

DECARBONIZING THE RAIL VALUE CHAIN

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A business of Marsh McLennan

OLIVER WYMAN INTRODUCTION

SUPPORTING BUSINESSES ON CLIMATE CHANGE PROJECTS IN A WIDE RANGE OF INDUSTRIES

VISION AND LEADERSHIP

Set goals and organize to achieve them

FINANCIAL RISK AND OPPORTUNITY

Assess true portfolio exposure and how to respond

INDUSTRY SYSTEM SOLUTIONS

Re-engineer operations, business models, and end-to-end value chains

PROPOSITIONS TO STAKEHOLDERS

Gain the participation of customers, colleagues, regulators and investors

Services, Transportation, Retail & Consumer Goods



Automotive & Manufacturing



Energy & Natural Resources



Financial Services

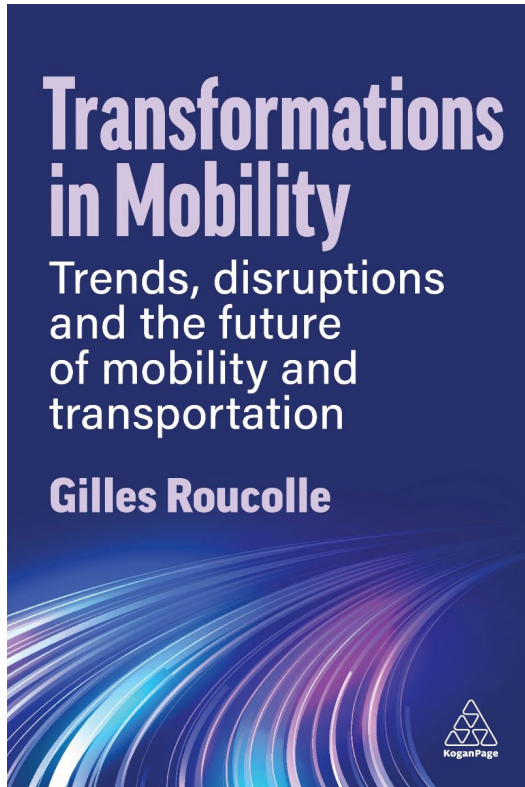


Public Policy



BACKGROUND : TRANSFORMATIONS IN MOBILITY

The Book



Overview

- **Author : 30+ year experience** in high-stakes strategic and operational projects worldwide around Mobility
- **35 experts & leaders' interviews**
- **OW Mobility Forum's research**
- **Trends, Disruptions and New perspectives** on the future of Mobility

Chapters

- 1 – The Great Fragmentation
- 2 – The Steel Backbone
- 3 – Designing Futures
- 4 – Two Keys to Growth
- 5 – The Global Illness
- 6 – New Values for A New Era**
 - Decarbonizing the mobility value chain
 - Aviation's greatest challenges
 - Electrification as opportunity for China
- 7 – Digital Connections
- 8 – Smart Ways to Use Capacity
- 9 – Future Visions

Leaders' panel

(and relevant past or current organizations)

- **Bernard AMORY**, Jones Day
- **Alexandre BAYEN**, UC Berkeley
- **Fabrice BREGIER**, Airbus
- **Olivier BROUSSE**, Veolia, John Laing
- **Gwendoline CAZENAVE**, SNCF, Eurostar
- **Paul-Marie CHAVANNE**, GeoPost
- **James CHERRY**, Alstom, Airport of Montreal
- **Tai CHONG CHEW**, Arup
- **Deepak CHOPRA**, Canada Post Corporation
- **Mike COOPER**, Eurostar, Arriva
- **Barbara DALIBARD**, SNCF
- **Alexandre DE JUNIAC**, Air France KLM, IATA
- **Joris D'INCA**, Oliver Wyman
- **Josef DOPPELBAUER**, European Union Agency for Railways
- **Rupert DUCHESNE**, Air Canada, Aeroplan
- **Jean-Pierre FARANDOU**, SNCF
- **Xavier HUILLARD**, Vinci
- **Marc IVALDI**, Toulouse School of Economics
- **Patrick JEANTET**, SNCF
- **Mark JOSEPH**, Transdev
- **Andrew LEZALA**, Metro Trains Australia
- **Marie-Christine LOMBARD**, Geodis
- **Pierre LORTIE**, Bombardier
- **Jean-Pierre LOUBINOUX**, SNCF
- **Frederic MAZZELLA**, BlaBlaCar
- **Jean-Marie METZLER**, SNCF
- **Andre NAVARRI**, Bombardier
- **Rana NAWAS**, Oliver Wyman
- **Guillaume PEPY**, SNCF
- **Hugh RANDALL**, Oliver Wyman
- **Sumati SHARMA**, Oliver Wyman
- **Adrian SLYWOTZKY**, Oliver Wyman
- **Guillaume THIBAUT**, Oliver Wyman
- **Laurent TROGER**, Bombardier
- **Andrew WATTERSON**, Southwest Airlines

MOST RAILWAYS AIM TO DEFINE THEIR NET ZERO STRATEGY AND SECURE COMPLIANCE

CONTEXT

- Sustainability is not only a mandatory requirement but also a significant business opportunity
- Several initiatives have been initiated on multiple fronts:
 - Compliance / risks assessment process for TCFD
 - Emissions mapping
 - SBTi targets for parts of the business
 - Supply Chain scoring
- The overall complexity is accrued by other factors:
 - Business Plans target an ambitious growth
 - The regulatory and compliance environment is evolving
 - Financing / Refinancing poses additional sustainability constraints
- Ambition to build a strategic and holistic approach to sustainability, that feeds and augments railway's strategic positioning

STRATEGIC OBJECTIVES



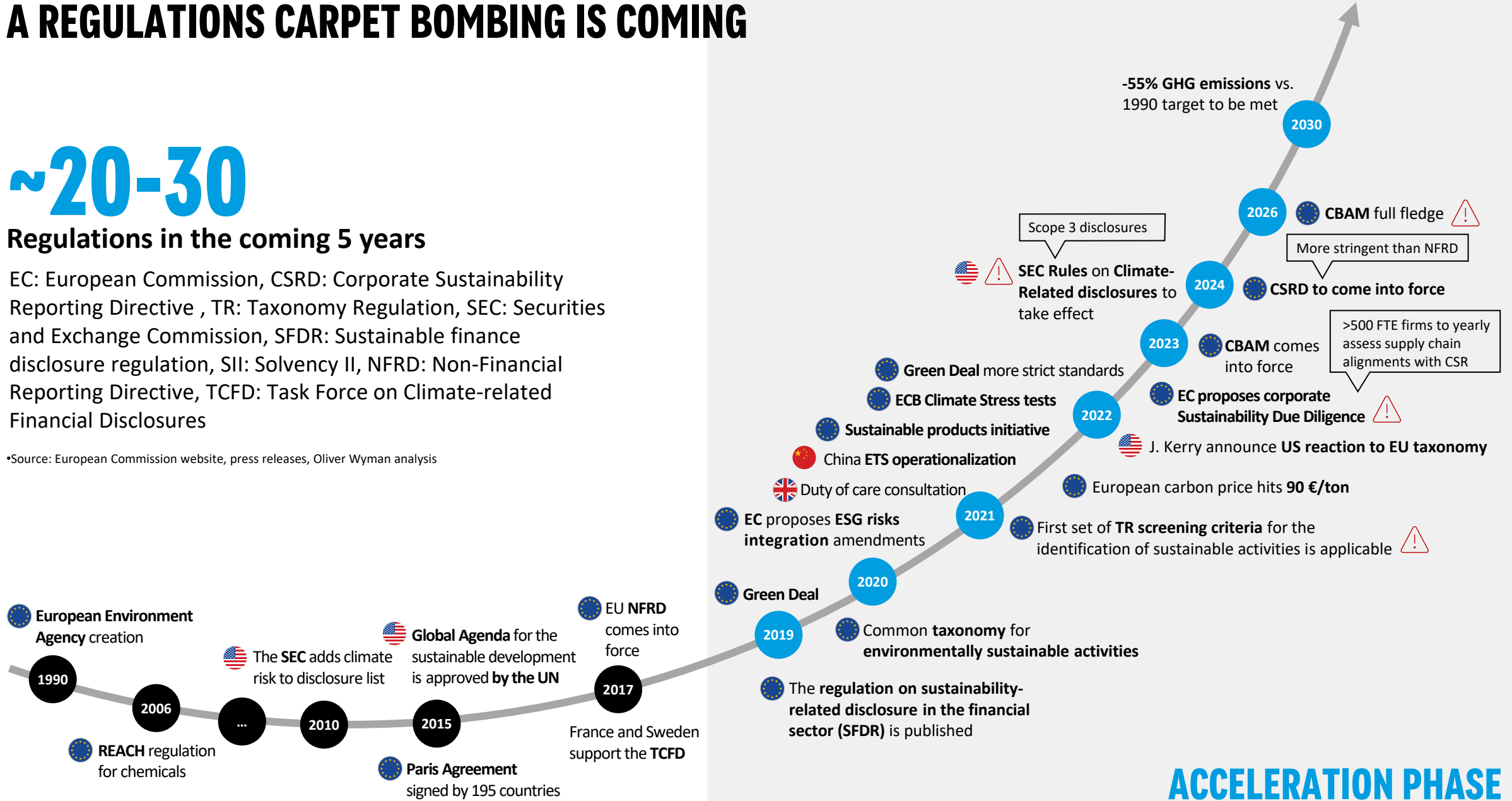
A REGULATIONS CARPET BOMBING IS COMING

~20-30

Regulations in the coming 5 years

EC: European Commission, CSRD: Corporate Sustainability Reporting Directive, TR: Taxonomy Regulation, SEC: Securities and Exchange Commission, SFDR: Sustainable finance disclosure regulation, SII: Solvency II, NFRD: Non-Financial Reporting Directive, TCFD: Task Force on Climate-related Financial Disclosures

*Source: European Commission website, press releases, Oliver Wyman analysis



SUSTAINABILITY LEADERS SET THE TONE FOR THEIR INDUSTRY AND BECOME “MARKET MAKER”



Anticipate to lead their industry

Strictly assess “game changer” **disruption impacts**

Operationalize net zero plan through rethinking the whole business design

Embody **leadership** via bold strategic moves

Reboot their value proposition

Design client **green offer** and enlarge to carbon as a service

Shape **inspiring narratives**

Unlock **green premium** through **innovation**

Reinvent their business systems

Build ecosystems to **decarbonize** and **secure** green resources

Transition to **circular business models**

Implement **sustainable procurement** and **supply chain**

Anchor sustainable operating models

Engage the whole organization and adjust future-oriented capabilities

Build robust data systems to maximize disclosure premium

Implement new carbon **financing models**

SUSTAINABILITY LEADERS TAKE BOLD MOVES BY 2030

100% of products¹ reparable in workshops or by customers by 2026

DECATHLON

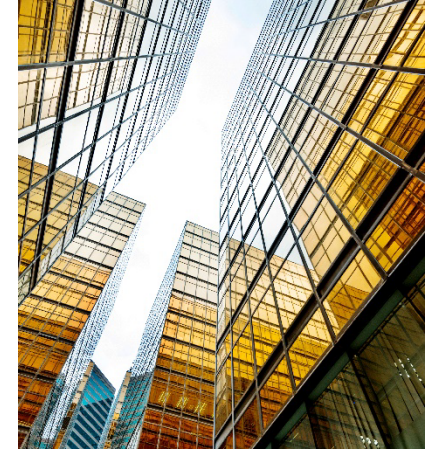


Become an electric-only car maker by 2030



80% of revenues generated by sustainable solutions by 2025 (70% in 2021)

Schneider Electric



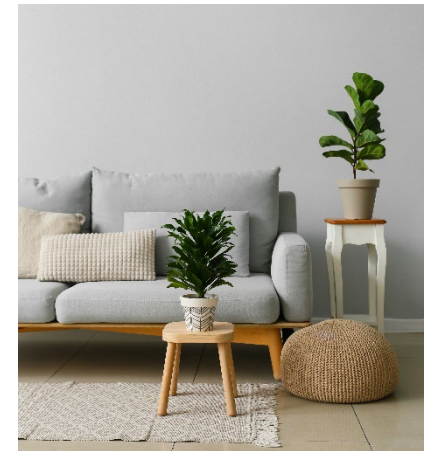
Make its menu 50% meat-free in the UK by 2030



Make 90% of its shoes recycled or recyclable by 2025



Become circular in 2030 and buy back furniture from customers



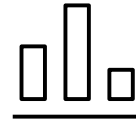
1. Repairable ones | Source: Philip Morris International, Volvo Cars, McDonalds, Burger King, WholeFoods, Adidas, Statista

SUSTAINABILITY LEADERS BENEFIT FROM THE “LEADERSHIP PREMIUMS” FROM FINANCIAL MARKETS



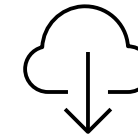
Financial premium

- **Market cap growth:** CDP A-Listed stock market cap grew **17%** higher than normal companies' stock in 2021
- **Remuneration:** **~30%** higher stock return vs. normal stocks¹
- **Cost of capital** Renewables average WACC was **37%** lower than oil and gas over 2010 – 2019
- Financial institutions in EU will rotate **30+%** of their portfolio to reach their NZ targets, **600 investors using CDP** information



Competitive advantage

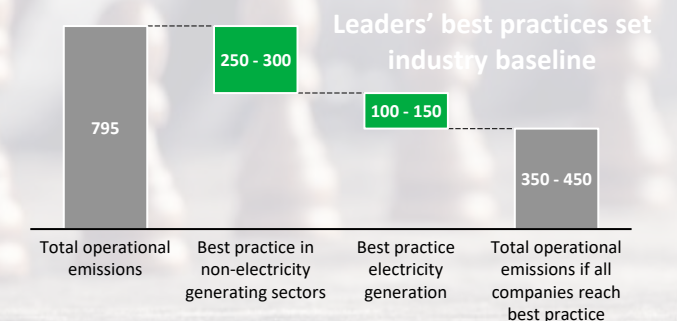
- Products **marketed as sustainable** have a **5X** faster growth than normal products
- **~30%** Consumers' sustainability practices are **driven by peer pressure**
- **1/3** Consumer sees himself as **environmental change key driver**








Setting the industry standards

- **Leaders are rating agencies' standard:** Total emissions could be cut by **40-50%** if all companies **caught up with the leaders** in each sector
- Leaders **set the tone** for whole industry **through defining standard** on which the others will have to align

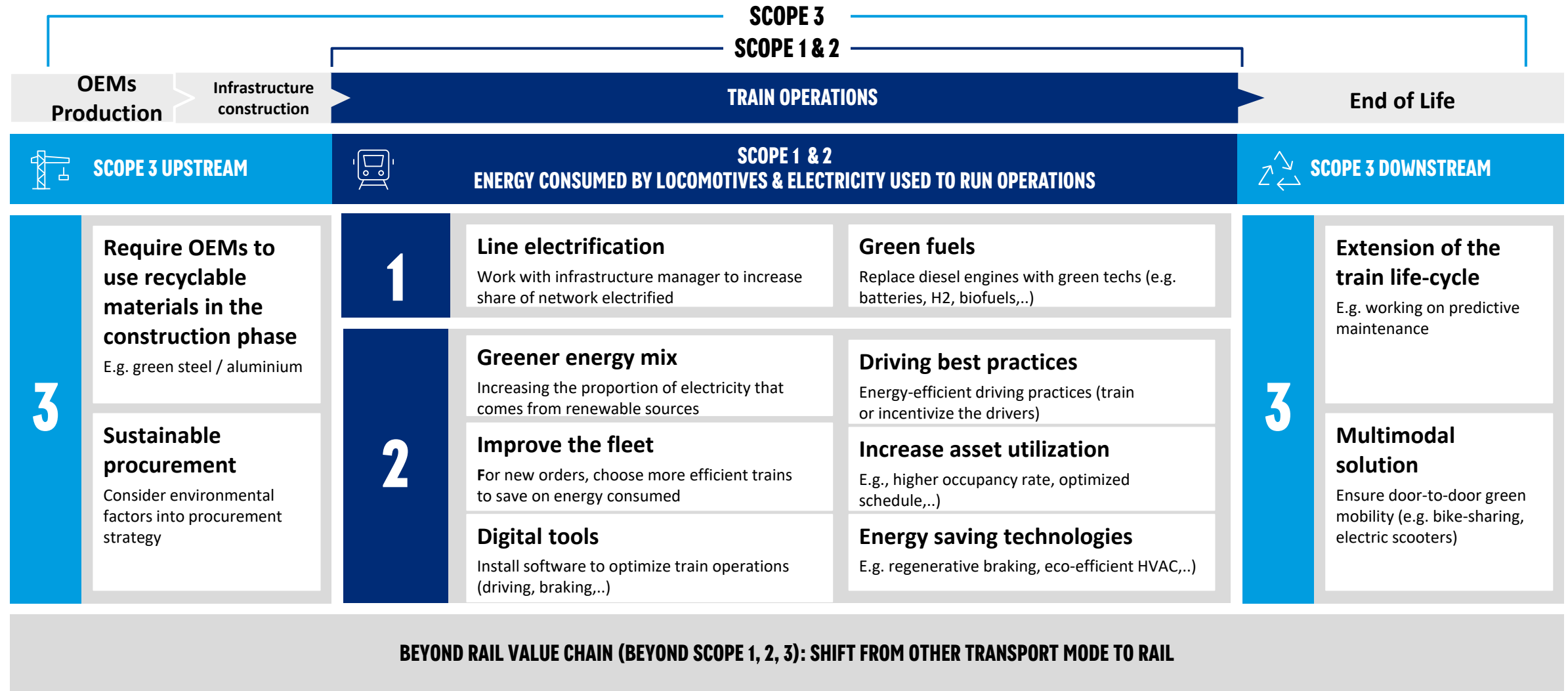
Potential emission reduction in MN tonnes CO₂e (scope 1 & 2) by sector



RAIL PLAYERS ARE RESPONDING TO THE CHANGE BY TAKING ACTIONS ON SCOPE 2 AND SCOPE 3 EMISSIONS

Railway operator	Scope 2 emissions		Scope 3 emissions	
	100% green electr. goal to fuel trains	Current % of renewable sources in the traction mix	Examples of initiatives	Examples of initiatives
	2038 (80% by 2030)	62,4 %	<ul style="list-style-type: none"> DB long-distance electric trains are already running 100% using green energy Starting in 2024, DB trains will operate with renewable energy purchased from the Amrumbank West offshore wind farm 	<ul style="list-style-type: none"> DB elected 200 environmental professionals to coordinate the implementation of green projects, ensure adherence to environmental regulations, identify environmental risks Part of Railsponsible
	2025	90 %	<ul style="list-style-type: none"> SBB owns seven hydropower plants to fuel its trains 	<ul style="list-style-type: none"> SBB has been using recycled asphalt since 2020 in the construction of their station platforms. Using this mix instead of asphalt allows SBB to reduce by 25% the environmental impact of building a platform. Part of Railsponsible
	2035 (40% to 50 % by 2025)	Not available	<ul style="list-style-type: none"> Purchase renewable: as from 2023, SNCF Energy has signed a 20-year contract with EDF Renewables to buy 25 gigawatts of renewable energy generated by a solar farm, opening in 2023 Generating renewable: SNCF rolls out rooftop solar installations progressively at all major facilities, spanning as much as 160 000 m² set up solar panel on site 	<ul style="list-style-type: none"> SNCF: 97% of the TGV M materials are recyclable SNCF Réseau committed a partnership with green rail producers with the objective to produce green rails by 2030. Part of Railsponsible
	Since 2017	100%	<ul style="list-style-type: none"> In 2014, NS concluded a long-term power supply contract with energy provider Eneco, and wind farms were built for the purpose Half of the necessary power is sourced domestically, and the other half comes from wind farms in Sweden, Finland and Belgium 	<ul style="list-style-type: none"> Part of Railsponsible
	Not available	Not available	<ul style="list-style-type: none"> FS aims to self-produce at least 40 % of its energy needs using renewable sources by installing photovoltaic and wind power systems in stations and railway areas (2022-2031 industrial plan). 	<ul style="list-style-type: none"> Part of Railsponsible

THIRTEEN LEVERS TO DECARBONIZE THE RAIL VALUE CHAIN AND GO BEYOND BY SHIFTING FROM OTHER TRANSPORT MODE TO RAIL

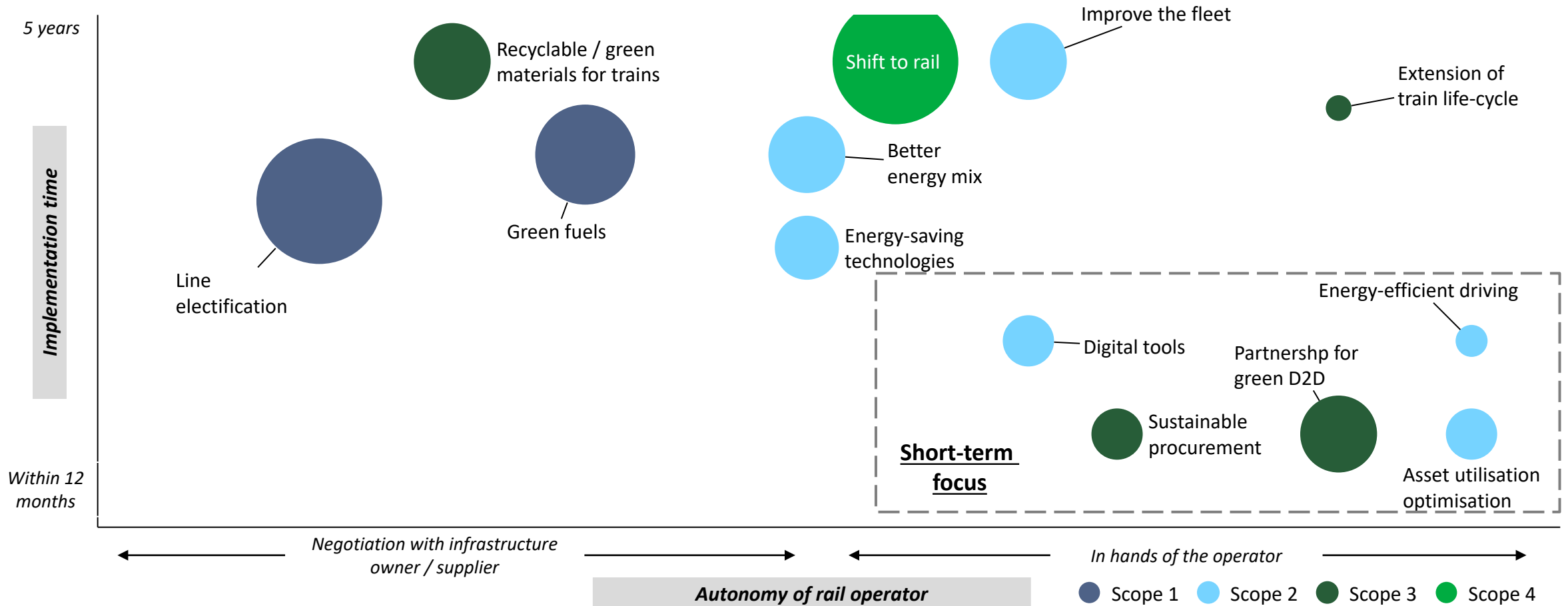


OPPORTUNITY TO IDENTIFY AND SELECT SUSTAINABILITY IMPROVEMENT INITIATIVES TO REDUCE THE CARBON FOOTPRINT

Mapping of rail decarbonization initiatives

Degree of tech maturity vs. rail operator autonomy (size of the bubble represents the expected impact in CO2 reduction)

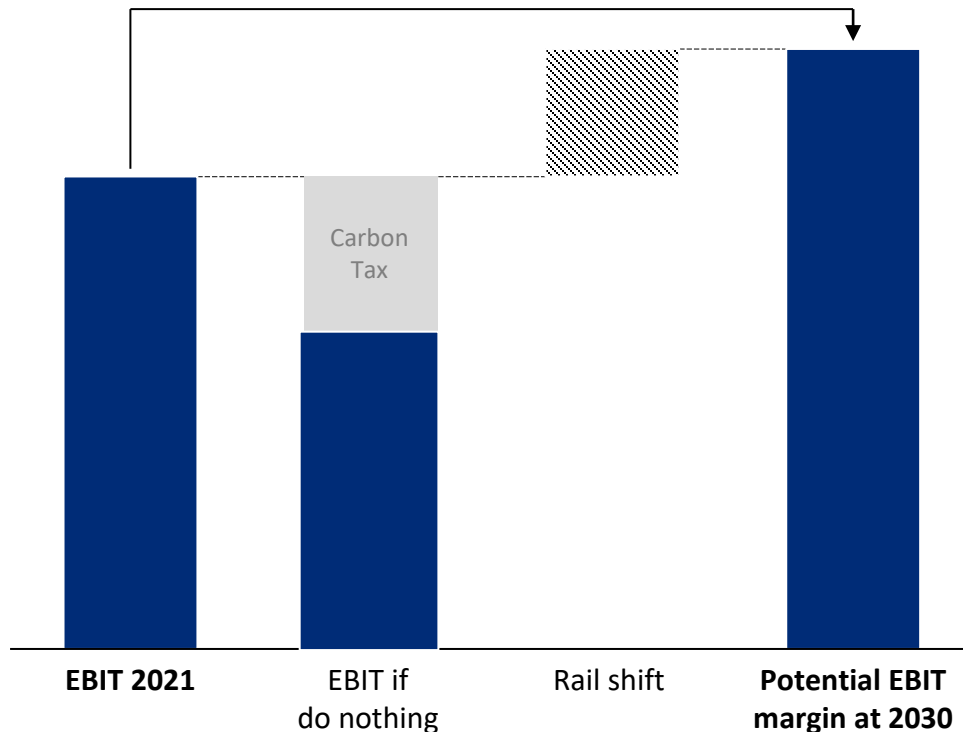
Illustrative



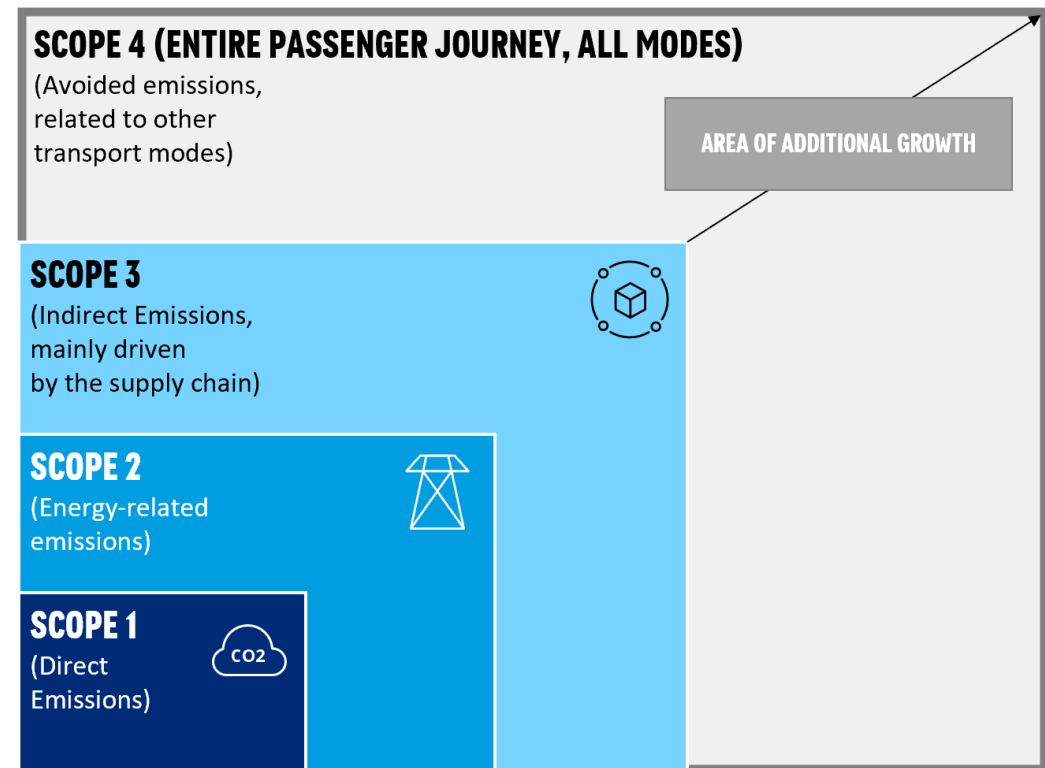
A RAIL SUSTAINABILITY LEADER CAN FIND GROWTH OPPORTUNITIES IN TACKLING SCOPE 4 EMISSIONS RELATED TO OTHER MODES OF TRANSPORT

Opportunity for rail operator to capture modal share
 EBIT evolution (index: EBIT 2021=100), for EU rail operator

Illustrative



Additional growth area in Scope 4



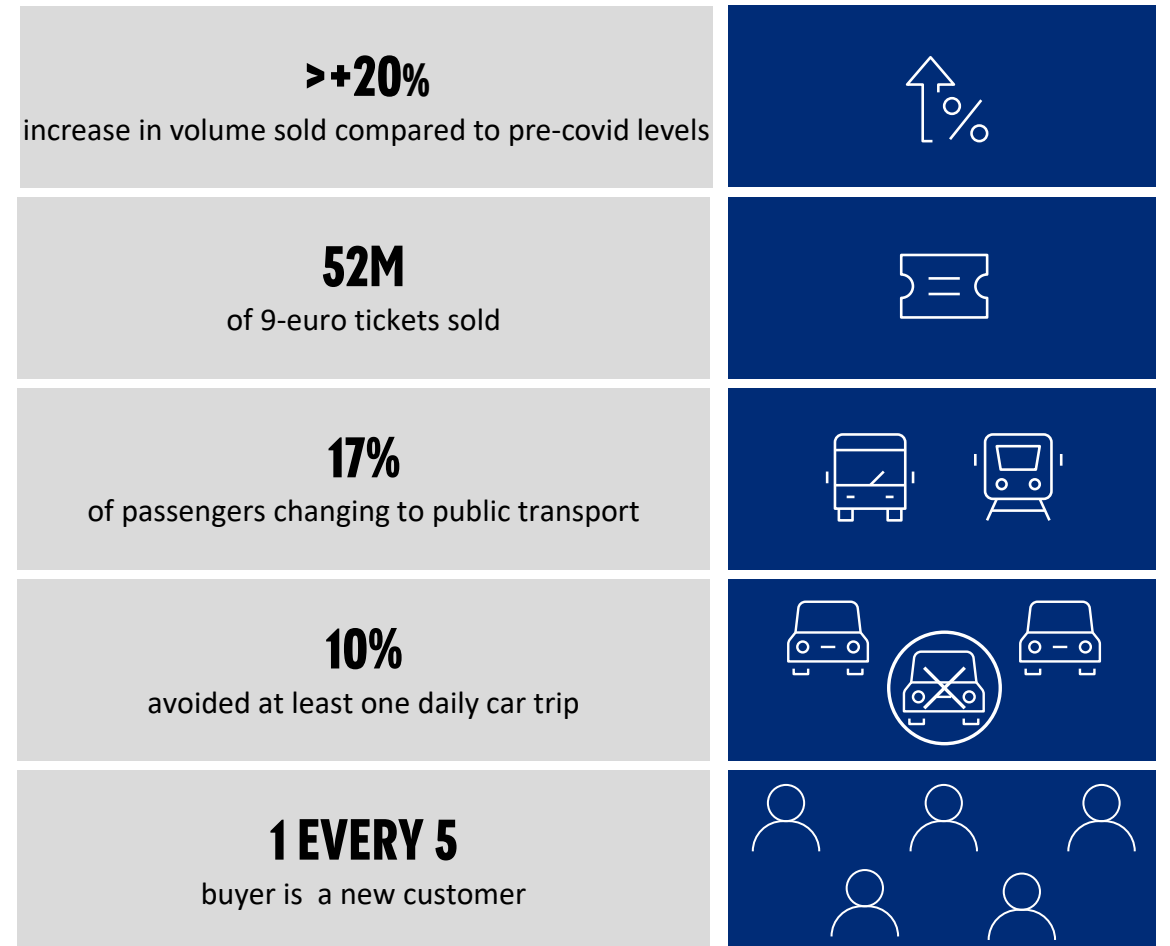
WORKING ON LEVERS TO SHIFT TO RAIL IS ALSO KEY AS DEUTSCHE BAHN DID WITH ITS “DEUTSCHLANDTICKET” FLAT-FEE PUBLIC TRANSPORT CARD

The initiatives

- The 9-euro ticket was **temporary flat rate ticket**, from June to August 2022, for local and regional transport all over Germany
- The successor of the 9-euro initiative, is a **€49 monthly subscription ticket** that will be available for services from 1st of May 2023
- The financing of this 3-billion-euro initiative, would be split evenly between the federal and state governments
- **DB experience an unexpected flow of Shit to Rail demand. While the offer was initially created to fight inflation, it may be reconducted due to its impact on financials but also overall sustainability aspects**

Source: press, DB

Impact of the 9-euro ticket initiative





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