



TELEMATICS AND FLEET SUSTAINABILITY

The Perfect Pairing For a **Greener
Future**

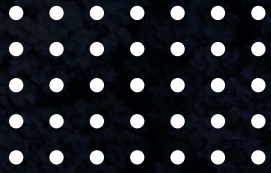




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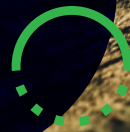


In this playbook about the Impact of telematics on fleet sustainability, you will gain a deeper understanding of:

- The benefits for businesses that rely on telematics
- How telematics can support the transition to EVs
- A look at global CO2 emissions
- Future trends that will shape fleet sustainability



Setting the Scene





Sustainability is a hot topic of great importance, and organizations that have effectively implemented strategic programs with the view of reducing CO2 emissions, have set themselves up for long-term success.

Besides assisting in combatting global environmental challenges and fostering social change, sustainability can contribute to a business's overall viability. For example, businesses with a high Environmental, Social, and Governance (ESG) score have a lower cost of debt and equity. Sustainability initiatives can improve a business's financial performance while fostering public support¹. Additionally, these businesses regularly outperform the market in both the medium and long-term².

A strategy that includes sustainability key performance indicators, can drive profitability by decreasing operating costs. This is achieved through effective risk management and more efficient operations, as well as gaining a competitive edge through long-term sustainability initiatives that transcend several areas or teams within an organization.

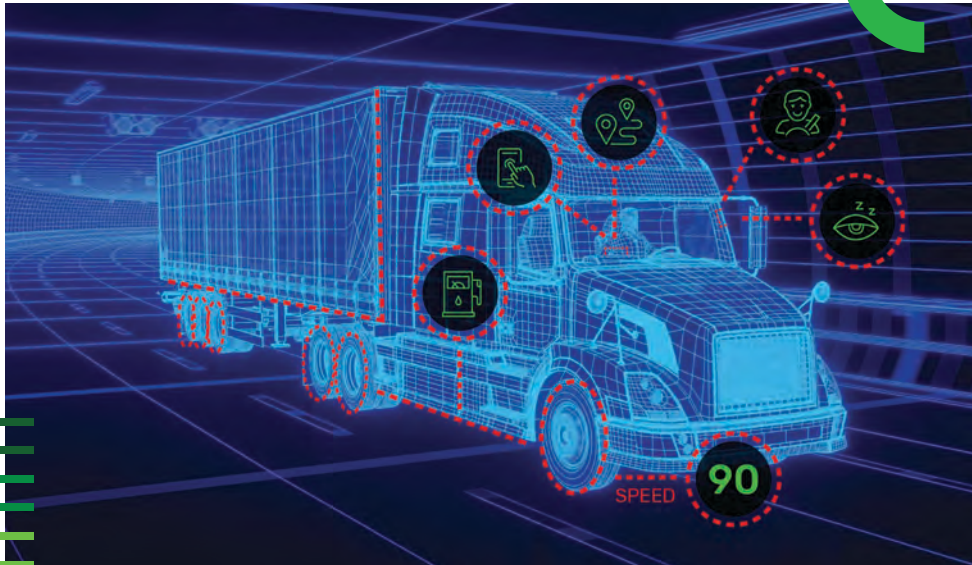


This is also true for fleets.

Telematics technology is a powerful tool in a fleet manager's arsenal and is primarily used to improve safety, efficiency, compliance, security, and sustainability. The beauty is that telematics is not a new ally in the efforts to reduce CO2 emissions, but one which may not have been considered before now.

¹ Spiliakos, A. (2018). What Is Sustainability in Business? | HBS Online. [online] Harvard Business School Online Blog

² McKinsey: Profits with purpose: How organizing for sustainability can benefit the bottom line



Telematics tech tracks a range of connected metrics in real-time. Driver behavior is monitored, and performance is tracked, fleet locations of all assets and vehicles can be accessed, while engine diagnostics for preventative maintenance and the optimized route planning further aid a business that uses this technology.

But have you considered how this technology can help propel sustainability efforts?

Besides delivering on increased efficiencies and reducing fleet operating costs, telematics also enhances a business's sustainability initiatives by reducing a fleet's energy consumption and carbon emissions.

Get ahead of the curve now – understand your operating environment, the impact that your business has on local and global carbon emissions and then develop use cases that make sense for your longevity. The best approach in our opinion is a collaborative one where technology partners like **MiX Telematics can become a positive force in your sustainability efforts.**



An aerial photograph of a multi-lane highway. A white semi-truck with a blue cab is traveling in the center lane. The highway is flanked by dense green trees and foliage. A dark blue banner with white text is overlaid on the bottom left, and a green circular graphic is on the bottom right.

Telematics + Sustainability: A Game-Changing Collaboration





As mentioned, fleet companies or businesses that benefit from telematics technology, often deploy long-tail investments to ensure that their operations remain safe, profitable, and efficient.

However, the strength of using telematics to reinforce and support sustainability efforts is unquestionable.

- **Identify opportunities to reduce waste with data:** fuel inefficiency is one of the biggest problem areas in fleet businesses and can increase the carbon footprint considerably. The main contributor to this wastage is poor driver behaviors like harsh acceleration and excessive idling. According to the US Department of Energy, an idle-heavy duty truck can burn up to 0.8 gallons of fuel per hour.

That's considerable when thinking about long-haul trucks averaging 1,800 idle hours per year. Another great way to reduce wastage with the telematics-derived data is by optimizing routes for vehicles – this goes far to alleviate bottlenecks on job sites and keep customers happy.

- **Better regulatory compliance:** as governments enact regulations to reach their net-zero targets by 2050, in line with the [Paris Agreement](#), integrating sustainability initiatives into your business positions it to meet changing regulations preemptively.



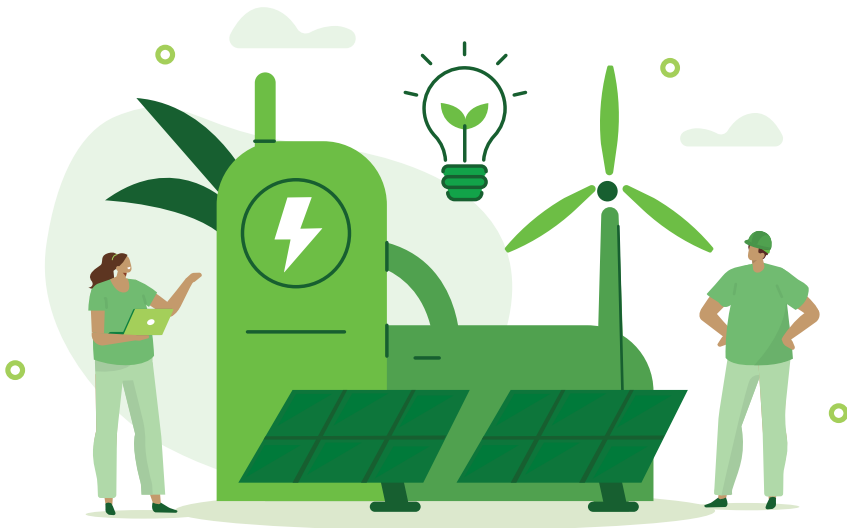
- **Awareness of engine errors:** like the way that OBD (onboard diagnostics) technology can be used to monitor driving habits, it can also point out how an engine is performing and whether maintenance should be completed in the future to limit costly and unexpected downtime. Further to this, connected telematics systems can monitor engine errors that lead to excessive CO2 emissions.



- **It boosts employee morale** by incorporating sustainability into day-to-day operations, and the mission impact statement goes a long way toward improving employee morale, recruitment, and retention. A company with strong ethical and environmental values fosters employee loyalty, pride, and satisfaction.

The benefits of telematics technology in the effort to reduce harmful CO₂ emissions have been demonstrated across several key sectors.

One such sector is EV vehicle manufacturers, as well as fleet leaders considering the switch from fuel-powered engines to battery-operated fleets.



The environmental benefits of which are innumerable, but the question that fleet leaders are faced with is whether there's a strong enough business case to switch to EV?

In the following section, we try and unpack this further with practical information.



What are the pros of an EV fleet?

The information from connected vehicles is integral for enhancing a fleet's fuel economy and overall efficiency to meet sustainability targets. However, this is largely based on fuel-powered vehicles with a measurable carbon footprint. For example, in 2018, the transportation industry emitted an estimated 8.26 gigatons of CO2 emissions globally, or about 26% of global emissions³.

Since the transition to EVs, fleets have started attaining real sustainability success. The likes of which include lowering greenhouse gas emissions by between 1 and 2 billion tons every year⁴.

The benefits of switching to an EV fleet are numerous, and besides the evidential impact on the environment, we've highlighted other considerations:

It significantly reduces your fuel costs: saving some money at the fuel pump is great, but EVs offer significant savings when

compared with their fossil-fueled counterparts.

For example, it costs 70% less to fuel and maintain EVs than a comparable internal combustion engine⁵.

The main reason for these savings is that electricity, in some countries, is cheaper compared to the most affordable (available) fossil fuel.

Additionally, EVs house 100 times fewer moving parts than internal combustion engines, which means they have fewer parts to service and replace, making them easier to maintain⁶.

EVs rely wholly on electric power, so their fuel economy is measured differently from conventional vehicles.

³ International Energy Agency: Global CO2 emissions by sector, 2018.

⁴ Stanford Earth Matters Magazine: Climate Change, Human Dimensions and Sustainability.

⁵ Applied Energy: Total cost of ownership and market share for hybrid and electric vehicles in the UK, US and Japan.

⁶ Smart Prosperity Institute: Four reasons why cheap gas prices will not stall the electric vehicle market.



The standard metrics for measuring an EV's fuel economy are Miles per Gallon of gasoline-equivalent (MPGe) and kilowatt-hours (kWh) per 100 miles.

Depending on how they are driven, today's light-duty EVs can exceed 130 MPGe and can drive up to 100 miles consuming 25–40 kWh.

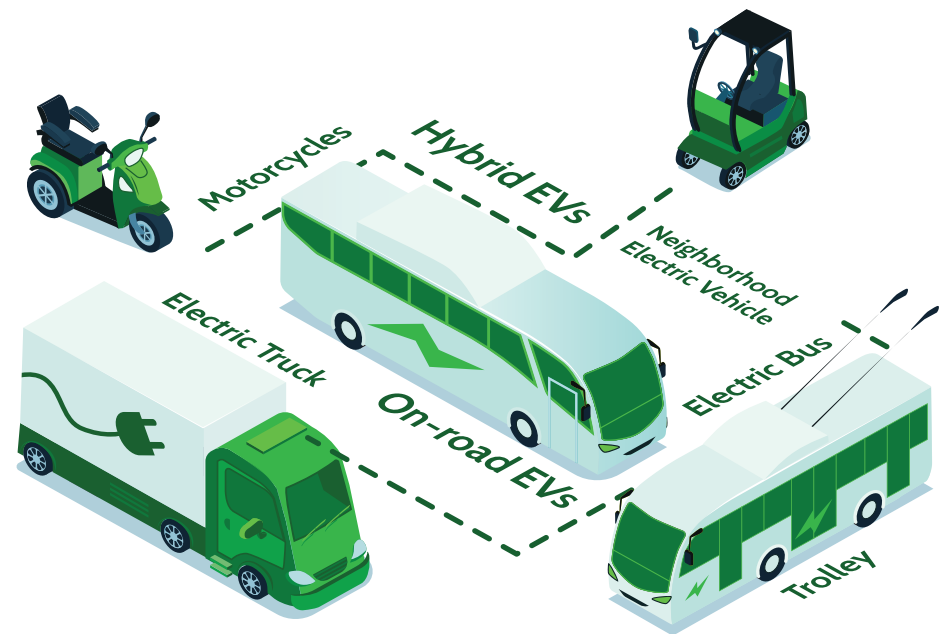
The fuel economy of medium- and heavy-duty EVs is dependent on the load carried and the duty cycle.

However, in suitable applications, EVs maintain a significant fuel-to-cost advantage over conventional counterparts⁷.

Good mileage per charge: a majority of new EVs in the market have a range of at least 300km, more than enough to sustain the efficiency of your fleet operations as they enhance a fleet's flexibility, reduce fuel costs, and maximize the use of vehicles and drivers.

Improve your value proposition for customers: replacing your entire fleet with EVs will exude an impression that your brand is forward-focused, tech-savvy, and cares about the environment.

Establishing charging priorities and maintenance schedules: telematics data can help establish a charging schedule for EV fleets based on operational schedules. This maximizes the efficiency of the drivers and routing schedules. Furthermore, telematics technology sends data and notifications about the problematic areas and regular maintenance reminders, reducing safety-related risks or unnecessary downtime.



⁷ U.S Department of Energy: Electric Vehicle Benefits and Considerations.



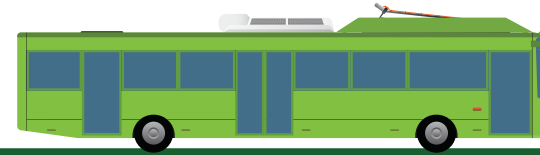
Barriers to EV adoption

Adopting EVs offers increased energy security by reducing carbon emissions. However, significant technical, social, and economic barriers to the widespread adoption of EVs exist, including:

Price:



The initial costs of EVs are still significantly higher than those of ICE vehicles, although the investment can be offset when government incentives are leveraged. Manufacturers predict cost parity by 2025 and are working with the battery production supply chain to improve efficiency in the system. Furthermore, once installed, and operational, EVs and plug-in hybrids have lower operating costs as a holistic system.



Range:

The distance EVs can travel without charging, also known as range anxiety, is a primary concern for fleet managers. Vehicle ranges are constantly increasing as technology advances. For example, the newest sedan and light-duty truck models scheduled to be released through 2025 have a range of approximately 250-300 miles per charge⁸.



Charging Infrastructure:

Users cite not having adequate access to efficient charging infrastructure as one of the top barriers to entry. Although, OEMs are championing the cause to improve and increase infrastructure and charging stations in major cities and along major routes. Quick charge capabilities are an important development in this industry and can disrupt the apparent barrier to entry where infrastructure is concerned.

⁸ Element: The Top Three Barriers to Electric Vehicle Adoption.



A Global Challenge



An estimated **50-billion tons** of greenhouse gases are emitted by the world annually, measured in carbon dioxide equivalents (CO₂ep)⁹.

Global emissions, since 2000, have increased exponentially and reached a record high of **36.7 billion** metric tons in 2019. However, in 2020, global emissions declined by **5%** to **34.81** metric tons from **36.7** metric tons in 2019 due to the COVID-19 pandemic¹⁰.

Additionally, there has also been a considerable decrease in carbon emissions per capita in 2020, dropping to an average of **4.47** metric tons per person¹¹.

As a result, it is estimated that global fossil emissions will be **36.4bn** tons of CO₂ (GtCO₂) in 2021, which is only **0.8%** below the pre-pandemic high of **36.7** GtCO₂ in 2019¹².



⁹ Our World in Data: Greenhouse gas emissions

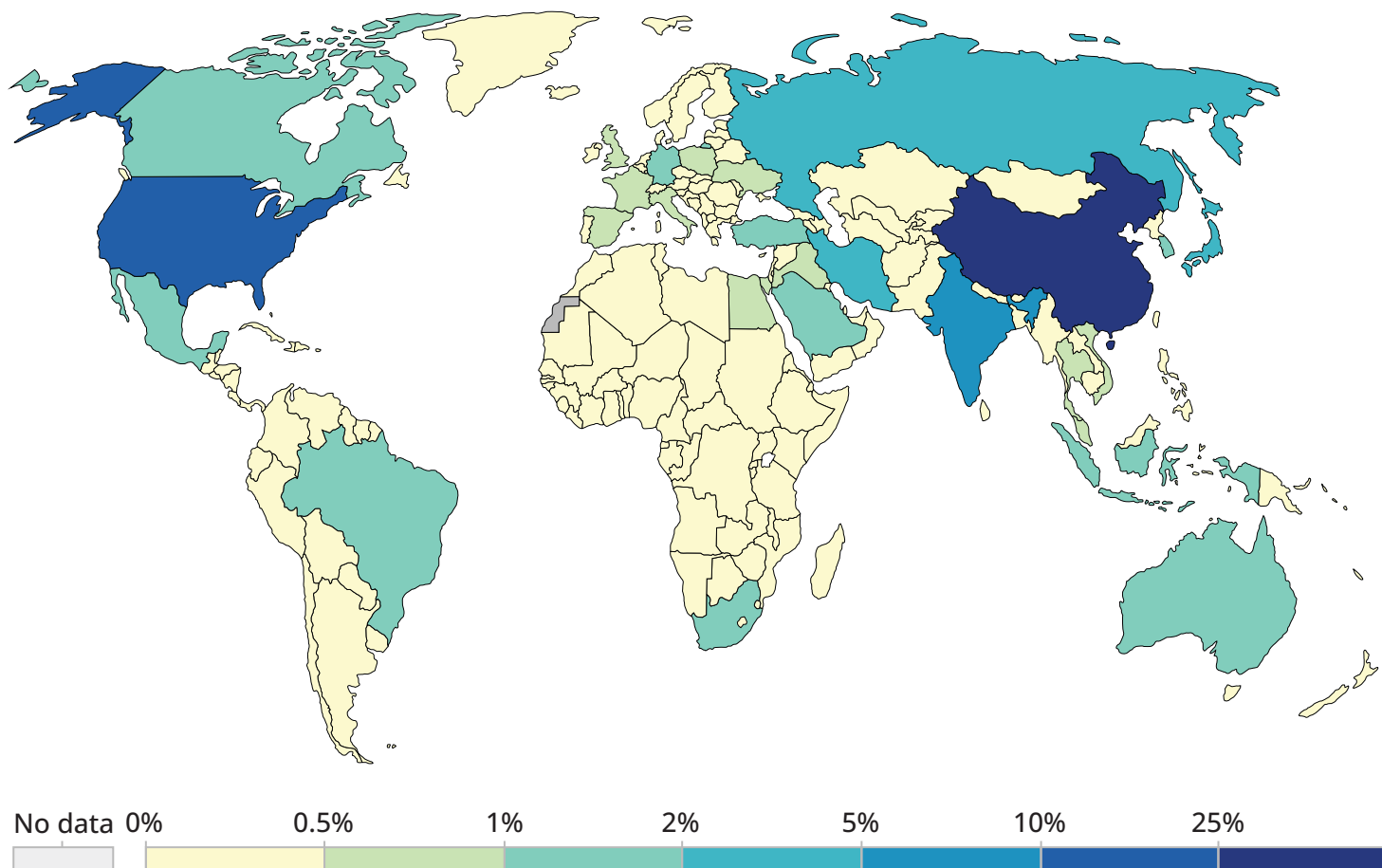
¹⁰ Global Carbon Budget 2021

¹¹ Global Carbon Budget 2021

¹² Global Carbon Budget 2021



Below are the total global CO₂ emissions for 2020:



Source: Our World in Data based on the Global Carbon Project | OurWorldInData.org/co2-and-other-greenhouse-gas-emissions | CC BY

Our World in Data

Annual share of global CO₂ emissions

Each country's share of global carbon dioxide (CO₂) emissions. This is measured as each country's emissions divided by the sum of all countries' emissions in a given year plus international aviation and shipping (known as 'bunkers') and 'statistical differences' in carbon accounts.



Where do CO2 emissions come from? A sectoral look

To figure out how we can most effectively reduce emissions and what emissions are avoidable and not given current technologies, we need to understand where our emissions come from.

Energy (electricity, heat, and transport) = 73.2%

- Energy use in industry = 24.2%
- Transport (with road transport equating 11.9% of the total) = 16.2%
- Energy-related emissions from the production of energy from other fuels = 7.8%
- Fugitive emissions (often-accidental leakage of methane during oil extraction) from Oil and Gas = 5.8%
- Energy use in agriculture (machinery) = 1.7%



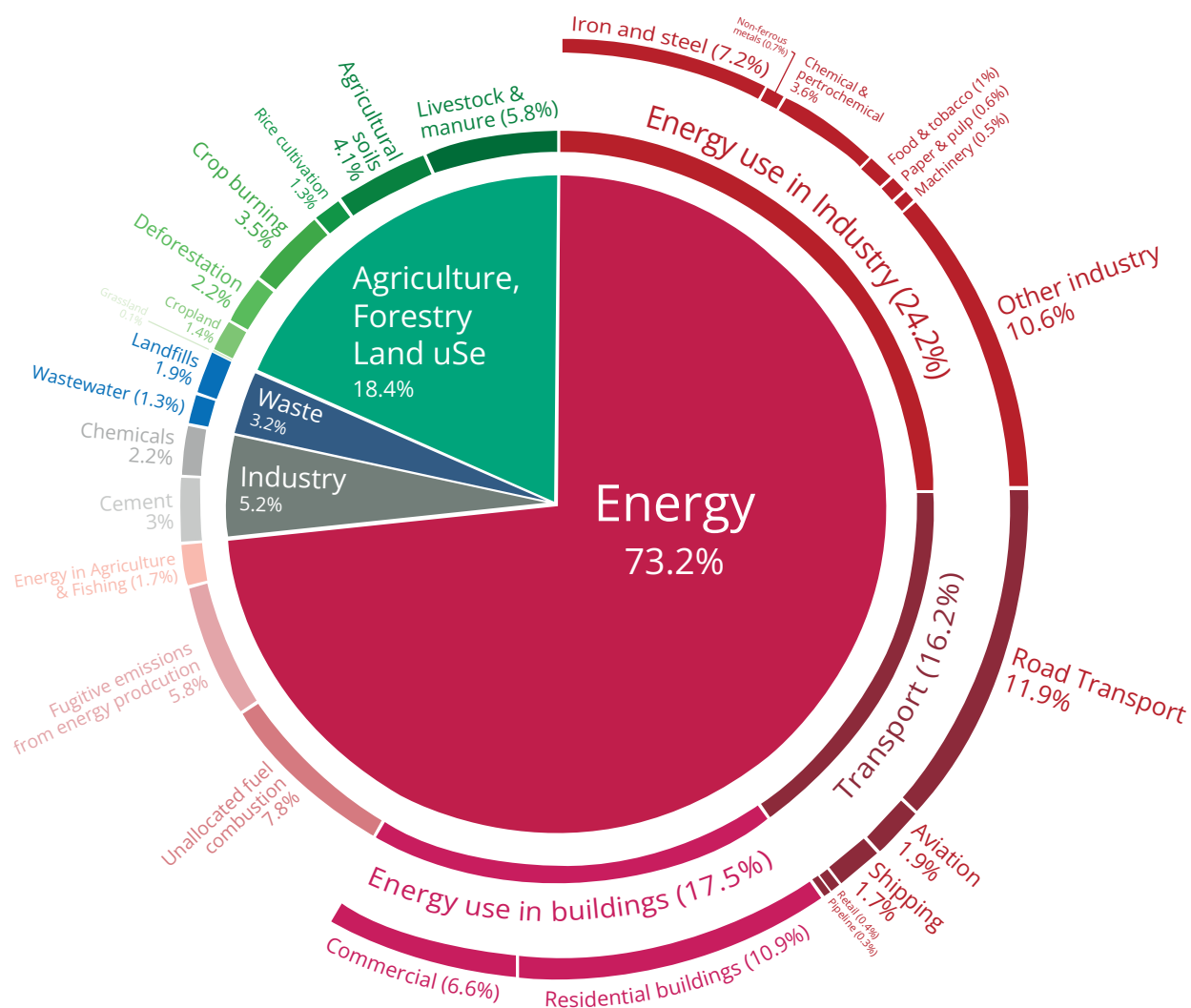
Agriculture, Forestry and Land Use = 18.4%

- Cropland = 1.4%
- Deforestation = 2.2%
- Rice cultivation = 1.3%
- Agricultural soils = 4.1%
- Livestock and manure = 5.8%



Waste = 3.2%

- Wastewater = 1.3%
- Landfills = 1.9%



Our World in Data

Global greenhouse gas emissions by sector

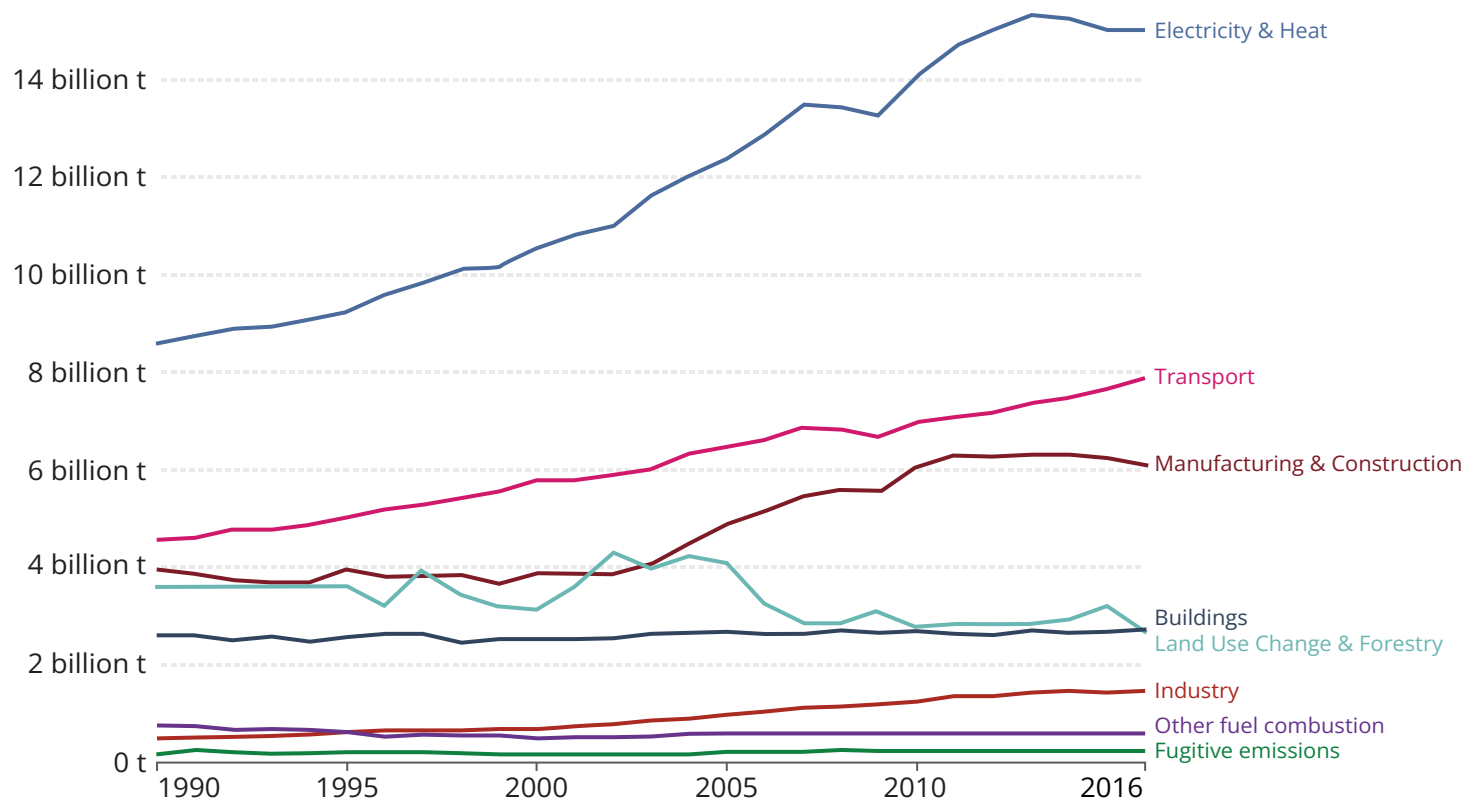
This is shown for the year 2016 - global greenhouse emissions were **49.4 billion tonnes** CO₂ eq.

OurWorldInData.org - Research and data to make progress against the world's largest problems. | Source: Climate Watch, the World Resources Institute (2020) | Licensed under CC-BY by thw author Hannah Ritchie (2020).



CO2 emissions by sector, globally:

This breakdown varies between countries and shows the CO2 emissions across sectors, emissions illustrated here only consider CO2.



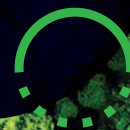
Source: CAIT Climate Data Explorer via. Climate Watch | [OurWorldInData.org/co2-and-other-greenhouse-gas-emissions](https://ourworldindata.org/co2-and-other-greenhouse-gas-emissions) | CC BY

Our World
in Data

CO2
emissions
by sector,
globally

An aerial photograph of a lush green forest with a winding river or stream cutting through it. The trees are dense and vibrant green, and the water is a deep blue-green color. The river meanders from the top left towards the bottom right, with several small islands and peninsulas of forested land. The overall scene is a healthy, natural landscape.

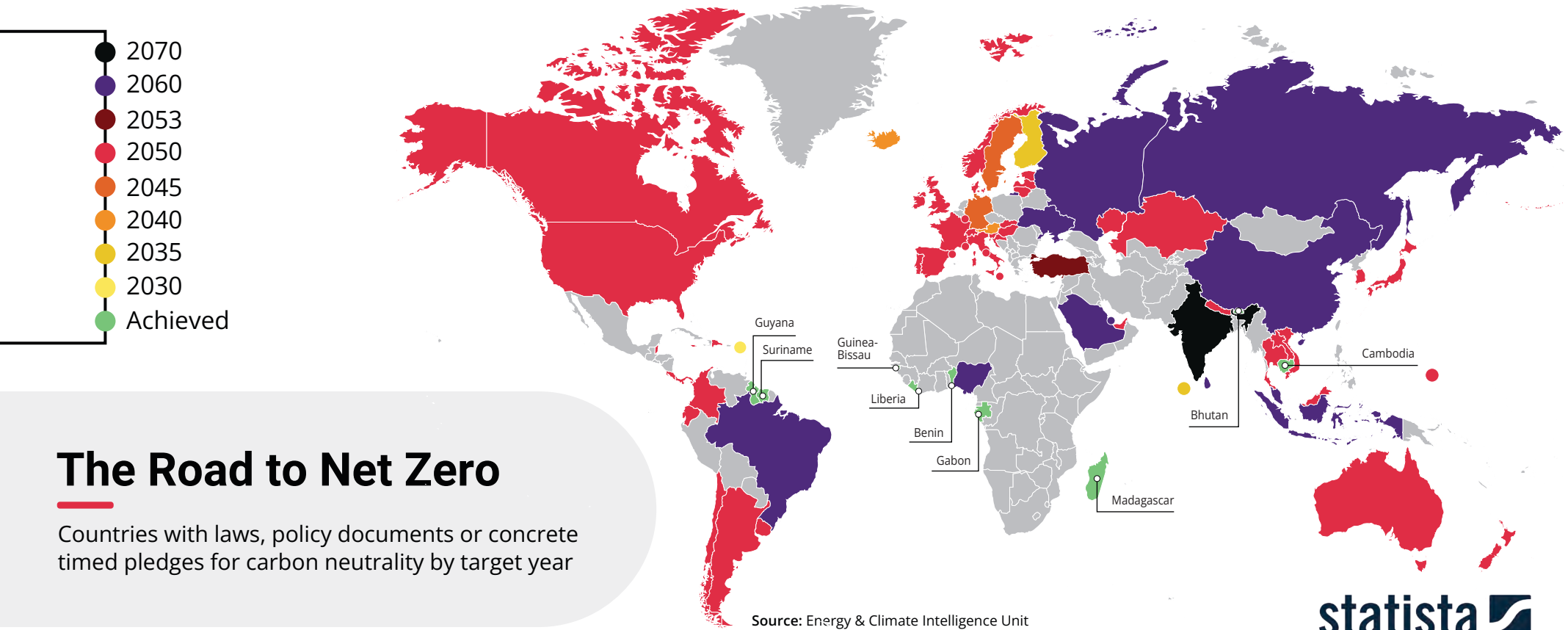
Sustainability by Country





Sustainability by Country

Sustainability has become top of the agenda globally, with most countries implementing initiatives to improve their impact on the environment. Countries with laws, concrete timed pledges, and policy documents for carbon neutrality by target year are illustrated in the diagram below.



The Road to Net Zero

Countries with laws, policy documents or concrete timed pledges for carbon neutrality by target year



The Environmental Performance Index (EPI) is used to calculate the list of the world's greenest countries (EPI).

It provides measurable metrics for assessing a country's environmental performance relating to clearly defined targets in various policy categories.



It combines data from multiple sustainability indicators into a single number, with an EPI score of between 0 to 100.

Furthermore, the EPI score's proximity-to-target methodology encourages cross-country comparisons among economic and regional peer groups.

Thus, assessing national sustainability on a scale unrelated to other countries provides a clearer picture of comparative national progress beyond simple ranking.

An aerial photograph of a multi-lane highway stretching through a vast, green agricultural landscape. A white semi-truck is traveling on the right side of the road. The fields are divided into sections by dark lines, likely furrows or irrigation channels. The lighting suggests a bright, sunny day.

What Does the Future Hold?





Despite a decline of 5.8% of CO2 in 2020, global energy-related emissions remained at 31.5 GT. This global average has contributed to CO2 reaching its highest-ever average annual concentration in the atmosphere – around 50% higher than when the industrial revolution began.

– Source: [iea.org](https://www.iea.org), Global Energy Review 2021

According to the Global Energy Review 2021, global CO2 emissions are projected to rebound and grow as demand for coal, oil, and gas rebounds with the economy, post-Covid. Developing economies and emerging markets account for more than two-thirds of global CO2 emissions. Conversely, advanced economies are in a structural decline (despite a rebound of close to 4% in 2021).

Oil demand in 2020 saw its biggest ever annual decline, while the 2021 rebound has been softened by a sluggish aviation sector.

– Global Energy Review 2021, source: [iea.org](https://www.iea.org)

China's emissions are likely to increase to 6% above 2019 levels. Similarly, India's economic recovery and demand for coal are set to push emissions to 1.4% above the 2019 level. India's emissions are now on par with that of the EU, although they remain two-thirds lower on a per capita basis at 60% below the global average. In the EU, the rebound is not expected to be as positive, with a dimmer economic outlook than other parts of the world.

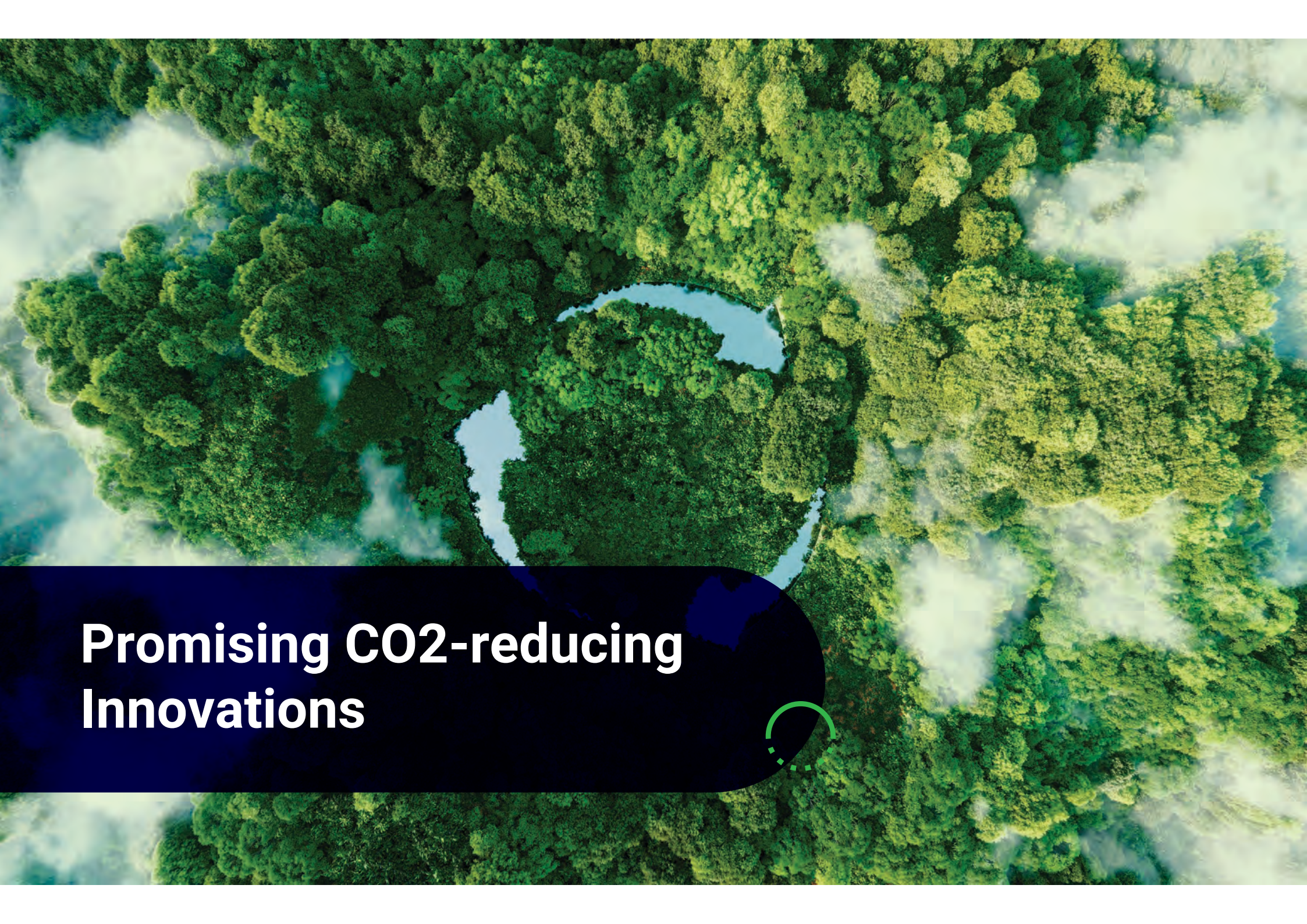
Coal experienced a major decline in 2020, but demand is rebounding strongly, driven by the power sector.

– Global Energy Review 2021, source: [iea.org](https://www.iea.org)

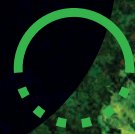
Regarding the US CO2 emissions and keeping in line with demand declining in developed nations, their emissions are 5.6% below the 2019 levels and massive 21% below 2005 levels. Oil use is the biggest contributor to CO2 emissions in the United States but remains at around 6% below 2019 levels.

Renewable energy bucked the 2020 trend and saw a 3% increase as demand for other fuels declined. Renewables are on track to set new records in 2021 and beyond.

– Global Energy Review 2021, source: [iea.org](https://www.iea.org)

An aerial photograph of a lush green forest. A winding river flows through the center of the forest. Mist or low clouds are visible in several areas, particularly on the right side and around the river. The forest is dense with various shades of green.

Promising CO₂-reducing Innovations





High-power, all-solid-state batteries: by using sulfide superionic conductors, these all-solid-state batteries developed through a collaboration between the Tokyo Institute of Technology and Toyota Motor Corporation, can potentially support GHG emission reductions. They have a higher power density and energy density than conventional lithium batteries with a use case for EVs and stationary storage to support intermittent renewables, such as solar power.

World's tallest wind turbine with pumped storage hydro: carried out by Max Bogel Wind AG and GE Renewable Energy in Germany, this is the first major wind farm to integrate water storage in the turbines – it could contribute to future wind power penetration.

Biogas: provides an immediately available solution for HGVs and long-haul vehicles and can also make a transition to hydrogen easier because the infrastructure is adaptable for future hydrogen requirements without the need to rebuild.

Hydrogen: is an ideal fuel source to curb CO2 emissions, although the current challenges to manufacturing it at scale are still a major barrier to entry in the transport sector. Hydrogen may well be the future solution for HGVs, public fleets (including buses), and railway freight. It's estimated that early hydrogen hubs for transport can be expected in the early 2030s. Looking beyond 2030, we may see large-scale charging hubs for heavy goods vehicles and public fleets in one location to minimize disruption.



Autonomous vehicles and AI: self-driving public vehicles running on advanced algorithms can transform the public transport sector. Imagine a centralized AI software system that directs traffic flow, so congestion and road accidents are a reminder of the past. The UK government's Future of Mobility has already funded three AV (autonomous vehicle) pilot projects that span vehicles driving in urban areas, an EV van that could be adapted to AV, and a demonstration of how the technology can replace the urban commuter car.



A View from our Leaders





We believe in building long-term partnerships that create an environment in which our customers can operate more sustainably by using fleet management technology to reduce their CO2 emissions.

Stefan Joselowitz, CEO & Founder, MiX Telematics.



Telematics technology from MiX Telematics has proven to be effective in assisting businesses to reduce their carbon emissions. It achieves this, by encouraging safer, more efficient driving practices and optimizing fleet utilization, our customers can significantly reduce their carbon footprint.

**Catherine Lewis, MD CSO and EVP Technology,
MiX Telematics.**



Increasingly we will see the application of machine learning and artificial intelligence to synthesize precious customer insights from the raw material mines of data.

Jonathan Bates, EVP Marketing, MiX Telematics.

Artificial Intelligence will be the core of any telematics solution in the coming years, building loyalty and trust across the customer experience.

Luiz Munhoz, MD MiX Brazil





We assist our customers in achieving their sustainability objectives by using the wealth of data that we have at our disposal to enable them to make better and more informed decisions. Thus, we can assist customers in transitioning to EVs, ensuring they acquire the right vehicle and drive well and on the best routes. If we do this right, you can achieve tangible sustainability results.

Glen Mitchell, Head of Product Management, MiX Telematics.



Looking ahead, significant investments in analytics, AI, machine learning and other technologies will provide insights business owners never even dreamed of.

Catherine Lewis, MD MiX CSO, and EVP Technology.

The future is mobile app-centric – ensuring that fleet managers have all of the information they need to run and improve their fleets in the palm of their hands is a major trend.

Jonathan Bates, EVP Marketing.





The only way for fleets to achieve sustainability goals and remain competitive is through the data insights available through telematics. The rapid growth of electric vehicles in commercial fleets is forcing a change in not just driver behavior but also management thinking. The driver's journey from diesel to electric or any alternate fuel requires training and ongoing coaching to gain their acceptance and advocacy. Management processes meanwhile need to embrace new ways of working to accommodate range and charging events. All are driven by the data derived from the vehicle.

Steve Ratcliffe, Global Product Manager.



2022 is all about leveraging off-the-shelf video technology to act as a virtual coach for every driver, 24/7. The adoption of video telematics will result in a decrease of fatigue and distraction-related crashes, saving lives and assisting drivers and passengers to arrive home safely.

Brodie Von Berg, MD MiX MEA.





**Learn how our customers are
successfully reducing their CO2
with telematics technology**





SAV

SAV, a Spanish-based environmental services specialist, was awarded the Public-Private Sector Cooperation Award in 2019. SAV's winning submission was judged on its use of MiX Telematics' premium fleet management solution. Through this partnership, SAV realized a significant and sustainable carbon offset reduction.

SAV chose MiX Telematics to help fuel consumption, enhance environmental efficiency and improve safety. In its first year, the environmental services provider succeeded in reducing its carbon emissions by 400 tonnes.



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We operate a variety of waste management vehicles, including side loaders, rear-end loaders, and road sweepers, and were looking to implement a solution which could monitor a wide range of parameters across the fleet to help us minimize our overall emissions. The support we received from MiX channel partner, Chip2Chip, was crucial to the project.

They assisted with equipment installation and creating our monitoring models and were also involved in the development and implementation of our driver training program.

The detailed analysis of results they provided enabled us to identify and overcome obstacles and was pivotal to the outcome of the project - we regard our success at the Sustainable City Awards as a true team effort.

//

- SAV's Director Research and Development Jeronimo Franco.



Transcargo

Transcargo, a Tanzanian-based transport and distribution company, successfully reduced its CO2 emissions by 30% by partnering with MiX Telematics for its 280 connected vehicles.

Other notable results included an improvement in delivery time by 48 hours, a 70% reduction of crashes, a 40% reduction in overtime hours, a 35% reduction in maintenance costs, and a 15% reduction in fuel consumption.

Transcargo also experienced a positive impact on the HSE compliance of their business.

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The system helps me with my HSE controls. Having accurate data to rely on makes my job much easier.

- Makorere Elisha, Transcargo's HSE Officer

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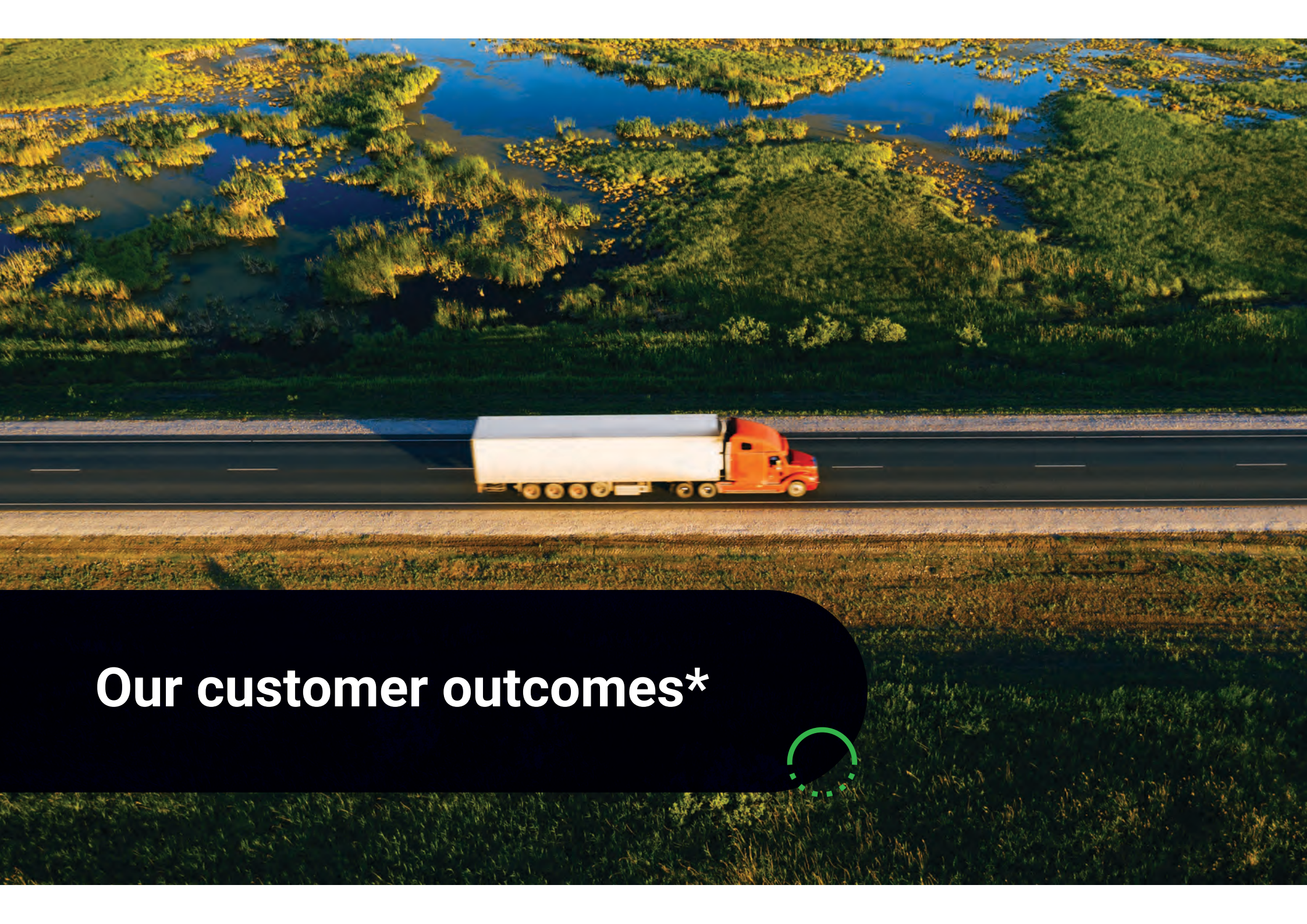
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We are very happy with our chosen solution, as it allows us to serve our clients more efficiently.

- Vishal Mehta, Transcargo Tracking Division

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Our customer outcomes*



Itamaraca saw a
92% fuel
consumption reduction



DS Smith achieved a
92% reduction
in excessive idling



Reading Buses reduced
harsh acceleration
by **44%** in a year



Barloworld Logistics
reduced over-revving
by **82%** annually



Bogestra reduced
CO2 emissions by
600 tons
in one year



Cardiff Bus saved
600 tons
of CO2 in one year



NZ Bus reduced
harsh acceleration
by **57%** over a year



Wincanton decreased
harsh acceleration
by **57%** in one year



ITA saw an
18% reduction
in fuel spend in one year

mX | TELEMATICS



ABOUT MiX TELEMATICS

MiX Telematics is an award-winning and recognized global provider of connected fleet and mobile asset management technology delivered as Software-as-a-Service (SaaS) to businesses of all sizes and sectors. Our products empower fleet leaders with actionable intelligence that drives safety, sustainability, efficiency, compliance, and security.

Visit our website to learn about our Connected and Protected solutions, benefits, and services for all industries.

www.mixtelematics.com



**CONNECTED AND
PROTECTED FLEET®**

