

# LEVEL CROSSING SAFETY

## REVIEW AND ANALYSIS OF THE ECONOMIC COSTS OF LEVEL CROSSING ACCIDENTS

Geneva, October 2014

Jacek Wojciechowicz (PKP, PL)

Vojtech Eksler (ERA, EU)

# PROPOSED TAXONOMY OF COSTS COMPONENTS (TRB 755 REPORT)

Effect	Impact	Cost Component
<b>Primarily</b>	Direct	Property Damage
		Other direct costs
	Indirect	Work-related productivity loss
		Tax loss
	Intangible	Quality of life
		Pain and suffering
<b>Secondary</b>	Supply chain disruption	Rerouting and increased emissions
		Freight and passenger delays and reliability
		Increased inventory and its spoilage
		Prevention
		Lost sales

## *ESTIMATION OF COSTS OF LEVEL CROSSING ACCIDENTS IN UNECE COUNTRIES*

- ◉ In 7 out of 22 countries the costs of level crossing accidents are estimated at the national level.
- ◉ Estimations are conducted by various actors:
  - railway infrastructure managers (3 countries),
  - national railway companies (1 country),
  - national rail safety authority (1 country),
  - national statistical office (1 country), and
  - research institute (1 country).

# REASONS FOR ESTABLISHING LEVEL CROSSING ACCIDENTS COSTS AND COLLECTING RELEVANT STATISTICS

- input to national safety plan (2 countries);
- report to ERA under CSI data (2 countries);
- criteria for (EU) mandatory accident
- investigation (1 country);
- input to cost-benefit studies (1 country).

# TYPE OF COSTS

Type of costs	Nr of countries
Property damage costs	16
Rescue services	3
Insurance	3
Work related productivity costs	6
Costs of casualties	5
Environmental damage costs	7
Investigation costs	1
Costs of delays	7
Costs of rerouting	1
Prevention costs	1
Lost sales	1

# *ESTIMATION OF COSTS OF HUMAN LIFE IN UNECE COUNTRIES*

- ◉ In 6 of 22 countries the costs of human life are estimated at the national level.
- ◉ One country reported that VPF is used as a method (defined by the Directives 2004/49/EC and 149/2009/EC),
- ◉ One country provided reference to HEATCO study
- ◉ One country uses expert opinion to estimate at the national level.

# GOOD PRACTICES

- ◉ India: „The loss of human on Level Crossing is a loss to NATION because most of the death on Level Crossing in India is due to Accident of Train and Road Vehicle. It is worth mentioning that a person owning a vehicle must be a person above Mid-Income Group and he decided to cross track in hurry because he has value of Time.”
- ◉ Ireland: Values for economic indicators for various member states are given in the [ERA CSI Guidance](#)
- ◉ Russia: For Russia there is no single methodology of cost estimates. Assessment of costs in different regions is different.
- ◉ Belgium: ERA Guidance (study HEATCO 2008)

# CONCLUSIONS AND NEXT STEPS:

- ◉ The initial survey confirms that the costs of level crossing accidents are not systematically estimated in UNECE countries and that in those countries where it is done, not all types of attributable costs are covered .
- ◉ The methodologies for estimating costs vary substantially between countries and even within countries. Some countries provide reference to a common methodology for estimating railway accident costs contained in the EU legislation (88/2014/EU).
- ◉ Costs of casualties are estimated only in a few UNECE countries, others rely on estimates produced by external EU wide studies. ERA Guidance on CSI implementation has been quoted as a useful reference for a methodology and national fall back values of certain types of costs.

# CONCLUSIONS AND NEXT STEPS

---

- ◉ **Further action 1:** Available methodologies for estimating rail/road accident costs should be reviewed by the subgroup and a method should be proposed for the estimation of costs of level crossing accidents.
- ◉ **Further action 2:** Authors of the World Bank methodology should be invited to the next session of the Group of Experts to share their ideas on the development of the methodology.
- ◉ **Further action 3:** Available studies that produce estimates of economic costs of casualties should be reviewed by the subgroup and a recommendation to be made on their use in the absence of nationally established estimates.
- *The group should attempt to collect the data on exact costs for accidents at level crossings from a pool of UNECE countries in order to establish the typical contribution of single cost items to the overall costs of LC accidents.*