

EVWIAS

*Enabling the transition to e-mobility;
charge as you go*



How to enable mobility without accelerating climate change

Transport accounts for nearly **one-quarter** of global energy-related **CO2 emissions**. **Electric vehicles** are the **key technology** to **reduce air pollution** in densely populated areas and reduce **greenhouse gas emissions**.

Sales of electric cars topped **2.1 million** globally in **2019** but represent only **1%** of global car stock.

According to Bloomberg the size of the global EV fleet by **2030** is expected to be **116 millions** vehicles, **8 %** of total passenger cars on the road. China being the biggest market with **50 Million Vehicles**.



The enabler of E-mobility: Electric Road Systems

With an Electric Road System a **vehicle can be charged while travelling on it**. No need to find a parking with charging to fill-up the vehicle, **savings both in time and parking space**. It also prepares for the future of autonomous vehicles that does not need to do stop-over.

The cost-effective power supply is through conductive rails embedded in the road. It **makes electrification possible without** the need of **big battery packs**.

The system **works for all type of vehicles**, from heavy trucks and buses to smaller personal cars.

充电

车辆在行驶过程中即可充电

通用

乘用车、公交车和商用车均可使用

简便

可利用现有的基础设施进行改造

About Evias

Evias established in 2018 with the objective to commercialize the electric road system developed by the R&D company Elways AB.

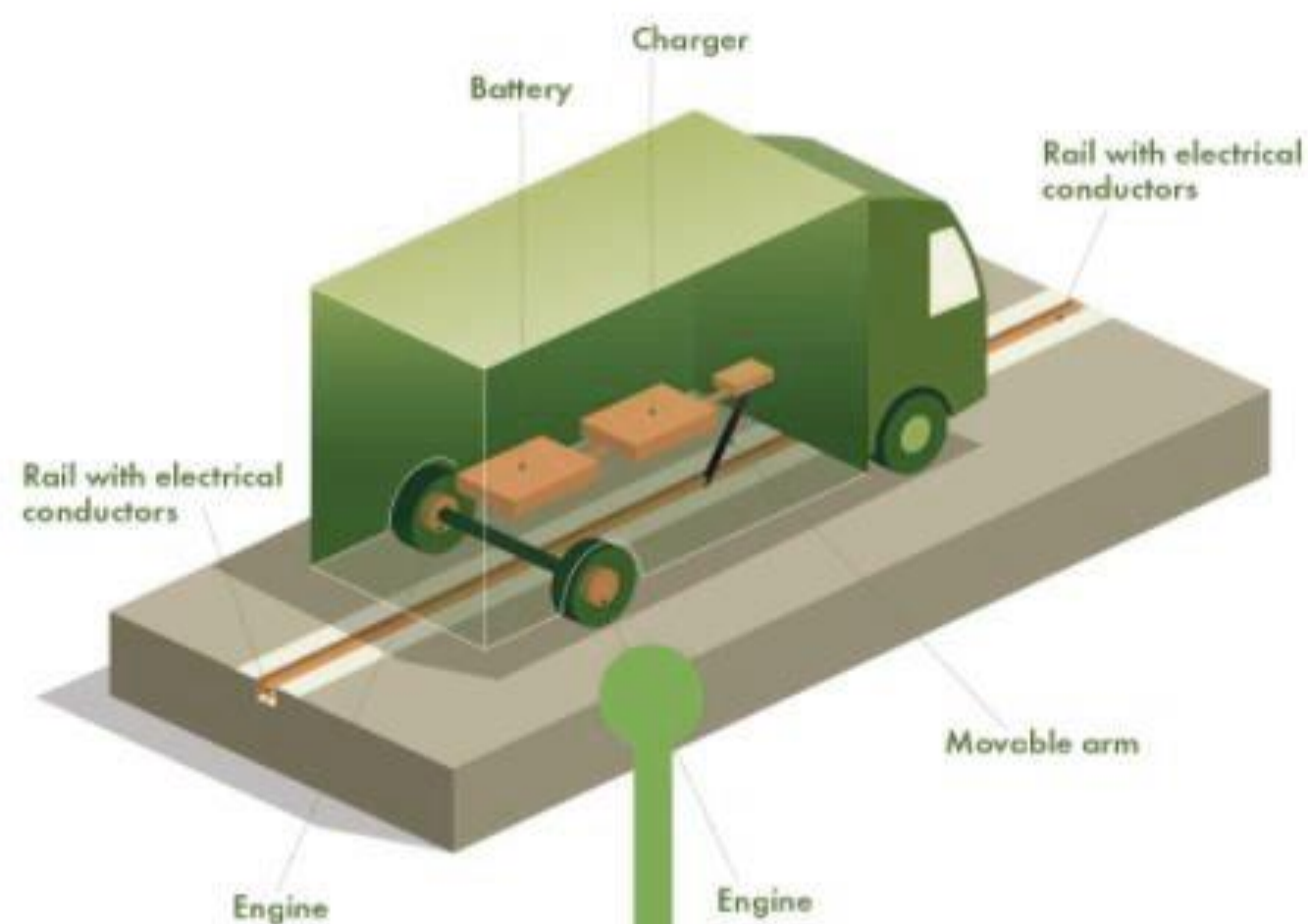
The vision is to **accelerate the transition to electrification of transportation** with an electric, sustainable, and intelligent infrastructure.

Elways was founded in 2009 by Professor **Gunnar Asplund**, one of the world's most famous inventors of practical science and technology with a background as chief designer for ABB Development Manager Project. He is also the **inventor of HVDC Light**.

Since 2012, Elways has upgraded the **intelligent electric road system** to the **fifth generation** and has performed extensive tests on a variety of vehicles on electrified roads. The company has developed and **registered patents** covering a wide range of eRoad systems, a total of 21 patent families and **76 patents**.

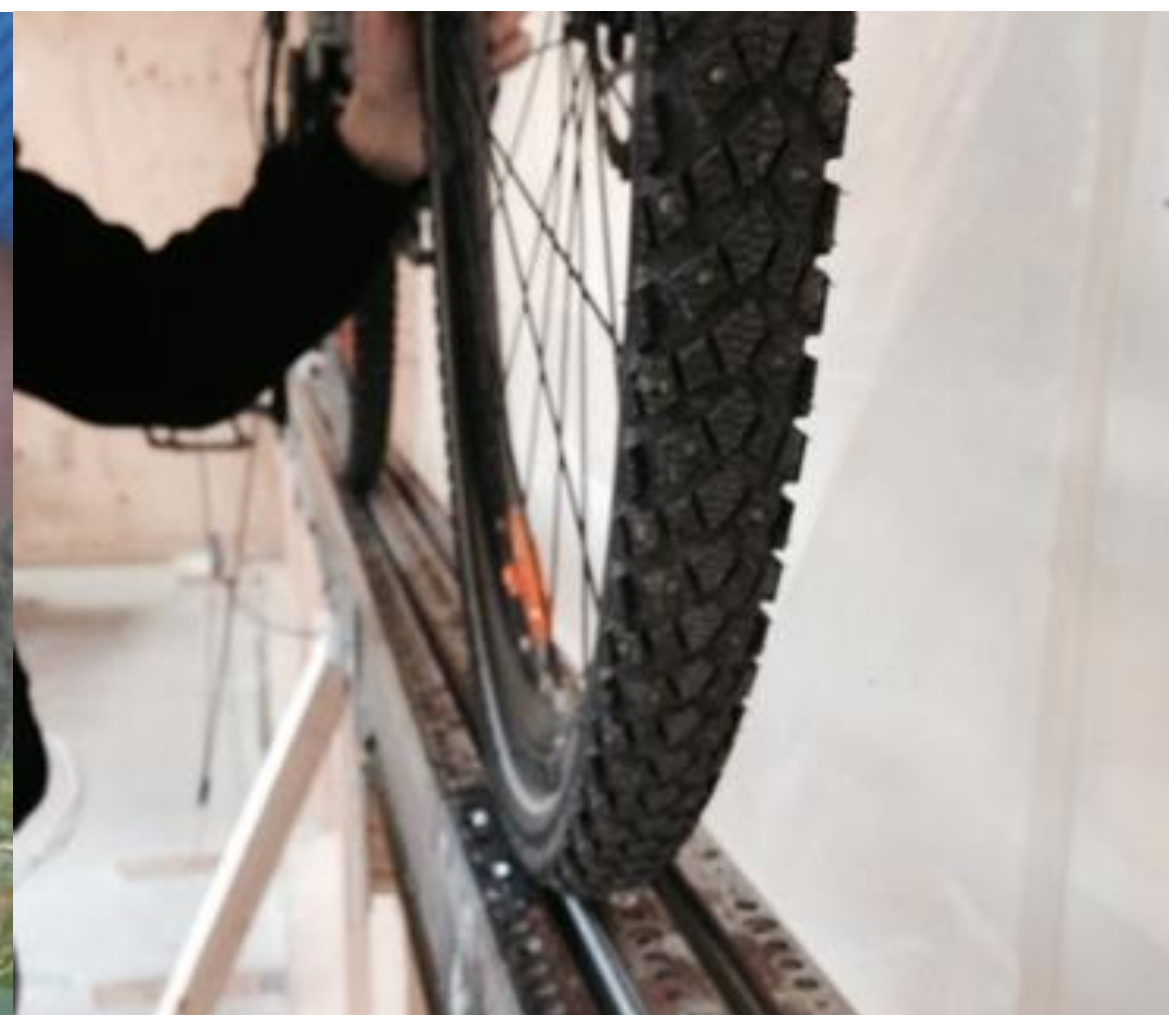
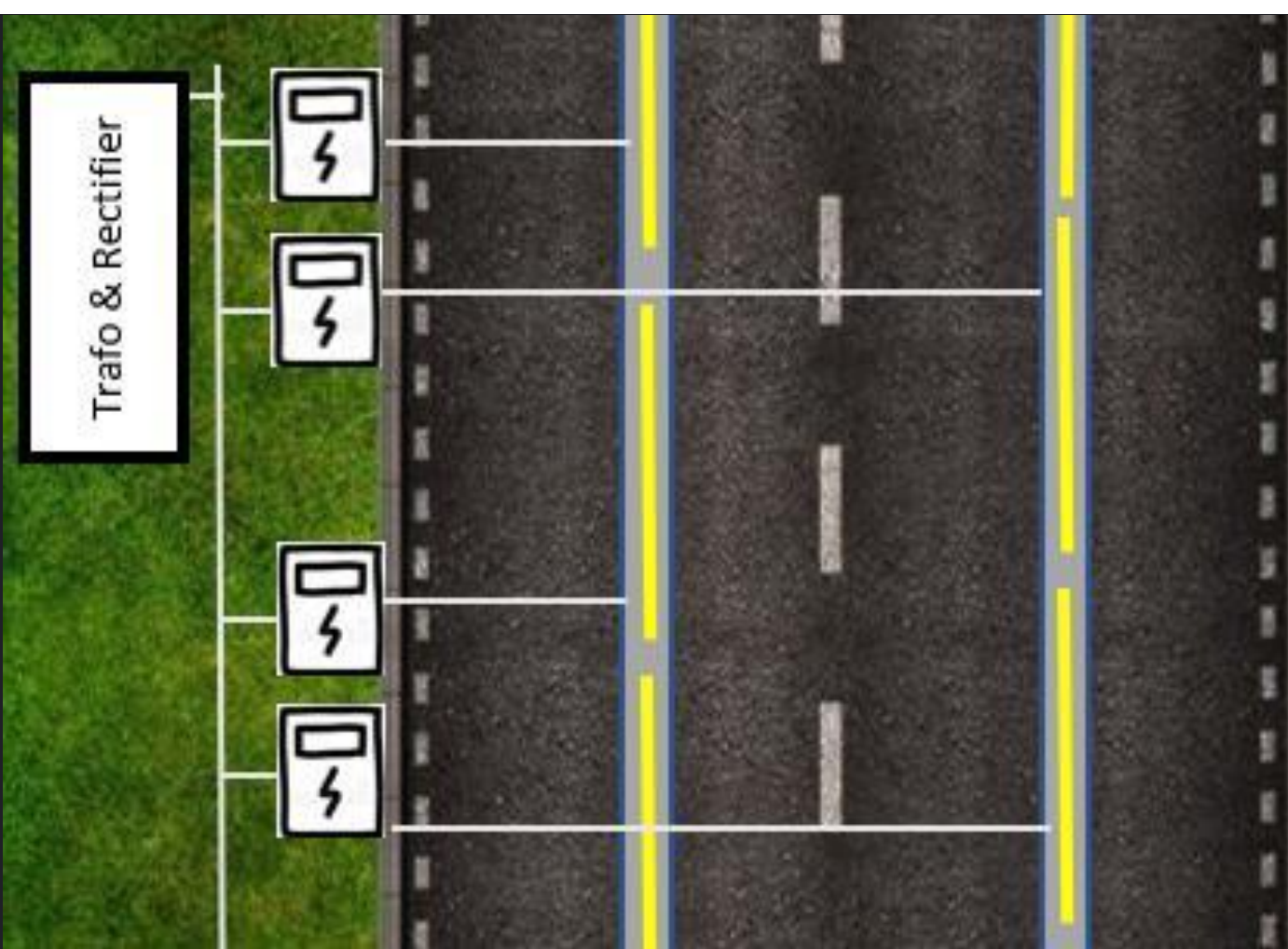
How it works

- The technical solution transfers **energy from a rail in the road to the vehicle**, using a movable arm.
- The **arm automatically detects the location** of the rail in the road and as long as the vehicle is above the rail, the contact will be in a lowered position. **When overtaking, the contact is automatically raised**
- Works for **all types of vehicles** from passenger cars to heavy trucks
- ERS is to be installed on **bigger roads/highways**, preferably at conjunction points. It can also be installed on private roads, in between to factories for example.
- Only **20 %** of the main roads needs to be **electrified** and none of smaller roads in between



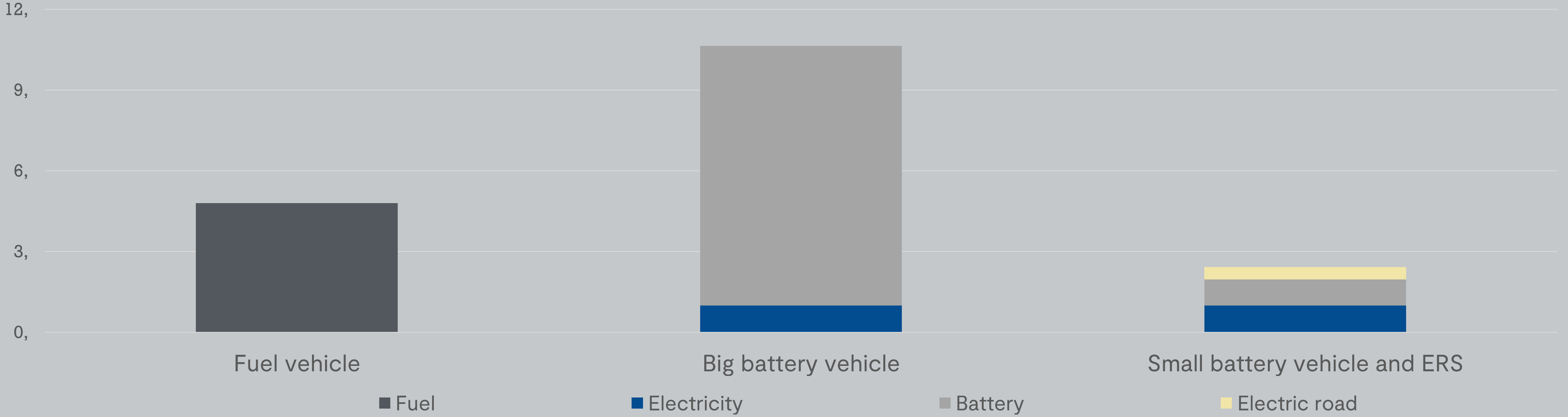
Safety

- The conductors are located deep down in the road and width of the trench is only 15 mm and makes it very difficult to reach the conductor. **Fingers are stopped about 5 mm above.**
- The upper part of the rail are electrically grounded
- Only **short parts of the rails are energized** during a short time
- The rail is designed so that **even the thinnest wheel (19 mm) of a racing bike cannot slip** down into the track.
- Test shows that there is **no dangerous voltage on the road even** when the track is **filled with conducting salt water** and the voltage is switched on. The **voltage measured** on the road was **less than one volt**.





Cost in SEK to drive 10 km



Cost saving: Electric alternatives vs. Fossil Fuel

The graph shows costs of driving ten kilometers. For fuel vehicles the cost is fuel. Big battery vehicles have cost for electricity and the batteries. Vehicles with small batteries on electric roads have cost of electricity, battery and part of investment in the electric road.



Project eRoad Arlanda

Installed in 2017, the eRoad in Arlanda is a **2 km** long electrified track on a public road. The project is a **part of the Swedish Transport Administration's** pre-commercial procurement of innovation, through which we are developing and testing the technology.

Located between the Arlanda Cargo Terminal and the Rosersberg logistics area and has been used by truck carrying PostNord freight in order to determine **how well the installation works under normal traffic conditions** in various weather conditions.

The investment in the eRoadArlanda project is in line with the Swedish government's target of creating a fossil-free transportation infrastructure by 2030-2050 and will help to boost Sweden's competitiveness.

Evias in China

Evias has a development office in Beijing. Currently we are **evaluating green projects** suitable to build a demotrack, similar to project eRoad Arlanda, with the target to showcase and try out the system in China.

The next step is to establish **partnerships with OEMs** and companies that can benefit from a faster and smoother way of charging vehicles.





More information:

Evias webpage: www.evias.se

or contact: info@evias.se

Read about the technology on Elways Webpage:

Chinese: www.elways.com.cn

Swedish: www.elways.se