4th ASECAP SUSTAINABILITY FORUM

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Hosted by

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Sustainability as a key driving force for the mobility of the future

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Agenda

1. My background
2. What is sustainability?
3. Sustainability and road transportation: a long history
4. EU Sustainable and Smart Mobility Strategy
5. Competitive challenges of the highway sector from an ESG perspective
6. The Environmental dimension
7. The Social dimension
8. The Governance
9. Final remarks

1. My background

- Full Professor of Accounting and Sustainability Reporting at the Venice School of Management, Ca' Foscari University of Venice, where I also am:
  - Director of Sustainability Lab
  - Program Director of Master in Sustainability Management.
  - Member of the PhD teaching committee on Science and Management of Climate Change.
- My research includes sustainability paradigm in management and accounting, sustainability reporting and accounting, where I have been active for the last 25 years.
- Member of board IFAC (International Federation of Accountants) since 2020.
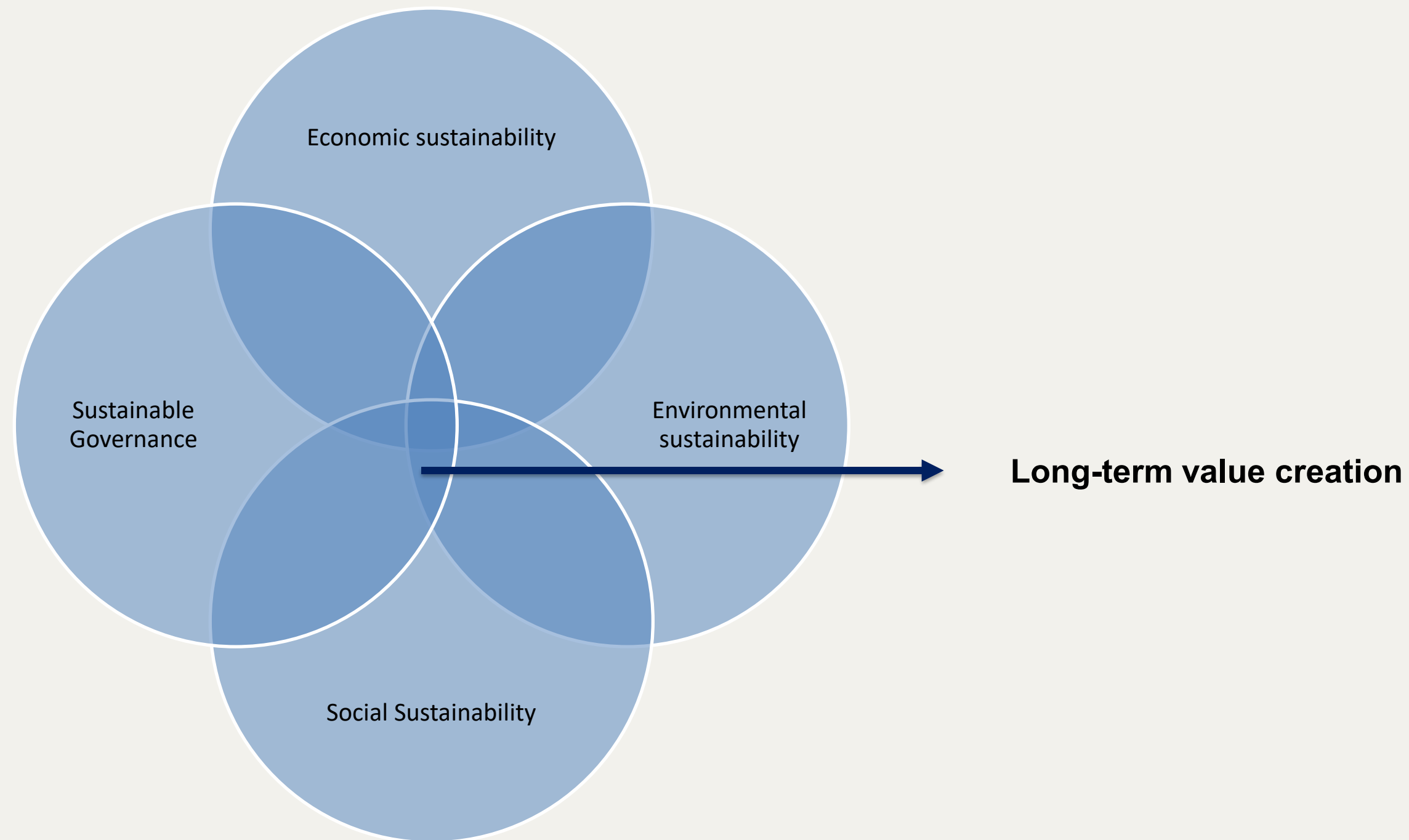- Member of EFRAG Sustainability Reporting TEG (2022-2024)

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2. What is sustainability

Charity

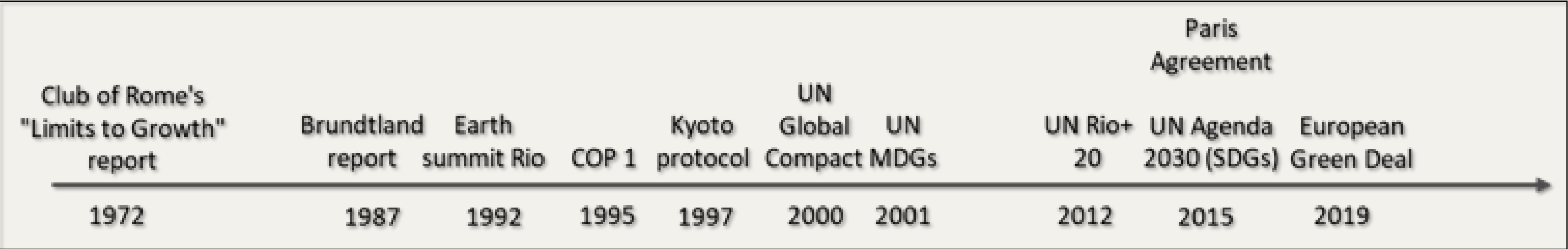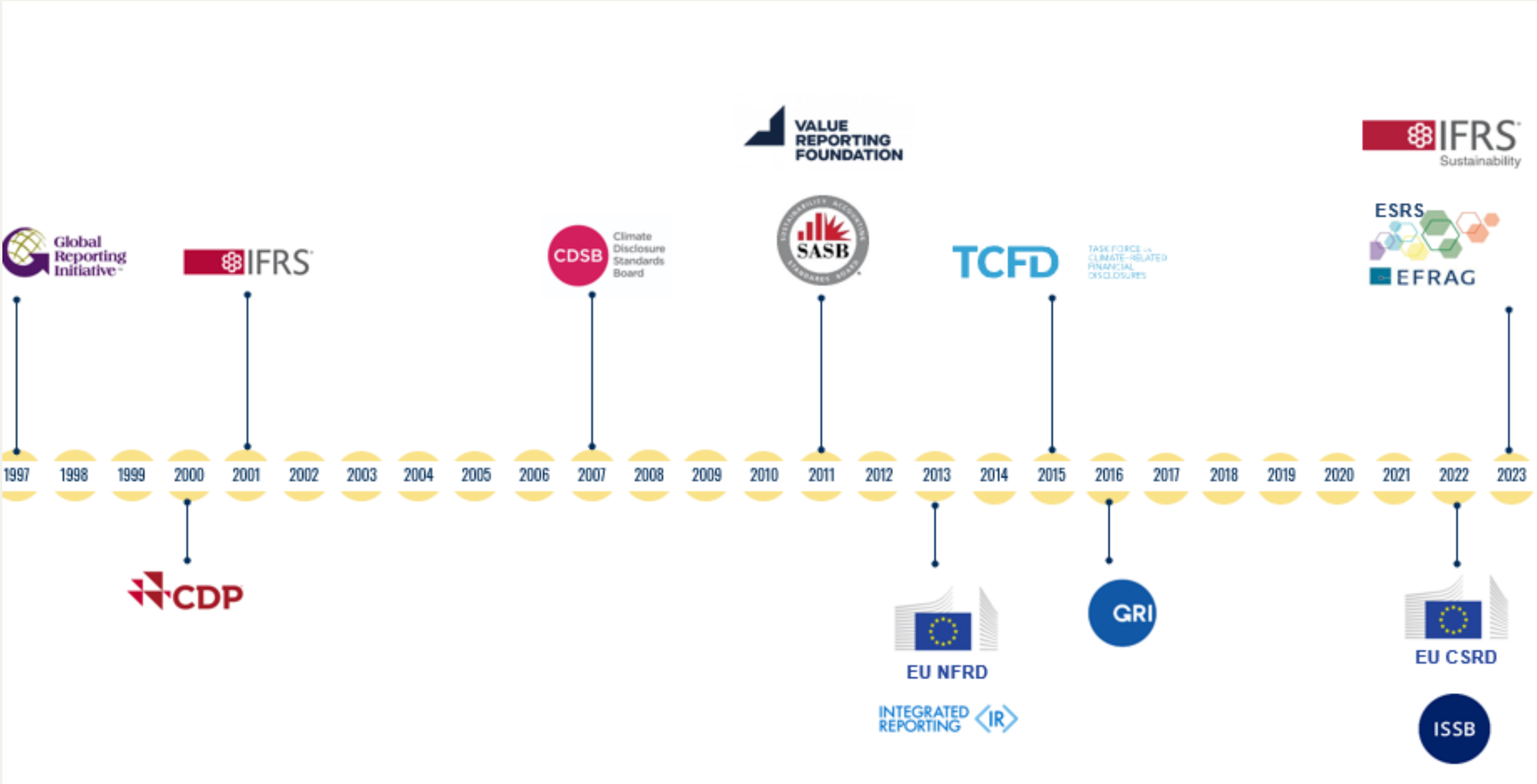Corporate social responsibility

Sustainability

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2. What is sustainability

Economic sustainability

Sustainable Governance

Environmental sustainability

Social Sustainability

Long-term value creation

2. What is sustainability

3. International initiatives on sustainability

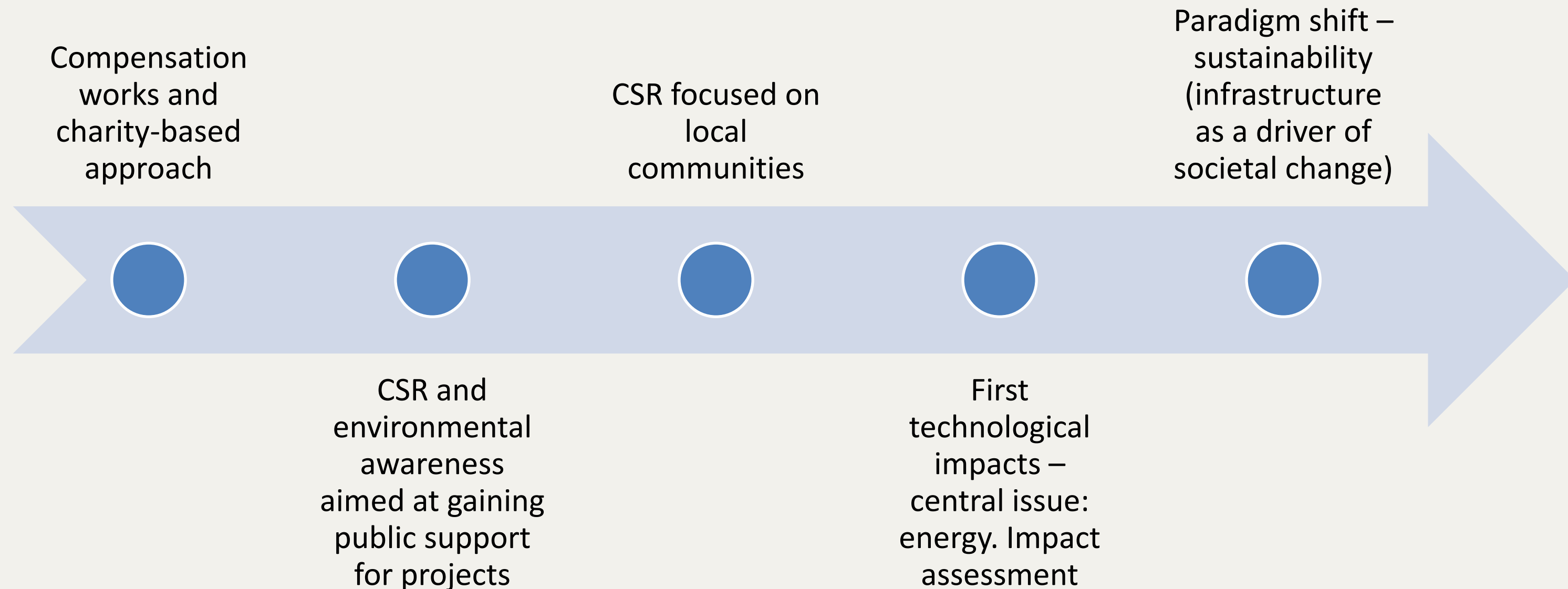| Club of Rome's "Limits to Growth" report		Brundtland report	Earth summit Rio	COP 1	Kyoto protocol	UN Global Compact	UN MDGs		UN Rio+ 20	UN Agenda 2030 (SDGs)	Paris Agreement European Green Deal
1972		1987	1992	1995	1997	2000	2001		2012	2015	2019

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3. International initiatives on sustainability reporting

Narrowing of scope of CSRD

3. Approaches to sustainability over time

Compensation works and charity-based approach

CSR focused on local communities

Paradigm shift – sustainability (infrastructure as a driver of societal change)

CSR and environmental awareness aimed at gaining public support for projects

First technological impacts – central issue: energy. Impact assessment

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Shaping Sustainable Mobility: Key Legislative Milestones

Eurovignette

Directive 1999/62/EC and its subsequent amendments

Taxonomy

EU Regulation 2020/852

CAM STRADE

Ministerial Decree (the so-called 'Corrective' amending Annex 1 of the Decree of 5 August 2024) – Green Public Procurement Criteria for Roads (CAM Strade)

17 June 1999   **22 October 2014**   **18 June 2020**   **13 April 2024**   **5 September 2025**

DAFI

Directive 2014/94/UE **(Deployment of alternative fuels infrastructure)**

AFIR

EU Regulation 2023/1804 **(Alternative Fuels Infrastructure Regulation)**

3. Sustainability and road transportation: a long history

- The concept of **sustainability in transport** is not a new phenomenon; it has evolved over centuries in response to growing concerns about the social, environmental, and economic impacts of mobility.
- As early as the late 19th and early 20th centuries, urban planners and engineers began recognizing the need for transportation systems that balanced **efficiency** with the **well-being of society and the environment**.
- The progression of sustainability in transport reflects shifts in technology, policy, and societal values, with each era contributing to the development of more **eco-friendly, accessible, and equitable mobility solutions**.

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3. Sustainability and road transportation: a long history

- As the scientific consensus on **climate change** solidified in the late 20th century, sustainability in transport became more urgent. The role of transport as a major source of **greenhouse gas emissions** was increasingly recognized, prompting governments, businesses, and communities to seek **low-carbon alternatives**.
- The 1990s saw the emergence of **eco-friendly vehicles** like hybrid cars and the expansion of **public transit systems** as cities worked to reduce their carbon footprints.
- International initiatives such as the **Kyoto Protocol (1997)** and the **Paris Agreement (2015)** set targets for emissions reductions, with the transport sector playing a key role in these global efforts.
- This era also marked the rise of **cycling and pedestrian-friendly cities**, green infrastructure, and the development of alternative fuels such as **biofuels**, **hydrogen**, and **electric vehicles**.

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- ExternE Transport project, was part of the broader ExternE (Externalities of Energy) initiative, promoted by the Directorate-General XII (DGXII) of the European Commission during the period 1995-1997.
- This project aimed to assess the external costs associated with energy and transport, particularly focusing on the environmental and human health impacts caused by energy and transport activities. These costs are not typically reflected in market prices but represent significant societal impacts.
- Key external costs included in the project were:
  - Air pollutant emissions from transport, such as nitrogen oxides (NOx), sulfur dioxide (SO2), carbon monoxide (CO), particulate matter, and greenhouse gases.
  - Noise pollution and its effects on human health.
  - Traffic accidents and the associated social and healthcare costs.
  - Traffic congestion, which leads to wasted time and increased fuel consumption.
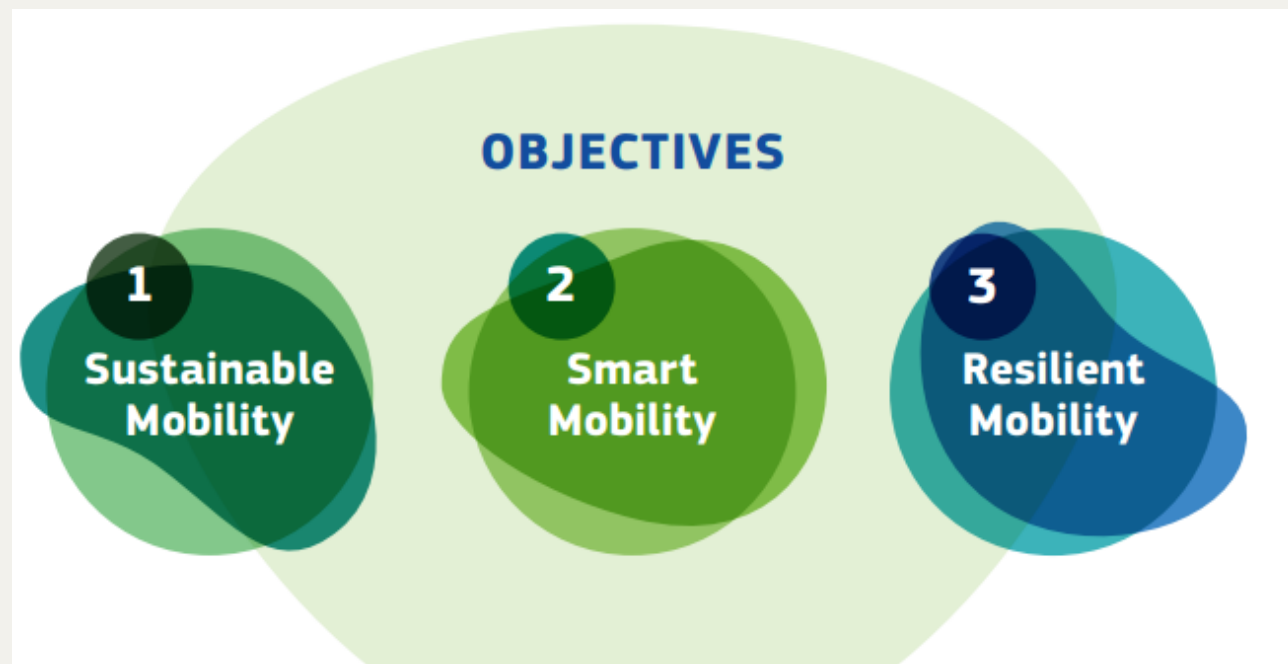
Policy Implications
• Supporting EU Transport Policies:
- Basis for the "polluter pays" principle.
- Recommendations for regulations on vehicle emissions, fuel standards, and traffic management.

Long-term impact:
- Informing carbon pricing mechanisms.
- Encouraging investment in cleaner transport systems (electric vehicles, public transit).

4. EU Strategy for Sustainable and Smart Mobility

Brussels, 9.12.2020
COM(2020) 789 final

COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT, THE COUNCIL, THE EUROPEAN ECONOMIC AND SOCIAL COMMITTEE AND THE COMMITTEE OF THE REGIONS

Sustainable and Smart Mobility Strategy – putting European transport on track for the future

{SWD(2020) 331 final}

OBJECTIVES
1 Sustainable Mobility
2 Smart Mobility
3 Resilient Mobility

- The **European Commission's Strategy for Sustainable and Smart Mobility** addresses the broader challenges of the transition to zero-emission mobility and sets out a that outlines how the European transport sector should be transformed and aligned with the European Green Deal by making it **sustainable**, **smart** and **resilient**.

- It lays the foundation for the EU transport system to achieve its green and digital transformation and become more resilient to future crises.

- The strategy identifies a total of 82 initiatives in 10 key areas for action ("flagships"), each with concrete measures.

5. Competitive Challenges of the Highway Sector from an ESG Perspective

Environment (E)

- **Hard-to-abate decarbonization (Scope 1–3):** electrification, renewables, traffic management, eco-driving.

- **Charging networks and alternative fuels:** coverage, interoperability, stranded asset risks.

- **Climate and nature resilience:** resilient infrastructure, biodiversity protection, extreme event management.

  – **Territorial protection and hydrogeological risk prevention:** measures to safeguard land and infrastructure from climate change impacts, with a focus on hydrogeological instability and extreme weather events

- **Materials and circularity:** low-carbon asphalts and concretes, recycling, and life cycle assessment (LCA).

- **Wildlife and biodiversity protection:** growing focus on preserving ecosystems crossed by highway infrastructure, including training of road operations staff to manage wildlife or domestic animals safely and non-traumatically when involved in accidents or found wandering along the network.

5. Competitive Challenges of the Highway Sector from an ESG Perspective

| ESG Challenge	Strategic Impact	Urgency / Priority
Decarbonization (Scope 1–3)	Very high (core competitiveness and concessions)	High (within 3 years)
Charging network and alternative fuels	High (new services, reputation)	High (rollout 2025–2030)
Climate resilience	Very high (service continuity, maintenance costs)	Medium (plan 2025–2035)
Materials and circularity	Medium–high (operational costs and supply chain)	Medium (2026–2030)
Road safety	Very high (social license, concession KPIs)	Very high (within 2 years)
Service quality / equity	High (reputation and local consensus)	High
Governance and CSRD reporting	Very high (compliance, sustainable finance)	Very high (2024–2026)
Cybersecurity and ITS privacy	High (operational and legal risk)	High (immediate)

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6. The environmental dimension

- Road transport has significant negative environmental impacts, contributing heavily to **air pollution**, **greenhouse gas emissions**, and **resource depletion**.

- Vehicles powered by fossil fuels release large amounts of carbon dioxide (**CO_2**), a leading cause of global warming and climate change. In addition, road traffic emits nitrogen oxides (NOx) and particulate matter, which degrade air quality and harm human health.

- The construction and maintenance of road infrastructure also lead to **habitat destruction**, **loss of biodiversity**, and **increased land use**. Furthermore, the reliance on non-renewable fossil fuels exacerbates resource depletion and contributes to environmental degradation on a global scale.

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6. The environmental dimension | CO2 emissions
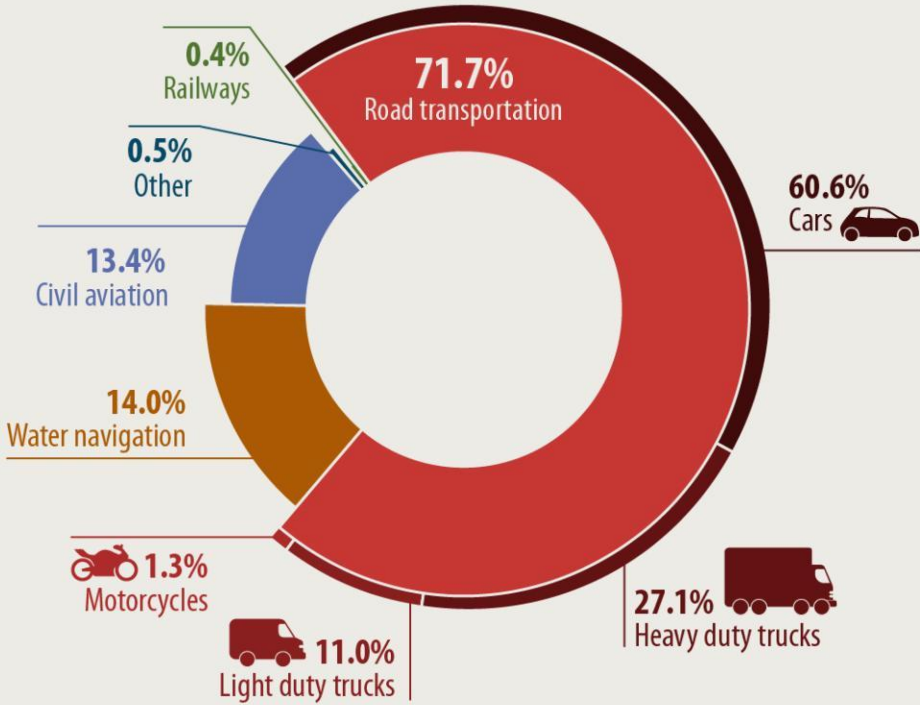
Transport
21%
of total CO2 emissions

Evolution of CO2 emissions in transport in Europe since 2000 (Mt CO2)
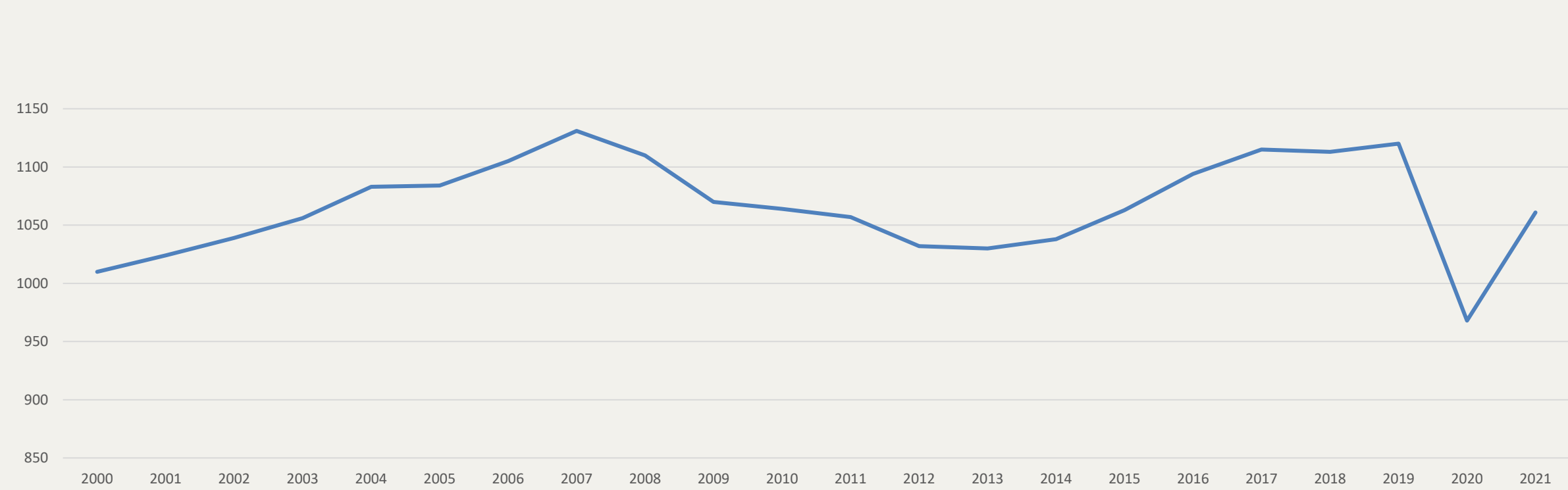
Source: Greenhouse Gas Emissions from Energy

TRANSPORT EMISSIONS IN THE EU
Greenhouse gas emissions breakdown by transport mode (2019)

- 0.4% Railways
- 0.5% Other
- 13.4% Civil aviation
- 14.0% Water navigation
- 1.3% Motorcycles
- 11.0% Light duty trucks
- 71.7% Road transportation
- 60.6% Cars
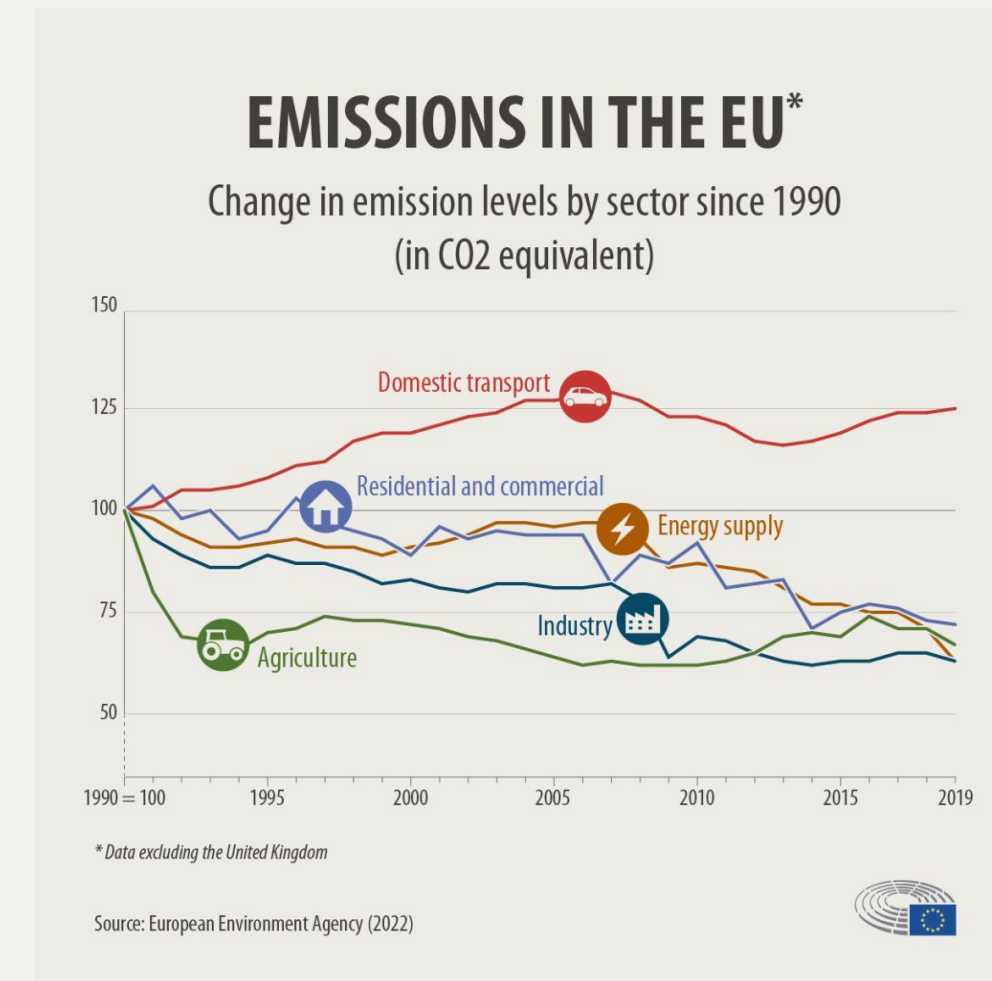- 27.1% Heavy duty trucks

Source: European Environment Agency (2022)

6. The environmental dimension | CO2 emissions

- Transport is the only sector where greenhouse gas emissions have increased in the past three decades, rising 33.5% between 1990 and 2019.
- Significantly reducing CO2 emissions from transport will not be easy, as the rate of emission reductions has slowed. Current projections put the decrease in transport emissions by 2050 at only 22%, far behind current ambitions.
- CO2 emissions from passenger transport varies significantly depending on the transport mode. Passenger cars are a major polluter, accounting for **61%** of total CO2 emissions from EU road transport.

EMISSIONS IN THE EU*

Change in emission levels by sector since 1990
(in CO2 equivalent)

Domestic transport

Residential and commercial

Energy supply

Industry

Agriculture

150
125
100
75
50

1990 = 100   1995   2000   2005   2010   2015   2019

* Data excluding the United Kingdom

Source: European Environment Agency (2022)

6. The environmental dimension | Regulation EU 2019/631 and 2023/851

- The **Regulation (EU) 2023/851 amending Regulation (EU) 2019/631 on strengthening CO2 emission standards for cars and vans** will:
  - contribute to reaching at least 55% net greenhouse gas emission reductions by 2030 compared to 1990 as well as achieving climate neutrality by 2050, in line with the European Climate Law;
  - provide benefits to EU citizens and vehicle users as a result of the wider deployment of clean and affordable zero-emission vehicles,
  - spur innovation in zero-emission technologies, strengthening the EU's technological leadership of the automotive value chain and stimulating employment in the EU.
- EU fleet-wide CO2 emission targets set in the Regulation:
  - **2020 to 2024**: Cars: 95 g CO2/km; Vans: 147 g CO2/km
  - **2025 to 2034** Cars: 93,6 g CO2/km (2025-2029) and 49,5 g CO2/km (2030-2034); Vans: 153,9 g CO2/km (2025-2029) and 90,6 g CO2/km (2030-2034)
  - **From 2035 onwards**, the EU fleet-wide CO2 emission target for both cars and vans is 0 g CO2/km, corresponding to a 100% reduction.

7. The social dimension

- Social sustainability in road transportation focuses on creating a system that is **inclusive**, **safe**, and **equitable** for all individuals, regardless of their socio-economic background.

- It involves designing transportation networks that promote **accessibility**, ensuring that people in both urban and rural areas have affordable, reliable mobility options.

- Social sustainability also considers the **health** and **safety** impacts of transportation, emphasizing the reduction of road accidents.

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7. The social dimension | Road safety

- **Road safety** is the first priority of the toll road operators. The social contract of motorway companies is to safeguard the safety of road users and their workers first and also to guarantee congestion-free traffic on their network. The motorway infrastructures are designed and built with highest quality and technological standards which make them the safest infrastructure than any other road infrastructure

- The European Commission is currently implementing its **EU Road Safety Policy Framework 2021-2030 – next steps towards 'Vision Zero'**, its long-term strategic goal to get close to zero fatalities and zero serious injuries on EU roads by 2050 (Vision Zero). As an intermediate step, its medium-term objective is to reduce deaths and serious injuries by 50 % by 2030, as already enshrined in the **2017 Valletta Declaration on Road Safety**. The framework includes a system monitoring fatalities and serious injuries at EU level based on 10 key performance indicators (KPIs) with timed targets for the reduction of casualties and serious injuries.

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7. The social dimension | Road safety

- Toll road operators permanently act at four levels on their network to improve road safety and reduce the number of road casualties:

  1. **Appropriate accident prevention measures** (e.g., Maintaining the road network with the highest possible standards of safety 365 days in all weather conditions)

  2. **Quick accident response** (i.e., reduce the impact of an accident and restore the traffic conditions on the infrastructure)

  3. **Collection and analysis of data accident** (to investigate the main causes of accidents and then implement successful strategies with proper actions on the infrastructure and / or drivers' behaviour)

  4. **Awareness-raising campaigns** (videos, spots, books, games)

7. The social dimension | High-level services

- Toll collection goes beyond simple payment, placing road users at the center of motorway operations.

- Modern operators provide not just transit, but a **high-quality "product"** with investments in safe, accessible infrastructure and smooth traffic flow. They offer Europe-wide traveler information, guiding users with real-time updates on traffic, weather, and incidents. Collaboration among operators ensures consistent service across borders, while electronic toll collection (**ETC**) improves traffic efficiency.

- To meet Green Deal goals, operators are shifting to **all-electronic tolling**, including cashless and contactless systems, and using variable pricing to reduce congestion and carbon emissions, supporting more sustainable travel

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7. The social dimension | High-level services

- **C-ITS** will enable real-time data exchange between vehicles and infrastructure, supporting autonomous driving. Toll operators are deploying a hybrid approach using ITS-G5 and long-range cellular communication, with future integration of 5G. Managing interference with existing systems like electronic tolling is crucial, and wide deployment will require significant investment.

- Toll operators are also adopting **AI** to transition from traditional to free-flow tolling. AI automates vehicle classification and will soon handle complex tasks like identifying special vehicles, aiming to match the accuracy of manual systems.

8. The governance

- Sustainable governance in road transportation is essential for ensuring long-term environmental, social, and economic benefits. It involves creating policies and regulations that promote cleaner technologies, reduce carbon emissions, and improve air quality, while also considering the needs of diverse populations.

- Here are some examples:

  1. **Sustainability Reporting**: Companies like toll road operators or logistics firms should report on their environmental impact, including carbon emissions, fuel consumption, and waste management. They set clear sustainability goals aligned with global standards like the UN Sustainable Development Goals (SDGs).

  2. **Board-Level Sustainability Oversight**: Many transportation companies have established board committees dedicated to sustainability, ensuring that ESG considerations are prioritized in strategic decisions and long-term planning.

  3. **Investment in Clean Technologies**: Companies involved in road transportation, such as vehicle manufacturers or logistics providers, invest in electric or hydrogen-powered fleets, cleaner fuel options, and carbon-neutral infrastructure to reduce their environmental footprint.

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8. The governance

4. **Ethical Supply Chain Management**: Sustainable governance ensures companies are accountable for their supply chains by sourcing materials responsibly, minimizing emissions, and promoting fair labor practices in all aspects of road transportation, from vehicle production to road maintenance.

5. **Stakeholder Engagement**: Companies actively engage with stakeholders, including local communities, governments, and NGOs, to address concerns such as road safety, environmental impact, and equitable access to transportation services.

6. **Employee Training and Development**: Firms prioritize training their workforce in sustainable practices, like eco-driving techniques for reducing fuel consumption or managing electric vehicle fleets, while promoting a culture of sustainability throughout the organization.

7. **Risk Management and Resilience**: Sustainable governance includes evaluating risks related to climate change, such as infrastructure damage from extreme weather, and incorporating these considerations into corporate strategies to build more resilient transportation systems.

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9. Final remarks

- The industry has been engaged with sustainability for a **long time**
- A shift toward a full sustainability paradigm is **underway**
- Strong focus on the E (**Environment**) and S (**Health & Safety**) dimensions…
- ….but real change comes from the G (**Governance**)
- To achieve real impact, an **industry-wide and policy-driven approach** is needed — not just a technological or managerial one (strategy and shared strategy/vision)

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