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## Building a Successful and Sustainable Future for the Rail Industry

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Even when accounting for current commitments for decarbonisation, global transportation activity is expected to double by 2050, leading to a 16% rise in emissions.

The railway industry is a significant contributor to these emissions and while it is committed to change, there is still a lot of work to be done if long-term sustainability goals are to be met.

### Key Challenges to Sustainable Rail Transport

The International Energy Agency (IEA) reports that by **diversifying energy sources** and providing more efficient mobility, the rail sector can significantly lower fuel consumption, as well as reduce both carbon dioxide and local pollutant emissions. This is backed up by the International Transport Forum (ITF), which believes **transport carbon emissions can be reduced** by up to 70% through 2050 with support from effective policies.

The good news is that rail is already one of the most energy-efficient ways to transport goods compared to alternatives such as air travel and automotive vehicles. Yet, there still remain some significant barriers to making rail transport as sustainable as it can be.

For this reason, organisations such as the International Union of Railways (UIC) are working to promote more sustainable infrastructure. They are doing so through

the use of resources such as concrete, steel and water, etc, that reduce external costs through careful monitoring and noise control, as well as reducing airborne particulates.

However, in order to succeed, the drive for sustainable rail transport must outpace the growth in emissions caused by increasing transport demand over time.

About three-quarters of passenger rail travel currently takes place on electric trains, making rail the only mode of transportation widely electrified today. However, despite being less polluting for the communities they operate in, electrified railways still rely on pollution sources such as coal or gas-fired power plants for electricity generation unless renewable energy or nuclear power options are available.

Resource scarcity is therefore another major factor for the industry to consider. Especially, as currently, humanity **uses resources 50% faster** than nature can regenerate them, while some resources will not regenerate at all.

### Solving the Sustainability Conundrum

Sustainability is defined as ‘fulfilling the needs of current generations without compromising the needs of future generations, while ensuring a balance between economic growth, environmental care and social well-being’. With this in mind, the rail industry is well-positioned to build on its inherent efficiency and become a leader in the sustainable transportation

sector. Here are some key considerations when planning for the future of the rail industry:

## Shift Modes

Rail freight is often limited to moving high volumes of heavy commodities, but there's so much more opportunity to shift freight from roads to rail.

For example, 65% of freight in the US moves by road, compared to just **8% by rail**. According to the **Association of American Railroads**, if 25% of the road traffic moving at least 750 miles was moved by American railroads instead, annual fuel savings would be around 1.2 billion gallons, and annual carbon emissions would fall by approximately 13.1 million tons. That's the equivalent of taking 2.6 million cars off the road for a year.

From a passenger perspective, railway infrastructure must be constructed efficiently and powered by more renewable energy sources, as well as offer attractive onboard services to lure people away from higher-emissions alternatives.

## Improve Collaboration

Transport decarbonisation must be integrated with developments in other sectors. Sustainable mobility is only possible with clean energy. At the same time, low-carbon transport is central to sustainable trade and tourism. For example, in China the IEA has proposed a railway expansion project that could **decrease transport emissions by 12%**.

The rail industry must also work with other transport providers, customers and passengers, urban planners and stakeholders to make transportation part of a sustainability platform through greater adoption of rail.

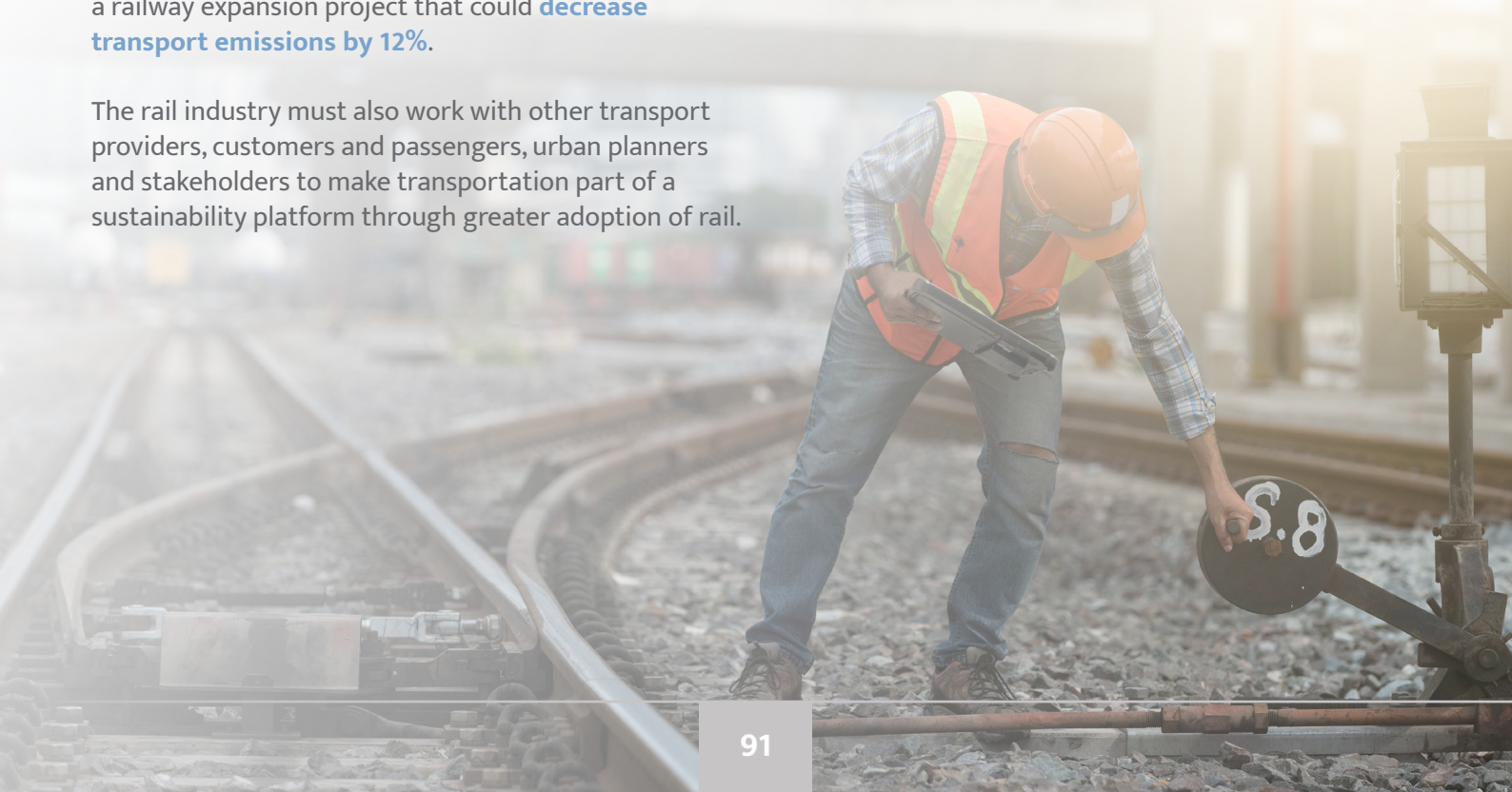
## Technology Innovation

**New technologies** can also improve train operations and sustainability with minimal investment. For example, **reducing idling** while waiting for passing trains to enter or exit freight yards can keep services moving while lowering emissions. Similarly, using **rugged mobile devices** to inspect railway carriages and track repairs, and work effectively in the field helps maintain efficiency with current assets and reduce the need to build more.

In the passenger sector, rail operators can employ rugged mobile devices to put information and controls closer to the front lines for faster response. For example, station employees can monitor environmental conditions in real-time to optimise passenger comfort and safety. Workers with rugged tablets can also make faster, more data-driven decisions on the spot, leading to better levels of service across the board.

As the global demand for transportation continues to grow at an unprecedented rate, the rail sector is perfectly positioned to capitalise by offering a more sustainable, environmentally friendly alternative to air and automotive travel. However, the sector must also embrace cleaner, more renewable fuels, and invest in the latest technological innovation if it is to achieve its own sustainability goals in the months and years to come.

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