

# Appendices

## A1 Abbreviations and acronyms

|                        |   |                              |   |
|------------------------|---|------------------------------|---|
| <b>AtJ</b>             | Alcohol-to-jet  | <b>DAC</b>                   | Direct air capture  |
| <b>AFIR</b>            | Alternative fuel infrastructure regulation                        | <b>DPD</b>                   | Geopost (formerly Dynamic Parcel Distribution Group)                |
| <b>AREC</b>            | Agence Régionale Énergie Climat                                   | <b>DNV</b>                   | Det Norske Veritas  |
| <b>ASTM</b>            | American Society for Testing and Materials                        | <b>DRI-EAF</b>               | Direct reduced iron-electric arc furnace                            |
| <b>ATR</b>             | Autothermal reforming   | <b>EAF</b>                   | Electric arc furnace  |
| <b>BaaS</b>            | Battery as a service  | <b>EEXI</b>                  | Energy Efficiency Design Index                                      |
| <b>BAU</b>             | Business as usual   | <b>EIA</b>                   | US Energy Information Administration                                |
| <b>BECCS</b>           | Bio energy with carbon capture and storage                        | <b>EJ</b>                    | Exajoules   |
| <b>B2B</b>             | Business to business  | <b>EPA</b>                   | US Environmental Protection Agency                                  |
| <b>B2C</b>             | Business to consumer  | <b>EPD</b>                   | Environmental product declaration                                   |
| <b>BETs</b>            | Battery electric trucks   | <b>ESG</b>                   | Environment, sustainability and governance                          |
| <b>BF-BOF</b>          | Blast furnace-basic oxygen furnace                                | <b>ETS</b>                   | Emissions Trading Scheme  |
| <b>bpx</b>             | British Petroleum Exploration                                     | <b>EU</b>                    | European Union  |
| <b>BTC</b>             | Blender's tax credit  | <b>EU-ETS</b>                | European Union-Emissions Trading Scheme                             |
| <b>CALCFS</b>          | California Low-Carbon Fuel Standard                               | <b>EV</b>                    | Electric vehicle  |
| <b>CAJU</b>            | Clean Aviation Joint Undertaking                                  | <b>FAME</b>                  | Fatty acid methyl ester   |
| <b>CapEx</b>           | Capital expenditure   | <b>FMC</b>                   | First Movers Coalition  |
| <b>CBAM</b>            | Carbon Border Adjustment Mechanism                                | <b>FT</b>                    | Fischer-Tropsch   |
| <b>CCfD</b>            | Carbon Contracts for Difference                                   | <b>GCCA</b>                  | Global Cement and Concrete Association                              |
| <b>CCS</b>             | Carbon capture and storage  | <b>GHG</b>                   | Greenhouse gas  |
| <b>CCUS</b>            | Carbon capture, utilization and storage                           | <b>GIIGNL</b>                | International Group of Liquefied Natural Gas Importers              |
| <b>CII</b>             | Carbon intensity indicator  | <b>GJ</b>                    | Gigajoule   |
| <b>CO<sub>2</sub></b>  | Carbon dioxide  | <b>GCL</b>                   | Golden Concord Group  |
| <b>CO<sub>2</sub>e</b> | Carbon dioxide equivalent   | <b>gCO<sub>2</sub></b>       | Grams of CO <sub>2</sub>  |
| <b>CORSIA</b>          | Carbon Offsetting and Reduction Scheme for International Aviation | <b>g/CO<sub>2</sub>/MJ</b>   | Grams of CO <sub>2</sub> per megajoule                              |
| <b>CPC</b>             | Taiwan Chinese Petroleum  | <b>gCO<sub>2</sub>e/RPK</b>  | Grams of CO <sub>2</sub> equivalent per revenue passenger kilometre |
| <b>CSP</b>             | Clean Steel Partnership   | <b>gCO<sub>2</sub>e/t-nm</b> | Grams of CO <sub>2</sub> equivalent per tonne nautical mile         |

|                              |  |                           |  |
|------------------------------|--|---------------------------|--|
| <b>gCO<sub>2</sub>e/tnm</b>  | Grams of CO <sub>2</sub> equivalent per tonne mile                   | <b>MPP</b>                | Mission Possible Partnership                             |
| <b>GPP</b>                   | Green public procurement   | <b>MRV</b>                | Measurement, reporting and verification                  |
| <b>GRI</b>                   | Global Reporting Initiative  | <b>MT</b>                 | Million tonnes   |
| <b>GSA</b>                   | Global Arrangement on Sustainable Steel and Aluminium                | <b>MTPA</b>               | Million tonnes per annum                                 |
| <b>GT</b>                    | Gigatonnes or billion tonnes   | <b>MVR</b>                | Mechanical vapour recompression                          |
| <b>gtCO<sub>2</sub>e</b>     | Gigatonnes of CO <sub>2</sub> equivalent                             | <b>OEMs</b>               | Original equipment manufacturers                         |
| <b>GW</b>                    | Gigawatt   | <b>PPA</b>                | Purchase power agreements                                |
| <b>HDT</b>                   | Heavy duty trucks  | <b>PtL</b>                | Power-to-liquids   |
| <b>HEFA</b>                  | Hydro processed esters and fatty acids                               | <b>R&amp;D</b>            | Research and development                                 |
| <b>HETs</b>                  | Hydrogen electric trucks   | <b>SAF</b>                | Sustainable aviation fuels                               |
| <b>IAI</b>                   | International Aluminium Institute                                    | <b>SCM</b>                | Supplementary cementitious materials                     |
| <b>IATA</b>                  | International Air Transport Association                              | <b>S&amp;P</b>            | Standard & Poor's  |
| <b>ICAO</b>                  | International Civil Aviation Organization                            | <b>SMR</b>                | Steam methane reforming                                  |
| <b>ICE</b>                   | Internal Combustion Engine   | <b>SPIC</b>               | Chinese State Power Investment Company                   |
| <b>ICS</b>                   | International Chamber of Shipping                                    | <b>SSAB</b>               | Swedish Steel (Svenskt Stål AB)                          |
| <b>ICCT</b>                  | International Council on Clean Transportation                        | <b>TCO</b>                | Total cost of ownership                                  |
| <b>IDDI</b>                  | Industrial Deep Decarbonisation Initiative                           | <b>t</b>                  | Tonnes   |
| <b>IEA</b>                   | International Energy Agency  | <b>tCO<sub>2</sub></b>    | Tonnes of carbon dioxide                                 |
| <b>IMO</b>                   | International Maritime Organization                                  | <b>tCO<sub>2</sub>e</b>   | Equivalent tonnes of carbon dioxide                      |
| <b>IRA</b>                   | Infrastructure Investment and Jobs Act                               | <b>tCO<sub>2</sub>e/t</b> | Tonnes of CO <sub>2</sub> equivalent per tonne of output |
| <b>JV</b>                    | Joint venture  | <b>TEN-T</b>              | Trans-European Transport Network                         |
| <b>kg</b>                    | Kilograms  | <b>TRL</b>                | Technology readiness level                               |
| <b>kgCO<sub>2</sub>e/boe</b> | Kilograms of CO <sub>2</sub> equivalent per barrel of oil equivalent | <b>UN</b>                 | United Nations   |
| <b>LCAF</b>                  | Low-carbon aviation fuel   | <b>US</b>                 | United States  |
| <b>LDAR</b>                  | Leak detection and repair  | <b>VRE</b>                | Variable renewable energy                                |
| <b>LME</b>                   | London Metal Exchange  | <b>WACC</b>               | Weighted average cost of capital                         |
| <b>LNG</b>                   | Liquefied natural gas  | <b>WRI</b>                | World Resources Institute                                |
| <b>LSE-TPI</b>               | London School of Economics Transition Pathway Initiative             | <b>ZEF</b>                | Zero emission fuels                                      |
| <b>MARS</b>                  | Methane alert and response system                                    | <b>ZET</b>                | Zero-emission trucks                                     |
| <b>MoU</b>                   | Memorandum of understanding  | <b>ZEV</b>                | Zero emission vehicles                                   |

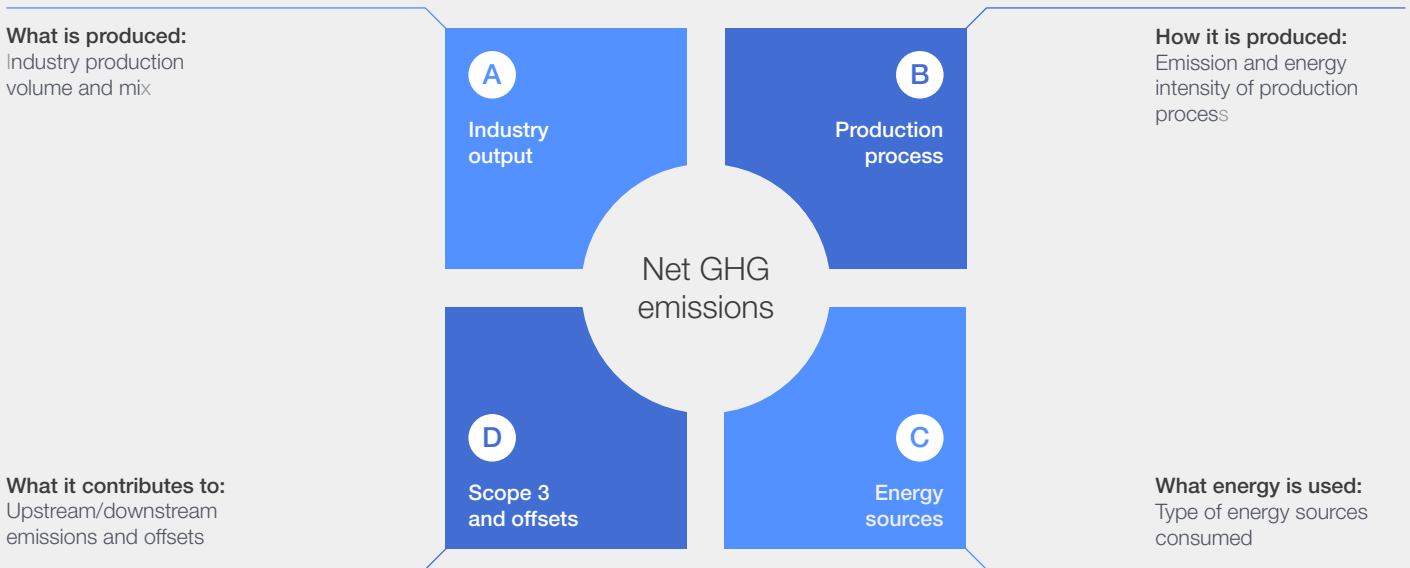
## A2 | Mission and methodology

An adapted version of the performance framework has been developed to account for variance in reporting requirements for the transport sector. The transport sector framework will account for greenhouse gas (GHG) emissions in the operational and fuel supply value chains against 2050 targets.

The 2023 iteration of the framework for production sectors remains the same.

FIGURE 73 | The Net-Zero Industry performance framework

Track progress of the **four drivers** of industry net GHG emissions:



Track progress of the **four drivers** of industry net GHG emissions:

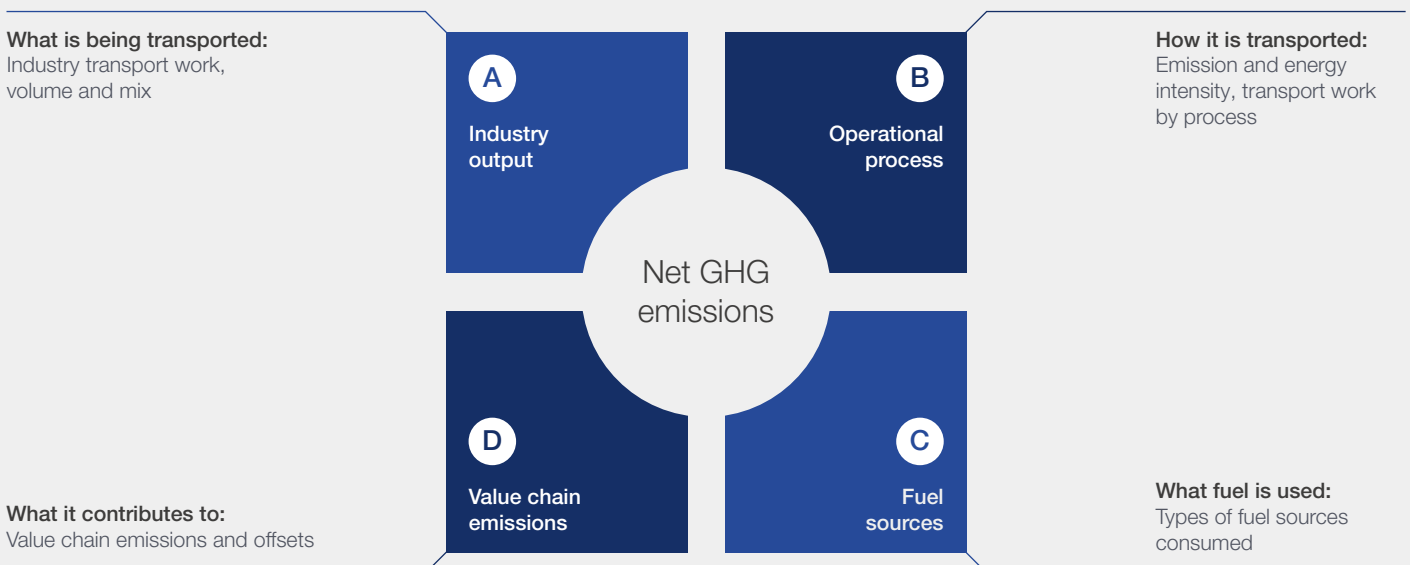


TABLE 13 | Criteria for assessing readiness stages of transformation enablers

| Technology   | Infrastructure   | Demand  | Policies   | Capital   |
|--|--|---|--|---|
| <b>Availability of technology</b> <ul style="list-style-type: none"> <li>– Technology options for low-emission production</li> <li>– Technology emission abatement potential</li> <li>– Technology readiness level (TRL)</li> <li>– Technology maturity timeline</li> <li>– Competitiveness of technology</li> <li>– Technology impact on production cost</li> <li>– Technology deployment</li> <li>– Technology adoption/ deployment</li> </ul> | <b>Infrastructure requirements</b> <ul style="list-style-type: none"> <li>– Infrastructure capacity required by 2050</li> <li>– Infrastructure investments required by 2050</li> <li>– Infrastructure deployment</li> <li>– Infrastructure deployment level</li> </ul> | <b>Market dynamics</b> <ul style="list-style-type: none"> <li>– Size of market</li> <li>– Historical price volatility</li> <li>– Price elasticity of demand</li> <li>– Availability and scalability of substitutes</li> <li>– Green premium for direct customers/ wholesale customers</li> <li>– Green premium for end consumers</li> <li>– Business model readiness</li> <li>– Standards and traceability of low-emission products</li> <li>– Availability of low-carbon substitute in the market</li> <li>– Effective green demand</li> <li>– Market share of low-emission products</li> <li>– Volume and strength of demand signals (e.g. regulation, public procurement)</li> </ul> | <b>Industry-/product-specific policies</b> <ul style="list-style-type: none"> <li>– Product specification standards</li> <li>– Product use standards</li> <li>– Public procurement standards</li> <li>– Product emission regulation/penalties</li> <li>– Impact of existing policies</li> <li>– Coverage of existing policies</li> <li>– Policy gaps</li> <li>– Competitiveness of technology</li> <li>– Carbon pricing</li> <li>– Carbon border adjustment mechanisms</li> <li>– Emission regulation</li> <li>– Public regulation</li> <li>– Public action/projects</li> <li>– Tax breaks</li> <li>– Subsidies</li> </ul> | <b>Ability to attract capital</b> <ul style="list-style-type: none"> <li>– Availability of adequate taxonomy</li> <li>– Profitability/level of returns</li> <li>– Cash availability</li> <li>– Credit rating</li> <li>– Cost of capital</li> <li>– Environment, sustainability and governance (ESG) rating</li> <li>– Expected returns as a differentiated product</li> <li>– Capital deployment</li> <li>– Scale of investments needed</li> <li>– Number of projects invested</li> <li>– Amount of green capital expenditure (CapEx)</li> <li>– Amount of green bonds</li> <li>– Amount of R&amp;D investments</li> <li>– Amount of venture capital investments</li> <li>– Amount of government funding</li> <li>– Risk to early investors</li> <li>– Geographic distribution of assets</li> </ul> |

# A3 Data sources

## Methodology sources

Aluminium Stewardship Initiative (ASI)

BloombergNEF (BNEF)

Commodities Research Unit (CRU)

First Movers Coalition

Global CCS Institute

Global Cement and Concrete Association (GCCA)

Global Maritime Forum

International Air Transport Association (IATA)

International Aluminium Institute (IAI)

International Council on Clean Transportation (ICCT)

International Energy Agency (IEA)

Transition Pathway Initiative Centre, London School of Economics and Political Science (LSE-TPI Centre)

Mission Possible Partnership

Standard & Poor's Global (S&P Global)

World Steel Association

## Other data sources

Accenture

Air Transport Action Group (ATAG)

ABB

Biogasworld

Breakthrough Energy

Det Norske Veritas (DNV)

Drive to Zero

Ember

Energy Information Administration (EIA)

Energy Transitions Commission (ETC)

European Cement Research Academy (ECRA)

European Maritime Safety Agency (EMSA)

Financial Times

Food and Agriculture Association of the United Nations (FAO)

Fortune Business Insights

Georgia Institute of Technology

Green Steel

Holcim

Industry Tracker

International Civil Aviation Organisation (ICAO)

International Gas Union (IGU)

International Maritime Organization (IMO)

International Renewable Energy Association (IRENA)

Maersk McKinney Moller Center for Zero Carbon Shipping (MMM)

National Institute of Statistics and Economic Studies (INSEE)

NYU Stern

Refinitiv

Rocky Mountain Institute (RMI)

Royal Dutch Shell (Shell)

Rystad

Sea-LNG

Sustainable Gas Institute (Imperial College London)

Swedish Steel (SSAB)

The Geography of Transport Systems

Organisation for Economic Cooperation and Development (OECD)

United Nations Conference on Trade and Development (UNCTAD)

United States Geological Survey (USGS)

University of Wyoming

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## Acknowledgements

The World Economic Forum acknowledges and thanks the experts, without whose support the *Net-Zero Industry Tracker 2023* edition would not have been possible. This report does not reflect the views of these companies and individuals. Expert advice is purely consultative in nature and does not imply any association with the takeaways or conclusions presented within this report.

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# Cross industry findings endnotes

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