

EXPLAINER

Improving Road Safety in Mongolia



Traveling into opposing traffic lanes often leads to head-on crashes on highways. Photo credit: ADB.
Installing wire-rope barriers to separate opposing lanes of traffic can reduce fatal road accidents by 95%.

Introduction

Mongolia is implementing a new road safety management strategy for its regional road corridors. Measures include installing wire-rope median barriers to prevent head-on collisions in the busiest national highway section of Ulaanbaatar-Darkhan.

This is part of the Regional Road Development Management Project supported by the Asian Development Bank (ADB), which aims to preserve and improve important regional road sections linking Mongolia's capital with the People's Republic of China and the Russian Federation. ADB's High-Level Technology Fund is financing the wire-rope median barriers.

The need for road safety features

Rapid motorization usually correlates to an increase in road deaths and injuries if serious action is not taken to improve road safety. In some countries in the Central Asia Regional Economic Cooperation (CAREC) subregion, the growth rate of vehicle ownership is high, particularly in the case of passenger cars in Azerbaijan, the People's Republic of China (PRC), Kazakhstan, and Mongolia.

Mongolia has a road network of about 100,323 kilometers. More road accidents have been recorded in the country in the last few years. In 2013, traffic crashes caused 597 deaths, which is above the world average. Speeding and low seat belt usage particularly by passengers contribute significantly to the

relatively high number of crash-related fatalities and serious injuries.

Major improvements have been implemented in Mongolia through new road construction and rehabilitation projects. However, if road accidents are to be held in check, essential road safety engineering features must be integrated in road expansion or improvement efforts.

For the black spots or the concentration of road traffic accidents in the most heavily used national highway section of Ulaanbaatar-Darkhan, a road safety feature, such as median barriers, can prevent violent head-on collision on a high-speed two-lane highway.

What is a wire-rope median barrier?

A test conducted by Japan's Ministry of Land, Infrastructure, Transport and Tourism in June 2018 showed that a median barrier with cables is the most effective method for preventing head-on collisions on highways.

Wire-rope median barriers separate opposing traffic lanes. This solution is made of three or four tensioned wire ropes, held in place by anchorages at each end, and supported at the ideal height by steel posts at spacings of between 2 and 3.5 meters.

The wire ropes deflect when struck by an errant vehicle and absorb the energy of the vehicle, causing it to slow down. The wire ropes guide the vehicle along the barrier while the posts progressively collapse when struck. The errant vehicle is redirected back in the direction of travel or slowed to a stop as it travels along the cables preventing a cross-median crash.

Considered as the most forgiving barrier system, this safety feature can reduce fatal crashes by 95%. They provide a lower risk of injury to vehicle occupants because the deceleration of the vehicle is relatively low compared with rigid and semirigid barriers. Wire ropes also cause the least damage to vehicles.

It's a cost-effective solution as its installation, replacement, and operations and maintenance costs are cheaper than the other barriers.

Moreover, wire-rope median barriers can also be installed within a narrow width and can be detached in case the median needs to be opened. The open design also prevents the accumulation of drifting sand or snow, both of which can be issues not just in Mongolia but also in other CAREC countries.

Scaling up socioeconomic benefits

Improvements in road safety can dramatically reduce deaths and injuries and also deliver significant social and economic benefits.

Using wire-rope median barriers is expected to increase the efficiency and safety of domestic and international transit traffic between the People's Republic of China and the Russian Federation through

Mongolia's north-south road transport corridor. This will promote inclusive economic growth through increased trade, as well as boost agriculture, agribusiness, and tourism. Mongolia has already initiated the National Program on Tourism Development, which will help establish the country as a global destination for nomadic culture.

What is the High-Level Technology Fund?

Under its Strategy 2030, ADB is mainstreaming the use of advanced technologies by carrying out pilot testing, strengthening project design, emphasizing quality in procurement, and mobilizing subject experts.

The High-Level Technology Fund was established in May 2017 as a multi-donor trust fund in ADB that provides grant financing to encourage more widespread adoption of high-level technologies to address development challenges in member countries. It is currently funded by the Government of Japan.

Following the premise that development impact can be profoundly improved with the right advanced solutions, the fund seeks to promote the integration of high-level technologies and innovative solutions into ADB-financed and administered projects. It also aims to connect technology providers with ADB's project officers and member countries to explore business opportunities for high-level technology integration.

Resources

Asian Development Bank (ADB). Mongolia: Regional Road Development and Maintenance Project (Additional Financing)

ADB. 2018. Roadside Hazard Management: CAREC Road Safety Engineering Manual 3. Manila.

ADB. 2018. Development of Road Safety Policy and Action Plan: Technical Assistance Consultant's Report.

ADB. 2017. Safely Connected: A Regional Road Safety Strategy for CAREC Countries, 2017-2030. Manila.

ADB. 2016. Development of Road Safety Policy and Action Plan: Technical Assistance Report.

High-Level Technology Fund Website.



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Lin Lu is responsible for the overall coordination of her department's activities in catalyzing innovation across sector and thematic areas as well as across operational and nonoperational departments through the One ADB approach. She is also fund manager of the High-Level Technology Fund. Previously, Lin led energy projects and technical assistance in Central, West and East Asia. Before ADB, she was business development manager at Hollysys Asia Pacific Ltd. She also worked as an electrical engineer and systems engineer in the United States. Lin holds a PhD in Mechanical Engineering from Drexel University.



Asian Development Bank (ADB)

The Asian Development Bank is committed to achieving a prosperous, inclusive, resilient, and sustainable Asia and the Pacific, while sustaining its efforts to eradicate extreme poverty. Established in 1966, it is owned by 68 members—49 from the region. Its main instruments for helping its developing member countries are policy dialogue, loans, equity investments, guarantees, grants, and technical assistance.



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