

VTG AG POLICY BRIEF

December 2018

FUTURE TRANSPORTATION SOLUTIONS

Dear Sir or Madam,

Climate protection, one of the most significant areas of activity in this day and age, is once again at the center of public attention, as the Nobel prize for economics was recently awarded for research on climate change and the fossil-fuel phase-out is still the subject of controversial debate. The transportation sector plays a key role in this matter: where there is no transport revolution, there is no energy revolution! Electromobility offers a major lever for reducing CO2 emissions in the transport sector. In Germany, this is often associated with electric cars but the fact remains that **RAIL IS THE FORERUNNER OF ELECTROMOBILITY** and is well ahead of road transport in this field. Furthermore, rail, the most environmentally-friendly mode of transportation, can contribute to ensuring that alternative fuels are used in an optimal manner. You can find out how we make this possible in this policy brief.



I would also like to take this opportunity to wish you all the very best for the festive season and for the year to come. I am sure that, with our common energy, drive and assertiveness, we will continue to use the great potential that rail has to offer and strengthen rail freight transportation to ensure an even greener transport sector in 2019.

I hope that you find the brief to be an interesting and stimulating read.

Dr. Heiko Fischer
Chairman of the Executive Board

52 trucks
can be taken off the road and replaced by a single block train with LNG tank cars.

LIQUEFIED GAS & HYDROGEN: ALTERNATIVE FUELS FOR THE TRANSPORT REVOLUTION – TRANSPORTED BY RAIL

Whether it's freight or passengers, the primary method of transportation in Germany is by road – and, more than 98 percent of the time, this means using diesel or gasoline. But this is the worst conceivable solution for the environment! Thankfully, other drive types that emit considerably less pollutants do exist, offering alternatives which are far more environmentally-friendly. If they too can be transported by rail, we can all breathe a sigh of relief!

LIQUEFIED NATURAL GAS (LNG)

LNG may be a fossil fuel, yet considerably less pollutants are emitted during combustion when compared to conventional fuel types – around 15 percent less CO2 and even 80 percent less nitrogen to be precise. Particulate matter and sulfur dioxide emissions are almost non-existent.

HYDROGEN (H)

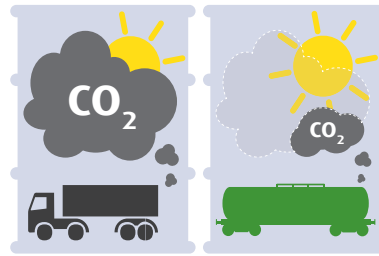
Whether it's combustion engines or fuel cells, hydrogen is a versatile fuel that causes no emissions as only water (steam) is emitted from exhaust pipes. In addition, the substance is available in almost unlimited quantities as no other chemical element occurs more frequently in our universe.



VTG BRINGS LNG AND HYDROGEN TO THE RAILS

The courage to innovate: VTG is both the first and only company in the railway sector that has developed a freight car capable of **TRANSPORTING LNG BY RAIL** to date. We know just how absurd and ineffective it is to transport such a clean fuel using conventional combustion engines on the road. In constructing the wagon, **VTG HAS ACTED ON ITS OWN INITIATIVE**, as there is still no terminal to load the fuel in Germany. Change in this regard cannot come soon enough! The **USE OF LNG AS A FUEL** is expected to increase to a significant degree in the future as, among other factors, the German Parliament decided to exempt gas-powered trucks from the obligation to pay tolls in October 2018. VTG has also already successfully transported hydrogen by rail. Besides the

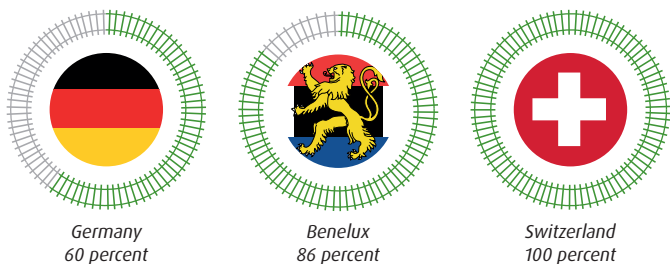
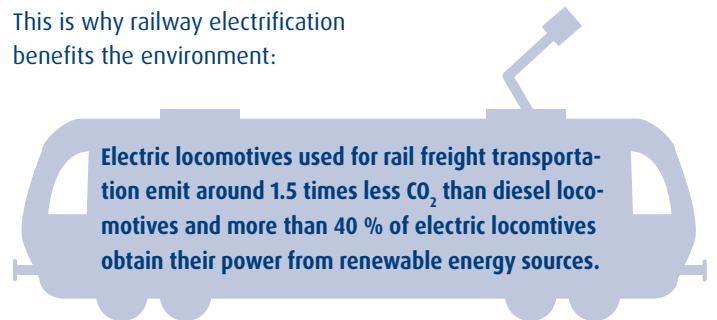
POSITIVE ENVIRONMENTAL PERFORMANCE (using rail freight saves an average of 80 percent CO₂ per ton kilometer in comparison to road transportation) another crucial factor which speaks for rail is that transporting hazardous goods (including LNG and hydrogen) by rail is, statistically-speaking, **40 TIMES SAFER** than by road.



FULLY-CHARGED RAIL: LET'S INCREASE ELECTRIFICATION!

Rail transportation is considerably more eco-friendly than road transportation. Yet, there is still room for improvement! **IN GERMANY ONLY AROUND 60 PERCENT OF THE RAIL NETWORK IS CURRENTLY ELECTRIFIED.** This equates to only a middle ranking when compared to other European countries: in the Benelux countries, up to 86 percent of railway lines are free of diesel and Switzerland is top of the class with an impressive 100 percent.

This is why railway electrification benefits the environment:



It is therefore even more significant that the German government set a **TARGET TO ELECTRIFY 70 PERCENT OF THE GERMAN RAILWAY NETWORK** in its coalition agreement. This intention must now be consistently pursued and the financial means for swift implementation have to be provisioned. It is also important to consider electrifying border crossings in the process because **RAIL POLICY IS ALWAYS SYNONYMOUS WITH EUROPEAN POLICY.** As a positive side-effect, electrification helps to enable Germany's overloaded route network to be used more effectively, as electrically-operated trains can brake and start up faster. What are we waiting for?

CONTACT VTG

Let's engage in active dialog! Feel free to contact us with all of your rail freight transport-related questions and queries. We would be glad to assist you and provide you with the facts, figures and estimates you may require.

YOUR CONTACT PERSON

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