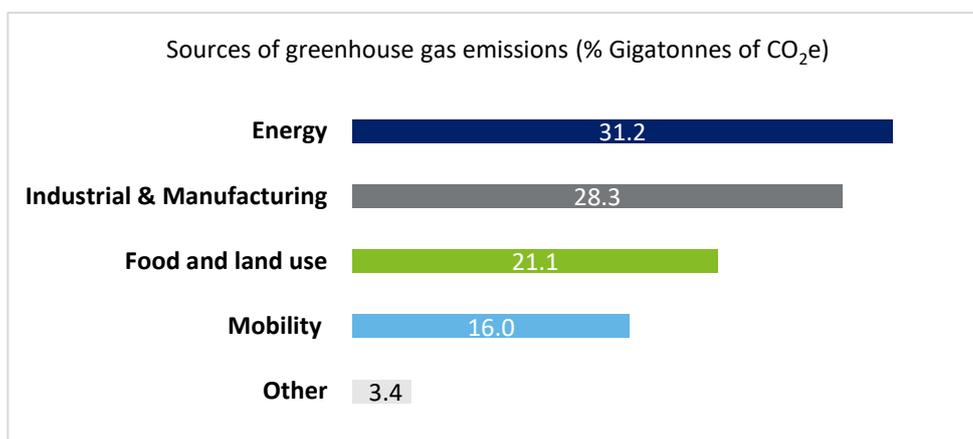




Policy considerations for a low-carbon mobility system

Introduction

Transport contributes around ~16% (~8 gigatonnes CO₂e) of global greenhouse gas (“GHG”) emissionsⁱ and needs to be a key focus area to achieve nations’ net-zero targets. Despite technological improvements and growing adoption of low- and zero-emission vehicles, CO₂ emissions from transport continue to riseⁱⁱ.



Achieving a low-carbon mobility system will require the near-complete replacement of the internal combustion engine vehicle fleet. This will likely mean replacing passenger cars and last-mile delivery vehicles such as small trucks and vans, with plug-in battery electric vehicles, perhaps with some use of fuel cell technology. Charging infrastructure, provisioned by a mix of public and private sector providers, will likely become ubiquitous. Heavier freight vehicles will likely see greater deployment of green hydrogen. In urban areas, walking, cycling, electric micro mobility (shared bikes and scooters), and public transport should increasingly replace private car trips as infrastructure and regulation become more conducive to those modes. Transport of all types will likely see carbon sequestration reporting and tracking.

A system of systems approach recognizes that the transition to a low-emission economy will require transforming a series of complex, interconnected, emissions-free systems; and that catalytic change can only happen by working at the intersections of those systems. To achieve meaningful impact, the transition to cleaner transport alternatives will involve making hard choices and changes such as encouraging ridesharing and mass transit options as well as increasing tolling for single passenger usage. Government, businesses, consumers, as well finance and technology will all play a critical role in enabling the emergence of the low-carbon systems.

Changing the transport system is expected to have a significant impact on how people live their lives. Many rely on vehicles for a wide range of activities from going shopping to taking the kids to school or getting to work. The transition should consider low-income communities as many want to see change but cannot afford to do so because of the higher upfront cost of new technologies such as electric cars.

Policies and policy levers—five considerations to be addressed

Policy makers are faced with a vast and varied array of choices about how to move their countries to a low-carbon mobility system. While most agree that this is the future and have committed to the Paris Agreement, how best to get there is a matter of continuing debate.

1. How to create a sustainable mobility value chain and support the rapid shift to electric and hydrogen powered vehicles.

With road transport making up ~12% of global GHG emissions ⁱⁱⁱ, sustainable mobility is a core focus of many governments. Investment will be needed to build a low-carbon system for personal transport. This includes expanding the charging network to help increase customer confidence in electric cars; creating the incentives and regulatory structure to accelerate the flow of private capital into the construction of electric battery and hydrogen-fueled vehicles; and ensuring that end-of-life considerations for disposal of environmentally hazardous materials are addressed through the adoption of circular approaches and recycling initiatives.

2. Find credible alternatives to cars.

Policies can drive behavioral change in how we approach mobility, especially in rapidly growing and increasingly congested urban centres. This will involve changing the way we design our cities to be more liveable and investing in walking, cycling, public transport, and other low-emission modes of transport.

3. Address emissions from the aviation and maritime shipping sectors.

The number of air travellers is forecast to double to 8.2 billion by 2037 ^{iv} and there is increasing demand for private jets, ^v a trend accelerated by the COVID-19 pandemic. Demand for maritime shipping will also continue to grow as the global economy rebounds. In addressing these sectors which are harder to abate, rail can be a suitable low-carbon alternative in some applications. High-speed rail has the potential to replace short haul flying as it is significantly less pollutive. High-speed rail projects also have the advantage of creating capacity on existing lines for more rail freight. But price continues to be a significant factor as the cost of flying in some regions remains significantly cheaper than rail. Interventions to internalize the cost of externalities of flying versus rail could be introduced to increase competition between these markets. Governments can also support efforts to develop alternative, lower-emission fuels and powertrains for aerospace and shipping applications.

4. Government can support businesses to accelerate the ambition and lead a low-carbon mobility transition.

Companies are already making pledges to be carbon neutral in all sectors, including shipping ^{vi} and aviation ^{vii}. This includes an increase in research and development in the production of electric vehicles and alternative transport modes. As shareholders and consumers look for demonstrable progress, accelerated development and adoption are expected, particularly when

reporting and tracking become commonplace. Governments will need to support these ambitions, work in partnership with business, and accelerate the transition with appropriate incentives and investment.

5. How governments, businesses, and civil society can work together to minimize social consequences.

Whatever policies governments implement, they should consider the impact this will have on vulnerable populations and those whose jobs are affected by the transition. Workers in such industries will need support to develop the right skills to find new, good paying jobs. Governments and businesses have difficult questions to answer on how to reskill and re-educate their workforces quickly. Combined with the impact of changes to move other systems to net-zero, the scale of this challenge is unprecedented. This is not a problem of the future; the world is already seeing the socio-economic effects of old car factories closing as electric production shifts to new territories. And the effects go beyond the obvious; electric vehicles require less maintenance and have fewer components, potentially putting at risk many jobs in the auto service market. But with a rise in digital technologies undergirding the future clean mobility system, there can be a rise in future employment opportunities.

At COP21, where the Paris Agreement was signed, policy makers set out their goals for limiting climate change. Now, at COP26, it is hoped those policy makers will set out the actions they are taking to make the Paris Agreement a reality.

Find out more

- Deloitte's [system of systems approach](#)
- Deloitte's [Climate Exchange](#)

Key contacts

- David Barnes, Public Policy & Regulatory Leader, Deloitte Global +44 20 7303 2888
- Scott Corwin, US Leader for Sustainability & Climate Change, Deloitte US +1 917 853 3735
- Kyra Kaszynski, Director, Public Policy, Deloitte Global +1 646 241-8044
- Derek M. Pankratz, Senior Manager, Deloitte US +1 303 312 4738
- Richard Bailey, Senior Manager, Deloitte UK +44 117 984 1180

^{i i} Hannah Ritchie, "[Sector by sector: Where do global greenhouse gas emissions come from?](#)" September 18, 2020.

ⁱⁱ International Energy Agency "[Improving the sustainability of passenger and freight transport](#)," Accessed October 29, 2021

ⁱⁱⁱ Hannah Ritchie, "[Sector by sector: Where do global greenhouse gas emissions come from?](#)" September 18, 2020.

^{iv} International Air Transport Association, "[IATA Forecast Predicts 8.2 billion Air Travelers in 2037](#)," October 24, 2018

^v Doug Gollan, "[Private Aviation Set To Emerge '5-To-10%' Bigger Post-Covid](#)," *Forbes.com*, July 30, 2021.

^{vi} Harry Dempsey, Dave Lee, "[Amazon, Ikea and Unilever commit to zero-emission shipping by 2040](#)," *Financial Times (ft.com)*, October 19, 2021.

^{vii} Philip Georgiadis, Claire Bushey, "[Global airlines commit to net zero emissions by 2050](#)," *Financial Times (ft.com)*, October 4, 2021.

Deloitte refers to one or more of Deloitte Touche Tohmatsu Limited ("DTTL"), its global network of member firms and their related entities. DTTL (also referred to as "Deloitte Global") and each of its member firms are legally separate and independent entities. DTTL does not provide services to clients. Please see www.deloitte.com/about to learn more.

Deloitte is a leading global provider of audit and assurance, consulting, financial advisory, risk advisory, tax and related services. Our network of member firms in more than 150 countries and territories serves four out of five Fortune Global 500® companies. Learn how Deloitte's approximately 264,000 people make an impact that matters at www.deloitte.com.

This communication is for internal distribution and use only among personnel of Deloitte Touche Tohmatsu Limited, its member firms and their related entities (collectively, the "Deloitte network"). None of the Deloitte network shall be responsible for any loss whatsoever sustained by any person who relies on this communication.

© 2021. For information, contact Deloitte Touche Tohmatsu Limited.

Designed by CoRe Creative Services. RITM0869682