



Trafi

Finnish Transport Safety Agency

Good practices to improve level crossing safety

Kirsi Pajunen, Trafi, Finland
Alok Kumar, IRSE, India

*Responsible traffic.
Bravely together.*

Data

- Survey
 - Expert opinions
 - Partly depending on the organisation of respondent
- Finnish study
 - 37 measures
 - Data on safety impact collected from international research
 - Target groups (all road users/motor vehicle drivers/pedestrians and bicyclists/(school) children)
 - Stability of measures (stable effect/stable if maintained/novelty effect/not known)
 - Types of measures (warning devices/warning lights/signs and signals/changes on road/risk analyses/awareness and education/regulation/other measures)

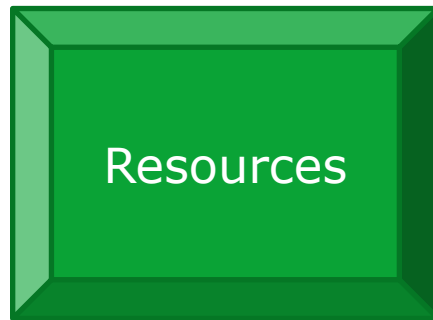
Data (cont.)

- Classification of measures (low tech engineering/high tech engineering/constructual measure/signs and opasteet/awareness and education/tool, process, procedure/other)
- Applicability (passive/crossings equipped with barriers/crossings equipped with lights and voice signals/crossings equipped with other warnign devices/crossings with traffic signals/low traffic volume on road/high traffic volume on road/paved road/unpaved road/electricity supply available/level crossing not in use or very seldomly used/other)
- Effectivity in different conditions (day light/dark/dusk/rain/snow fall/slippery/poor visibility)
- Costs (low, under EUR 5,000/intermediate, EUR 5,000-25,000/high, over EUR 25,000)

Data (cont.)

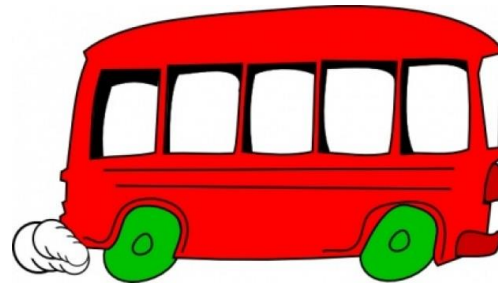
- Need of maintenance (only some maintenance needed/maintenance costs low compared to total costs/maintenance costs significant)
- Maturity of technology (available now/available in near future/development phase)
- Acceptability for road users, railway staff and inhabitants nearby (not opposed considerably/opposing possible/opposing probable)

LC expert



Road user

- Knowledge
 - Education at school
 - Education at driving school
 - Reminding
- Awareness campaigns
 - Leaflets etc
- Enforcement



Level crossing

- Approach
 - Understandable signs and markings
- At crossing
 - Passive and active signs
 - Markings
 - Speed humps
- Warning of approaching train
 - Barriers
 - Warning lights and signals
 - In-vehicle warning



Recommendations and next steps



Good Practice	Specific Measures (if applicable)	Pros	Cons	Other Relevant Factors or Comments
Removal of level crossings	Not applicable	Removes the safety problem locally	Very expensive; May not be physically possible considering the local road conditions etc	For safety impact the high risk crossings need to be removed. Assuring that the safety of nearby crossings or road network is not decreased.
Passive crossings updated to active	Passive to double barriers Passive to half-barriers Passive to active with low cost measure New technology solutions (e.g. in-vehicle warning)	Safety is improved Low cost measures working e.g. with solar panels	First two are expensive and need power supply	The safety impact is different for different types of warning devices. Double and half-barriers not applicable for small rural roads Research on new technology solutions needed
Making road users aware of proper behaviour at level crossings	Education at schools and driving schools Awareness campaigns Social media campaigns Leaflets etc. Giving information at fairs and other mass gatherings	Effect on the behaviour of the road users		Target groups need to be considered carefully Safety impact not really known, more research needed

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Good Practice (this is where the broad headings go)	Specific Measures (if applicable)	Pros	Cons	Other Relevant Factors or Comments (Subgroup and GE.1 to suggest)
Improving the surroundings at level crossing	Preventing driving around the barriers Having separate pedestrian and bicycle ways Speed humps			Safety impact and costs depend highly on the measure
Enforcement	Police presence Speed cameras at crossing Red light cameras at crossing Speed and/or red light cameras in the police vehicle			Quite new measure, safety impact not known, needs research

Next steps

- Possible addition of new measures from HF subgroup
- Updating and finalising the recommendations table
- Updating and finalising the report based on the comments received



Thank you!



Trafif

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Kumpulantie 9, 00520 Helsinki

PO Box 320, FI-00101 Helsinki, Finland

Telephone +358 29 534 5000

www.trafi.fi