EuroRAP
EUROPEAN ROAD ASSESSMENT PROGRAMME

Case Study

B-Moldova
National Road M3 - Congaz

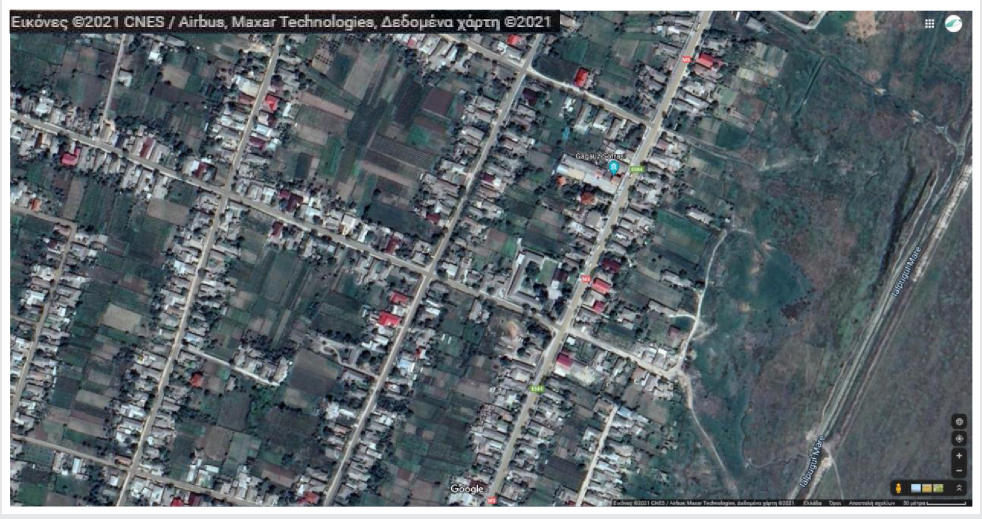
Case Study

The information in this case study has been provided by the Automobile Club of Moldova (ACM). Scene photographs and other information come from the report for the RADAR project[1] prepared for ACM. It is included here as part of the capitalisation of that project foreseen in the SLAIN proposal (section 2.2). The case study concerns assessment of a pedestrian crossing installation using the iRAP Star Rating for Schools (SR4S) methodology. From a network assessment perspective, surveys using the iRAP methodology have shown that in south-east Europe pedestrian crossings are often of a poor quality. 4,869 were surveyed in the 14 countries of the SENSoR study[2]: 2,151 (44%) were described as poor quality (77% in Moldova), either because of a lack or signing and marking, poor maintenance, issues that would cause difficulties for the driver to see them or because of general clutter in the surrounding round environment.

In Moldova, around 25 children are killed every year and another 100 are seriously injured in road crashes annually. The number of deaths and injuries among the younger age groups has dropped by almost 50% in the last 10 years but in relation to the population and overall number of road injuries the rate is still too high.

Even where schools and the areas around them attract a high road traffic flow (at the start and end of the school day), there is no clear and reliable policy of safe and accessible routes from home to school and vice versa.

This case study concerns a school (named "Nicolae Cebanov") at Congaz, near the high traffic volume M3 national road which passes through the village (Picture 1). The M3 has high volumes of traffic with a high percentage of heavy vehicles. Additionally, the M3 (as European Road E584) serves long-distance trips, with much traffic passing through built-up areas. The road alignment, when passing through Congaz (almost at its outskirts) is a long straight stretch. Most of the vehicles are through-traffic and the drivers entering the village of Congaz do not reduce their operating speeds sufficiently.



Picture 1. Location of the school at the village of Congaz[3] (Google Earth CNES Airbus)

[1] *http://www.interreg-danube.eu/approved-projects/radar*
Lead: partner European Institute of Road Assessment

[2] *Lawson et al.* Paper 0525, TC3.1, Proceedings of the XXVth World Road Congress organised by the World Road Association, PIARC, 2-6 November 2015, Seoul, Korea. Available at *https://s3-eu-west-1.amazonaws.com/irap-public-read/www.irap.org/assessments/2015/2015-SENSOR-report-PARC-Seoul.PDF*

[3] *https://www.google.gr/maps/place/46%C2%B005'53.8%22N+28%C2%B035'51.2%22E/@46.0987101,28.5953178,1550m/data=!3m1!1e3!4m6!3m5!1s0x0:0x0!7e2!8m2!3d46.0982855!4d28.5975579*

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The speed limit in the area of the school is 50km/hr and the operating speed approx. 60 km/hr. The Annual Average Daily Traffic (AADT) of the M3, passing through the village, is approx. 12,000 vehicles. Pedestrians may be found at both sides of the road (flow is around 60 pedestrians per hour during the school rush hours).

Problem Definition

The road safety hazards that were identified at the school "Nicolae Cebanov" in Congaz are:

- Low quality pedestrian crossing facility (badly worn road markings making it almost invisible (Picture 2) and a lack of supporting information to drivers)
- Vehicles parking close to the pedestrian crossing
- Inadequate sight distances
- Pedestrian sidewalk not connected to the pedestrian crossing
- Lack of the marking of the crossings, or very poor condition of the marking
- Absence of signs "Attention school zone"
- Vehicles speeding and not giving way to pedestrians
- Absence of a low-speed zone in the proximity of the school crossings
- Lack of speed calming measures, such as speed bumps.

Picture 2. Pedestrian crossing at Congaz (before upgrade)

Crash Data

Recording of crash data has made big steps in recent years but often the allocation of crashes to a geographical location or particular road is not done in a consistent and reliable way. It is therefore difficult to monitor potentially hazardous situations and to report on interventions such as road improvements. Data are though collected and available for larger-scale analyses such as those described below.

According to the data provided by the automated information system "Register of road crashes" of Moldova, during the period of 2015-19 there were 1,904 road crashes registered involving young people, as a result of which 87 children died and 1,951 were injured.

As regards the category of child road users, they were mostly involved in road crashes as pedestrians – 974 road accidents were recorded, resulting in 44 deaths and 917 injuries, accounting for 45% of the total number of road crashes in the entire country involving minors during 2015-19. In addition, children were frequently injured in road crashes as car passengers, in some 30% of such crashes in 2015-19 and resulting in 26 deaths and 595 injuries.

In the Gagauzia region, where Congaz is located, 74 road crashes were recorded in 2015-19, with 4 deaths and 67 injuries among the younger age groups. The highest risk group of road traffic users near the selected location are pedestrians, involved in 65% of the total number of road crashes involving younger age groups (0-19).

Countermeasures Implemented

Taking into account this specific location characteristics and circumstances, the following are noted:

a. the most important issue is to inform the passing through drivers that they are approaching a school area and a pedestrian crossing that many young children (ages 6-13), accompanied or not, are crossing the road at the start and end of the school day

b. a high percentage of drivers are on long-distance trips, passing-through the area, their speeds are usually higher than the speed limit, and it is widely-observed that they do not obey the traffic rules. Thus, signs alone would not have the anticipated effects on the drivers.

c. the pupils crossing the road are concentrated at specific time periods.

Countermeasures were proposed in two stages, initially the low-cost interventions and as a second step, ones requiring more budget.

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Stage 1 Measures

In order to provide at least some risk reduction immediately, a preliminary set of low-cost recommendations were made, accepted and implemented (see Figure 3):

- re-painting of the markings
- road marking “School”
- installation of warning signs “school zone”
- crossing supervisor presence during the rush hours.

Picture 3. Crossing supervisor on action (Stage 1 countermeasures applied)

Picture 4. Road markings (Stage 1 countermeasures applied)

Stage 2 Measures

- A second stage of countermeasures was recommended (in addition to the measures described above):
- Redesign of the crossing into a raised and marked pedestrian crossing
- Upgrading of the crossing quality (increase its conspicuity and visibility to drivers)
- Installing a low speed zone 30km/h during school times (with an anticipated 40km/h operational speed), supported by enforcement from local patrol police.

Road Assessment

The absence of satisfactory localised crash data for the reasons described above means that in drawing attention to the lack of safety around a school it is necessary to look to alternative methods. The Star Rating assessment for the selected location in Congaz was performed with the 'Star Rating for Schools' (SR4S) tool.

The area around the school was inspected. Based on the Star Rating result of the 'before' status, road treatments were proposed, in order to achieve at least 3 stars.

Baseline Assessment

The main attributes coded for the 'before' condition were:

- one wide lane each way with an undivided carriageway type, medium grip and medium road condition
- heavy traffic of around 12,000 vehicles per day and a lack of speed management
- lack, or poor quality of, markings, including school zone warnings
- poor crossing design quality and lack of calming measures
- high operating speeds (65km/h).

In the baseline condition before any countermeasures were implemented the Star Rating was 2-star.

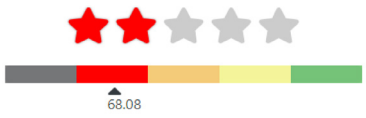

Figure 1. Star Rating Scoring (before status)

Stage 1 Assessment

After the initial countermeasures were implemented (Picture 5), a replication of the assessment occurred.

The Stage 1 low-cost measures involved repainting the crossing, installing warning signs 'School zone" and "Beware kids" and providing a school crossing supervisor at the start and end of the school day. The location achieved a 3-star rating (Figure 2) although it can be seen be seen that the road markings are of low quality and wore away quickly and that much would depend upon the role of the school crossing supervisor in reducing risk. Very little has been done to reduce the risk built-in to the road environment or to influence the behaviour of drivers or indeed of pedestrians. At most times of the day it would not be unreasonable to expect that the risk at this location would be little-changed.

During the month of September 2020, after the first stage low-cost measures were implemented, there were 0 incidents compared with 2 incidents in the same period of 2019. This is clearly an early analysis and the small numbers and short time period involved mean that the data are not robust or reliable. They may however be an encouraging sign of what to hope for from a fuller analysis.

Picture 5. Assessing the infrastructure with SR4S app (Stage 1 countermeasures applied)

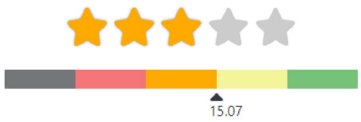

Figure 2. Star Rating scoring with low cost measures implementation

Stage 2 Assessment

The second stage analysis involved assessing the likely outcome if the following were implemented:

- Installation of warning signs 'School zone" and "Beware kids"
- Redesign of the crossing into a raised and marked pedestrian crossing
- Upgrade the crossing quality from poor to adequate
- Install a low speed zone 30km/h during school times (with an anticipated 40km/h operational speed), supported by enforcement from local patrol police
- Use the school crossing supervisor during the drop off and collection hours.

The proposed improvements would be anticipated to raise the Star Rating from 2-star to 5-star and to reduce the risks to minimum.

Figure 3. Star Rating scoring with moderate cost measures implementation

The measures proposed in Stage 2 would be a substantial improvement over Stage 1 but even they lack some of the quality and permanence shown to be effective in terms of injury reduction and giving pedestrians the necessary priority over passing traffic. For a meaningful transformation, this site probably requires the additional installation of a traffic signal-controlled crossing to bring traffic to a halt on demand and a refuge island in the carriageway. Some minor road realignment and other traffic calming may also discourage speed and make the speed limit self-enforcing.

Conclusions

When schools and the areas around them attract high road traffic flows and pedestrian activity it is necessary to have a clear and reliable policy of safe and accessible routes from home to school and vice versa. The infrastructure must also provide continuity for a safe journey.

From a network assessment perspective, pedestrian crossings in Moldova have been shown to be of a poor quality (77% in one study).

The iRAP Star Rating for Schools (SR4S) is an excellent tool to provide to decision makers awareness of the real problems and risks around schools.

In many cases, assessments point to deficiencies that will trigger the authorities to accept the necessity for road safety investment in infrastructure.

The existing crossing at this site was of very poor quality (almost invisible). There were no crash data conveniently available to highlight the risk at this location but the SR4S app was able to highlight the risk and show that some improvements would reduce that risk and therefore improve the Star Rating.

It is likely that substantial measures, beyond those already implemented or considered in the Stage 2 assessment, will be required to reduce crashes and injuries at this location in the longer-term.

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EuroRAP EUROPEAN ROAD ASSESSMENT PROGRAMME

SLAIN

The European Road Assessment Programme (EuroRAP) is an international not for profit association set up in 1999 and registered in Belgium that is dedicated to saving lives through safer roads.

The programme aims to reduce death and serious injury through a programme of systematic assessment of risk, identifying the major shortcomings that can be addressed by practical road improvement measures. It forges partnerships between those responsible for a safe road system – civil society, motoring organisations, vehicle manufacturers and road authorities – and aims to ensure that assessment of risk lies at the heart of strategic decisions on route improvements, crash protection and standards of route management.