against suicide or trespassing, either used already or proposed by project partners, national infrastructure managers (IMs) and railway undertakings (RUs). These measures were grouped into 38 families in which the modes of action for incidents and accidents were similar, using a safety barrier model. Subsequently the assessment was conducted in three phases:

- **Preparation of material**. Information regarding the implementation of families of measures and their effectiveness was sought and examined by an internal group of experts from WP2 (suicide) and WP3 (trespassing) using assessment forms. The internal group carried out an additional analysis to produce detailed examples of the type of information required for the effective assessment of the measures. This phase resulted in the 38 families of measures being associated with relevant evidence. One IM partner (PRORAIL) conducted an assessment of the 38 families of measures based on several criteria (durability, cost-benefit, impact on railway operations, transferability to other countries, integration with policy measures, impact on people, technological issues, environment issues, acceptance issues) and separately according to whether they were aimed at preventing suicide or preventing trespassing. Another partner (VTT) calculated an estimate of the likely effectiveness of each family of measures in those two contexts.

- **First assessment by a group of experts**. For each family of measures, the likely effectiveness and 11 criteria related to implementation were examined and where

necessary re-assessed during an expert group session involving WP2 and WP3 task leaders and expert guests from the advisory group and the rail sector. The session was held in Malmö, Sweden, on 16 and 17 October 2012. It resulted in a preliminary classification of the families of measures using preferences, effectiveness estimates and implementation criteria.

- **Second assessment**. Using the collected data and the preliminary classification, a second assessment was conducted with WP2 and WP3 task leaders and sector experts to agree on the criteria thresholds and the principles according to which measures would be classified as "Recommended" or "Promising". In addition, the group concentrated on the practicalities of implementation and the execution of a cost-effectiveness assessment. This phase resulted in a set of recommended and promising measures to be tested in WP5.

As well as being used for the assessment process, all the evidence collected was used to provide those who would be taking part in pilot testing in WP5 with an outline of the factors affecting the success of measures to be implemented.

c) Results: the final classification gives the following lists of recommended and promising measure.

For suicide, we identified the following families of measures:

ID	Family of measures	Classification
6	Surveillance and lighting to influence behaviour	Recommended
7	Detection system combined with sound warnings	Recommended
12	Targeted campaigns (including shock campaigns)	Recommended
25	Fences and barriers at specific parts of stations	Recommended
26	Fences and barriers at locations outside stations where people enter tracks	Recommended
2	Increased visibility by lighting at railway crossings, tunnels and hotspots	Promising
4	Increasing visibility through removal of vegetation	Promising
8	Surveillance to deter based on patrols	Promising
11	Surveillance based on local intelligence (e.g. from police, health authorities)	Promising
14	Mass media campaigns	Promising
15	Media guidelines	Promising
19	Training of staff - Gatekeeper training	Promising
29	Emergency information at stations (signs, posters, flyers, information on screens etc.)	Promising
35	Collaboration between organisations and agencies	Promising
36	Risk assessment (e.g. of stations, special circumstances, at risk groups or individuals).	Promising
37	Monitoring and learning from research and best practice	Promising
38	Local suicide and trespassing prevention plan	Promising

For trespassing, the following list was identified:

ID	Family of measures	Classification
13	Education and prevention in schools and outside of school	**Recommended**
25	Fences and barriers at specific parts of stations	**Recommended**
26	Fences and barriers at locations outside stations where people enter tracks	**Recommended**
31	Warning signs and posters to address trespassing	**Recommended**
8	Surveillance to deter based on patrols	**Promising**
12	Targeted campaigns (including shock campaigns)	**Promising**
14	Mass media campaigns	**Promising**
30	Prohibitive signs	**Promising**
36	Risk assessment (e.g. of stations, special circumstances, at risk groups or individuals).	**Promising**
37	Monitoring and learning from research and best practice	**Promising**

For both **suicide** and **trespassing**, general guidance is offered to support RUs, IMs and other stakeholders in implementing preventive measures. This is followed by a series of facts and lessons learnt from experience regarding each specific recommended or promising preventive measure.

An important part of the assessment is the cost-benefit analysis (CBA) of the measures. Due to how difficult it is to obtain all the necessary data and the homogeneous environment required for a CBA, in the context of RESTRAIL a less data-stringent cost-effectiveness analysis method is presented in section 4.4. In addition, one CEA example and one CBA example for two measures are presented in section 5.3. The two examples are given to illustrate these methods, which could be used for further assessments at the time of the final selection of measures to be tested in WP5.

2. CONCLUSION

The common assessment method described in D2.1 and D3.1 [3] has been successfully applied to the list of measures identified within the RESTRAIL framework.

This document describes the assessment procedure and the measures thus selected.

An initial set of 83 preventive measures to reduce the occurrence of suicide or trespassing, either used already or proposed by project partners, national infrastructure managers (IMs) and railway undertakings (RUs), has been grouped into 38 families of measures in which the modes of action for incidents and accidents are similar, using a safety barrier model. Since overlapping exists between preventive measures against suicide and trespassing, a model has been proposed to take into account shared and specific suicide and trespassing characteristics. The model also makes it possible to visualise how each stage of the suicide or trespassing processes can be linked to certain families of measures.

The 38 families of measures were assessed by a group comprising members of WP2, WP3 and external IMs. Each family of measures was assessed separately for suicide and for trespassing. A set of available data was used for the preliminary classification that allowed sector experts in a second phase to assess the principles for classifying measures as “Recommended” or “Promising”, i.e. effective, cost-effective, and free of shortcomings. Three main sources of information were used: the preferences of railway undertakings and infrastructure managers; estimates of impact at European level; weighted and individual scores according to 11 criteria representing implementation practicalities for each family of measures.

The cost-benefit analysis (CBA) of the measures is an important part of the assessment. So far RESTRAIL has used a series of data-stringent cost-effectiveness analysis methods presented in section 4.4. In addition, section 5.3 provides one example of a CEA and one example of a CBA for two measures. The two examples are given to illustrate these methods, which could be used for further assessments at the time of the final selection of measures to be tested in WP5.

The results of the work are a set of recommended and promising measures for testing in WP5, and an outline of the factors affecting successful implementation of the measures. In addition, implementation issues connected to the “Recommended” or “Promising” measures were also considered. The method has demonstrated satisfactory flexibility as well as a capacity to support the analysis and selection of measures.

For both suicide and trespassing, general guidance is provided to support RUs, IMs and other stakeholders in the implementation of the proposed preventive measures. Facts and lessons learnt from experience regarding each specific recommended or promising preventive measure complete the guidance.

Applying the method has also allowed certain challenges to be identified in assessing preventive measures in order to select the one(s) to implement in a specific context. The challenges were initially related to the high number of options, the heterogeneity of measures and the need to consider applying many of the preventive measures in combination rather than in isolation. Other significant factors were the lack of assessment and empirical data on the effectiveness of the different measures, and the incomplete data on trespassing-related fatalities in order to identify the nature and location of trespassing problems. Finally, there is potential negative and positive

interplay between measures against suicide and measures against trespassing, but to date documentation on the subject has been scarce.