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# Climate Target Setting for Automotive Sector Financing

Emerging practice paper

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## Disclaimer

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# Purpose of this publication

This sector-specific analysis for the automotive sector is part of a series developed by members of the Net-Zero Banking Alliance (NZBA) with the purpose of outlining the choices banks make when setting climate-related targets in particular sectors of the real economy. This series identifies emerging practices and approaches to establishing emissions targets for bank financing, while also identifying prevailing trends, common challenges and policy, data, and other gaps.

The overarching goal of this analysis is to assist NZBA members in formulating or refining their own targets towards net-zero emissions going forward. It does not impose any new requirements on NZBA member banks over and above the ones they chose to commit to when becoming a signatory and is not prescriptive in terms of specifying when and how they are expected to decarbonise their sector-specific lending and investment portfolios. Due to the fast-paced environment characterised by rapidly evolving scenarios, pathways, scientific advancements, and developments in the real economy, this publication should be regarded as a review of current practices.

This sector-specific publication will focus on providing the baseline information banks can use when actively steering their portfolio towards emission reductions in the automotive sector. This paper focuses on decarbonisation and does not consider other important environmental and social issues.



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# About the Net-Zero Banking Alliance

The industry-led, UN-convened Net-Zero Banking Alliance (NZBA) brings together a [global group of banks](#), currently representing over 40% of global banking assets, which are committed to aligning their lending and investment portfolios with net-zero emissions by 2050.

Combining near-term action with accountability, this ambitious commitment sees [signatory banks](#) setting intermediate targets for 2030 or sooner using robust, science-based guidelines.

NZBA is the flagship climate initiative under the [Principles for Responsible Banking](#) to accelerate science-based climate target setting and develop common practice. As the banking alliance within the global efforts on net zero across the finance industry brought together under GFANZ, the NZBA is open to all banks globally, including banks that are not UNEP FI members and Principles for Responsible Banking signatories.

The Alliance reinforces, accelerates, and supports the implementation of decarbonisation strategies, providing an internationally coherent framework and guidelines in which to operate, supported by peer-learning from pioneering banks. It recognises the vital role of banks in supporting the global transition of the real economy to net-zero emissions.

The Alliance is convened by the [UN Environment Programme Finance Initiative](#) and is a part of the [Race to Zero](#).

Learn more here: [unepfi.org/net-zero-banking/](https://unepfi.org/net-zero-banking/)

# Abbreviations and acronyms

<b>BEV(s)</b>	Battery electric vehicle(s)
<b>CNG</b>	Compressed natural gas
<b>EV(s)</b>	Electric vehicle(s)
<b>EU</b>	The European Union
<b>FCEV(s)</b>	Fuel cell electric vehicle(s)
<b>GHG</b>	Greenhouse gases
<b>HDV(s)</b>	High duty vehicle(s)
<b>HEV(s)</b>	Hybrid electric vehicle(s)
<b>ICE</b>	Internal combustion engine
<b>ICEV(s)</b>	Internal combustion engine vehicle(s)
<b>IEA</b>	International Energy Agency
<b>IEA B2DS</b>	International Energy Agency Beyond 2° Scenario
<b>IEA NZE</b>	International Energy Agency Net Zero Emissions by 2050 Scenario
<b>ISSB</b>	International Sustainability Standards Board
<b>LPG</b>	Liquefied petroleum gas
<b>NGFS</b>	Network for Greening the Financial System
<b>NZBA</b>	Net-Zero Banking Alliance
<b>OEM(s)</b>	Original equipment manufacturer(s)
<b>PCAF</b>	Partnership for Carbon Accounting Financials
<b>PHEV(s)</b>	Plug-in hybrid electric vehicle(s)
<b>SBTI</b>	Science Based Targets initiative
<b>SUV</b>	Sport Utility Vehicle
<b>WACI</b>	Weighted average carbon intensity
<b>WEO</b>	World Energy Outlook
<b>WLTP</b>	Worldwide Harmonised Light Vehicle Test Procedure



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# Summary

The table below summarises the key design choices financial professionals face when setting net-zero financing targets for the automotive sector.

Design choices	Elements	Automotive Sector
Sector scoping	Financial products	Banks can set targets across their loan books as well as capital market products. Common financial products that are considered by banks include general corporate finance, captive finance (to manufacturers), loans to other finance arms, as well as direct vehicle loans (to end customers). Methodologies for setting targets on loan books are most advanced.
	Value chain stakeholders	Banks can set one or more targets for any of the value chain stakeholders, namely suppliers, vehicle manufacturers/original equipment manufacturers <sup>1</sup> (OEMs), distribution and sales, as well as end customers (see Annex A for more detailed definitions). This paper focuses on setting targets for financing of vehicle manufacturers. Methodologies covering direct vehicle loans are available from third parties, such as the Partnership for Carbon Accounting Financials (PCAF).
	Emissions	Emissions coverage can include operational emissions of vehicle manufacturers and component manufacturers (Scope 1 and 2), as well as tailpipe emissions (Scope 3) of the vehicle.
Target-setting metrics and data	Metric types	NZBA Guidelines direct banks to set financed emissions targets using absolute emissions metrics (e.g. annual tCO <sub>2</sub> e) and/or emissions intensity metrics based on an activity (e.g. annual kg of CO <sub>2</sub> per vehicle km travelled (/v(k)m)).
	Attribution approach	Two broad attribution approaches are available to banks: the balance sheet approach and the portfolio weight approach.
	Data sources	Banks have several data sources available, including client reports, Asset Impact, Auto Forecast Solutions, European Environment Agency, World Bank Benchmarking Alliance, JATO volumes, S&P Global Mobility, Transition Pathway Tool (TPI), Trucost Environmental ESG Data Pack, PCAF Database, and Wards Intelligence.



Design choices	Elements	Automotive Sector
Pathways	Scenario choice	<p>NZBA Guidelines direct member banks to use widely accepted, science-based decarbonisation scenarios to guide members when setting individual long-term and intermediate targets that are aligned with the temperature goals of the Paris Agreement. In addition, per the Guidelines, “scenarios selected shall be “no overshoot” or “low-overshoot” scenarios,” and should have a &gt;50% probability of limiting global warming to 1.5°C by the end of the century.</p> <p>Scenarios discussed in this paper are IEA Net Zero Emissions by 2050 Scenario (IEA NZE 2050) and the Network for Greening the Financial System (NGFS) Net Zero scenario. However, other 1.5°C scenarios and pathways exist (e.g. One Earth Climate Model) or are being developed at the time of publication (e.g. SBTi).</p>
	Benchmark pathway	<p>Three approaches are available to design the benchmark pathway:<sup>2</sup></p> <ul style="list-style-type: none"> <li>▪ <b>Convergence approach:</b> implies that all counterparties converge to net-zero-aligned industry-average emissions intensity levels.</li> <li>▪ <b>Contraction approach or rate-of-reduction:</b> implies that all counterparties reduce emissions at the same net-zero-aligned, industry-average rate, irrespective of their current and past performance.</li> <li>▪ <b>Fair share approach:</b> defines the average rate of reduction in absolute emissions for an industry but recognises that individual counterparties may be better- or worse-performing than average.</li> </ul>

# 1. Introduction

## 1.1 Methodological approach taken by this paper

In this document, the Net-Zero Banking Alliance (NZBA) examines science-based approaches employed by banks to establish and measure their progress in developing individual net-zero targets for their transportation portfolios.

The publication was developed by an NZBA working group comprising 17 NZBA member banks who have already set, or are currently developing, their net-zero targets for the automotive and/or trucking sector. The working group's analysis is structured around six building blocks, as depicted in Figure 1, which form the basis of this document.

Banks setting net-zero targets for the automotive sector will make critical design choices to appropriately scope their approach, including:

- Financial products in scope: Understanding the different financial products that can be in scope for banks.
- Value chain scope: Identifying and engaging relevant stakeholders throughout the automotive value chain to promote emissions reduction efforts.
- Vehicle type considerations: Recognising the influence of different vehicle types on target setting due to their distinct emissions profiles, lifespan, and potential for decarbonisation.
- Greenhouse gas emissions and scopes: Identifying the diverse sources of emissions within the automotive industry.
- Assessing 1.5°C pathways: Banks gain insights into strengths and gaps of prominent pathways that guide the automotive sector's alignment with the 1.5°C target.
- Establishing metrics and methods: Banks select metrics and methodologies to measure progress and individually set ambitious targets in line with global climate objectives.
- Accessing relevant data sources: Banks utilise sector-specific and regional data sources to inform target setting and decision making.



**Figure 1:** The six building blocks considered by banks through the target-setting process

Recognising the significant regional variations in regulations, reporting requirements, data availability, and the maturity of zero-emission vehicle markets and associated infrastructure, this publication aims to provide a nuanced understanding of the multiple factors influencing a bank's assumptions underlying a bank's net-zero targets.

The following information provided is not exhaustive, and banks must navigate data limitations both at the collateral and scenario levels, necessitating reliance on the availability of national data and regional scenarios. NZBA recognises that approaches to target setting in various sectors are evolving and will continue to do so, highlighting the dynamic nature of this field. As such, this document represents a point-in-time assessment.

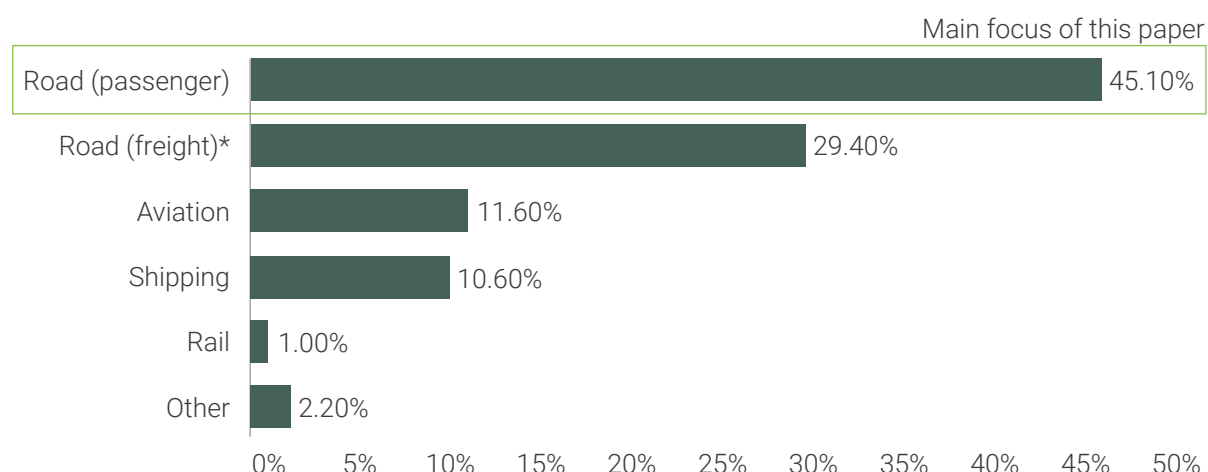
While the publication focuses on decarbonisation and does not include other environmental, social, or governmental aspects, banks need to consider the conduct implications and clients' ongoing access to financing when steering their portfolios. Adhering to these principles will also help avoid the creation of stranded assets by adapting to changes, such as shifts in regulatory or environmental policies, as well as avoiding investments in assets that later are less likely to become non-viable or obsolete.

Importantly, the paper is designed to complement the *NZBA's Guidelines for Climate Target Setting for Banks* (the Guidelines) and does not prescribe any specific methodologies for banks to adopt. It is essential, however, any action taken based on information in this publication to fulfil a bank's NZBA Commitment should adhere to all provisions of the Guidelines. Moreover, national laws and regulations should take precedent.

## 2. Understanding the automotive sector

### 2.1 Greenhouse gas emissions of the transport sector

As global greenhouse gas (GHG) emissions continue to rise, urgent action is required to address climate change and its wide-ranging consequences. Within the spectrum of sectors contributing to these emissions, the transport sector emerges as significant. Annually, it adds 8.7 Gt CO<sub>2</sub>e emissions, accounting for 23% of global energy-related emissions.<sup>3</sup> Of these emissions, a significant portion (about 70%) stems from road vehicles responsible for both passenger and freight transport.



\*Road (freight) is only partially covered by this paper.

**Figure 2:** Global CO<sub>2</sub> emissions from transportation [Source: “Our World in Data” (2020)]

Projections indicate a varied landscape for the global vehicle fleet. While OECD countries are expected to witness fleet volumes reaching a plateau, non-OECD countries are poised to experience significant growth, with the addition of over one billion vehicles, predominantly featuring conventional internal combustion engines.

Between now and 2030, an annual reduction of approximately 5 Gt CO<sub>2</sub>e is needed, totalling around 25–30 Gt CO<sub>2</sub>e over that period, across all economic sectors.<sup>4</sup> Looking ahead to 2050, an ambitious target of an 80% overall reduction in transportation-related emissions must be pursued to remain within 1.5°C warming.<sup>5</sup>

## 2.2 Strategic options for the decarbonisation of the automotive sector

Decarbonising the automotive sector requires exploration of multiple potential decarbonisation pathways, with the acknowledgement that these pathways are not just primarily dependent on financing but also require action from governments, industry players and customers. Banks are encouraged to set ambitious and forward-thinking targets for their financial activities, and engagement from all relevant stakeholders is crucial. The sector will need to transition towards electrifying mobility and reconsider the continued and widespread utilisation of cars as a primary means of transportation.<sup>6</sup> Consequently, manufacturers must carefully reconsider their business models and promotional strategies surrounding vehicle usage, facilitating the necessary shift towards a more sustainable transportation paradigm.

Overall, the transition of the sector calls for necessary achievements, ranging from the near-term to the extended long-term, namely:

1. Improving efficiency of vehicles produced;
2. Transitioning from carbon-intensive modes of transport to less carbon-intensive transportation ranging from increasing the utilisation rate of vehicles (measured as people per vehicle per kilometre) to implementing solutions better suited for urban, peri-urban, and rural environments. This can include but is not limited to: bicycles and expanding bicycle lanes, reducing speed limits, and developing infrastructure support for zero-emission vehicles<sup>7</sup> etc.;
3. Maximising the electrification rate of the transport sector—i.e. the shift from internal combustion engine (ICE) to electric vehicle (EV).

While the outlined decarbonisation achievements are also reliant on governmental and policy interventions, the private sector also has a role to play and has increasingly set EV targets in line with government action. Financial institutions can expedite decarbonisation goals by supporting clients' transition through targeted capital allocation and structuring. This focused financial support can drive both the innovation in sustainable vehicle design (ranging from low-carbon components to applying circular economic principles) and the consumer adoption of net-zero emission options, such as EVs, thereby reinforcing governmental efforts to decarbonise the transport sector.

A net-zero energy sector is a fundamental upstream contributor to decarbonisation efforts, as the future generation and supply of power strongly influences the decarbonisation efforts within the transport sector. Banks need to consider these dependencies when analysing their role in the context of potential impact within the transport sector.

### 3. Design choices for scoping the sector

This publication focuses on banks' approaches to setting targets to reduce emissions associated with clients in the automotive sector, specifically related to a vehicle's production and use phase. However, it is acknowledged that banks' design choices can help incentivise additional action in the sector to reduce GHG emissions, including:

- Using lending activities to encourage fuel-switching to net-zero fuels, development of improved manufacturing, material improvements, and extended battery life cycles.
- Implementing circularity approaches to reduce embedded emissions in materials, increase raw material recycling rates, and minimise production waste, resulting in decreased Scope 1, 2 and 3 emissions from vehicle manufacturers.
- Financing infrastructure and switching vehicles to reduce private transportation demand.

Banks' financing and target-setting focus in the automotive sector is subject to change and is influenced by transition rates, i.e. the speed at which the sector decarbonises, and by sound investment decisions to ensure capital safety. As the sector advances in its electrification journey, characterised by a significant uptake of zero-emission vehicles, banks may decide to extend their scope to encompass other interconnected components. This evolution is rooted in the changing landscape of emissions sources that accompanies the sector's electrification. Factors such as mining for elements used in batteries and the application of circular economic principles become more salient in this context. Consequently, the durability and recyclability of batteries assumes growing significance in this dynamic scenario. Although not in scope of this paper, banks can additionally consider engagement with suppliers of raw minerals (such as lithium, cobalt, or nickel) in a separate target to address these nested opportunities (such as incentivising sustainable raw material sourcing) and continue to reduce their financed emissions in related markets.<sup>8</sup>

Taking a cross-sectoral perspective allows for a comprehensive approach to the automotive sector, encompassing not only manufacturers but also related components and processes. However, this approach adds complexity to emissions accounting and adds risk of double-counting with other sectors such as steel, rubber, and heavy industry. Double-counting can have several unintended consequences, including portraying an inaccurate image of emissions reduction achievements or disguising counter-dependencies if one sector (e.g. upstream or downstream Scope 3 emissions) progresses at a different pace than the sector in focus. This publication addresses such cross-sectoral interfaces where needed to ensure accurate emissions accounting and avoid duplication of efforts.

# 3.1 Scoping the automotive sector: value chain and vehicle types

By establishing an accurate scope of the specific stakeholders within the automotive value chain, banks can understand how to incentivise their clients' design decisions to reduce emissions associated with a vehicle's use phase and lifecycle, e.g. suppliers might need different incentives than vehicle manufacturers. The value chain for vehicle production (Figure 3) encompasses four key stakeholder groups: suppliers, original equipment manufacturers (OEMs)/manufacturers, distribution and sales, and vehicle users/end customers.<sup>9</sup> While raw material producers are acknowledged and influence a vehicle's lifecycle emissions, they are not within the scope of this analysis.



**Figure 3:** Value chain of the automotive production industry

Each stakeholder group offers different opportunities to achieve a net-zero transformation within the sector. Table 1 offers a comprehensive overview of the benefits and challenges associated with the inclusion of each stakeholder group within a target, enabling a focused approach to address their unique circumstances and emissions reduction potential.

**Table 1:** Challenges and benefits of including the identified value chain segments within the scope of banks' target setting for the automotive sector

Value chain	Challenges (Cons)	Benefits (Pros)	Share of CO <sub>2</sub> emissions & downside of not including emissions from this value chain segment
<b>Suppliers</b>	<ul style="list-style-type: none"> <li>▪ <b>Diversity of components:</b> Diversity in types of auto component (such as engines and compartments, batteries brakes, spark plugs, tires etc) can give us a wide range of emissions profiles from different stakeholders, which are covered by banks to varying degrees and might thus skew comparability of emission targets.<sup>10</sup></li> <li>▪ <b>Range of components:</b> The range of components and their manufacturers might lead to a convoluted identification of decarbonisation levers, thereby complicating a bank's insights to drive decision-making.</li> <li>▪ <b>Insufficient guidance:</b> Lack of pathways, data, and guidance on emissions reporting from suppliers complicates systematic recording.</li> <li>▪ <b>Granularity:</b> Difficulties exist in attributing emissions in a sufficiently granular manner.</li> <li>▪ <b>Decreasing relevance:</b> As the sector moves towards electrification, the number of part producers (and their aggregated footprint) is likely to decrease, as EVs contain approximately 100 fewer parts than a regular ICE vehicle. EV manufacturers produce most of these parts themselves, except for batteries. The additional work of including part manufacturers in target setting will be less and less relevant over time, causing a lack of motivation to develop thorough accounting methods.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Financing value chain actors who are relevant for transition, including manufacturers of EV batteries and fuel cells offers opportunities to accelerate a transition.</li> <li>▪ Manufacturing emissions of auto component manufacturers (Scope 1 and 2) can be systematically tracked.</li> <li>▪ Financing innovations to increase efficiency of essential components can lead to significantly reduced embedded material emissions.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Suppliers contribute to the share of embedded emission of cars (Scope 3 emissions of vehicle manufacturers).</li> <li>▪ Around 18%–22% of emissions can be linked to the auto supply chain, particularly the production of materials (not taking logistics into account).<sup>11</sup></li> </ul>



Value chain	Challenges (Cons)	Benefits (Pros)	Share of CO <sub>2</sub> emissions & downside of not including emissions from this value chain segment
<b>Original equipment manufacturer (OEM)/ manufacturer</b>	<ul style="list-style-type: none"> <li>▪ <b>Accuracy of emissions reporting:</b> Scoping and attributing emissions coherently can potentially be challenging for auto manufacturers who rely on suppliers to manufacture components and report related emissions according to GHG accounting methodologies. The emission impact can be slightly higher for OEMs who manufacture their own batteries which will result in higher emissions.<sup>12</sup></li> <li>▪ <b>Need for political support:</b> While OEMs produce the end product, they still need support from governments through policies that promote charging infrastructure, encourage behavioural customer change, or accelerate the decarbonisation of the power generation sector. This might differ across regions and need to be consider when setting targets.</li> </ul>	<ul style="list-style-type: none"> <li>▪ OEMs have the greatest impact on design choices of vehicles that effect emissions when vehicles are in use.</li> <li>▪ Banks typically work directly with OEM clients through financing thereby indirectly exerting considerable support to other value chain stakeholders.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Credibility risk of not including OEMs is increased as OEMs are in the public eye.</li> <li>▪ Manufacturers have the most influence over the end-use vehicle emissions as they control which new vehicles will be available. But they have low emissions profiles themselves (relative to the rest of the value chain, i.e., end users)</li> <li>▪ Tank-to-wheel emissions are considered Scope 3 but are directly controlled by the company's manufacturing plans (they are directly related to the type of vehicle sold and its fuel economy). As such, they represent the majority of sector emissions.</li> <li>▪ In total, around 80% of emissions can be linked to OEMs, including production and assembly, logistics, fuel supply and tailpipe emissions.<sup>13</sup></li> </ul>
<b>Distribution and sales</b>	<ul style="list-style-type: none"> <li>▪ <b>Difficulty of engaging key players:</b> Sales agents are difficult for banks to reach, as the distribution/sales chain is comprised of a large, unconnected spectrum of players.</li> <li>▪ <b>Limited influence:</b> These actors have less control on design choices that determine tailpipe emissions and are primarily acting as a marketplace.</li> <li>▪ <b>Establishing dedicated financing:</b> Differentiating captive financing arms (which provide loans to end customers) from corporate treasury/ other financing arms can be challenging.</li> </ul>	<ul style="list-style-type: none"> <li>▪ By providing transparency and information to end customers regarding carbon footprint of products, sales agents can influence the decision-making of the end customer, i.e., which type of vehicles will be used.</li> </ul>	<ul style="list-style-type: none"> <li>▪ No emissions can be directly attributed to this stakeholder.</li> </ul>

Value chain	Challenges (Cons)	Benefits (Pros)	Share of CO <sub>2</sub> emissions & downside of not including emissions from this value chain segment
End customer	<ul style="list-style-type: none"> <li>▪ <b>Diversity of end customers:</b> ‘End customer’ represents a significant group of diverse actors (individuals, taxi companies, logistics firms, business fleets etc) influenced by different levers, related to private versus corporate users. Consumer behaviour (particularly private users) can most often only indirectly be influenced by banks through different pricing strategies. However, other factors related to the net-zero ecosystem will also play a dominant role.</li> <li>▪ <b>Challenges for fleets:</b> Fleet owners or logistic companies are usually difficult to classify as it is challenging to relate a loan to a specific Light Duty Vehicle brand or make/model. Banks need to rely on a fleet owner’s own disclosures of emissions for which data is hard to source, especially for smaller actors.</li> <li>▪ <b>Limited pathways scope:</b> Limited pathways, data, and guidance on emissions reporting from fleet users complicates a systematic recording.<sup>14</sup></li> <li>▪ <b>Potential for double-counting:</b> Double-counting of manufacturer Scope 3–downstream emissions can arise if integrated with manufacturer emissions.<sup>15</sup></li> <li>▪ <b>Realistic substitutions:</b> The difficulty of influencing customer behaviours and “just transition” considerations when confronted with low access to mobility can be a barrier to setting targets in that portfolio in certain jurisdictions; however, portfolio steering is a way to support OEM clients’ targets.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Large fleet owners and operators can influence EV demand and have the power to improve infrastructure leading to a faster transition. For example: In the EV100 initiative 127 members have made a commitment to switch their fleets to EVs and/or install charging for staff and/or customers by 2030.<sup>16</sup></li> </ul>	<ul style="list-style-type: none"> <li>▪ Globally, fleets make up a quarter of all vehicles but contribute to two-thirds of all GHG emissions from road transport.<sup>17</sup></li> <li>▪ 65%–80% can be linked to tailpipe emissions.<sup>18</sup></li> </ul>

In addition to considering the various segments of the value chain, banks will need to make a design decision as to which type(s) of vehicle should be included in their targets. Each vehicle type has different emissions intensities associated with their technology readiness, market transformation strategies, use phase, and overall sectoral impact. Table 2 provides a categorisation of vehicle types, including 2–3 wheelers, light-duty vehicles (LDVs), and heavy-duty vehicles (HDVs).

**Table 2:** Overview of different types of vehicles and their potential role in target setting

Products	Definition	Reasons to include	Reasons to exclude
<b>2–3 Wheelers</b>	2–3 wheelers are defined as motorized vehicles with two or three wheels aimed at mobility of passengers or goods.	<ul style="list-style-type: none"> <li>Emissions can be material in specific regions such as China, India etc. where the overall share of 2–3 wheelers is significant.</li> <li>There is a higher adoption rate of electrified alternatives than other segments due to their low-cost advantage and lower dependency on large scale infrastructure development.</li> </ul>	<ul style="list-style-type: none"> <li>Globally emissions from 2–3 wheelers might not be material when compared to other segments.</li> <li>There could be challenges related to data availability.</li> </ul>
<b>Light Duty Vehicles (LDVs)</b>	<p>Light duty vehicles (LDVs) are defined differently depending on regional market conditions and legislations (such as weight classification thresholds of vehicles). The category includes but is not exclusive to passenger cars, light commercial vehicles/light trucks/vans.</p> <p>For the below markets, LDVs are defined as follows:</p> <p><b>Europe/Asia</b></p> <p>The EU, the United Kingdom, China, India, Japan, and several other markets follow definitions of LDVs that broadly align with IEA,<sup>19</sup> which classifies LDVs as any vehicle under 3.5 tonnes.</p> <p>In the EU specifically, passenger cars and light trucks/light commercial vehicles are subject to different regulatory pressures and reduction targets, which leads to a tendency for banks to treat them separately and develop two sets of sub-targets.</p>	<ul style="list-style-type: none"> <li>LDVs are the largest contributors to road transport emissions.</li> <li>Transition to net zero emission vehicles is crucial for emissions from road transport to reach net-zero by 2050.</li> <li>Data availability related to vehicles emissions is better than other segments.</li> </ul>	
	<p><b>North America</b></p> <p>The U.S. Environmental Protection Agency includes in its definition vehicles under 8500 lbs or 3.85 tonnes.<sup>20</sup></p> <p>Passenger cars and light truck/light commercial vehicles are both defined as LDVs and classified as one vehicle scope or class— e.g. contrary to the EU. As of 2022, SUVs make up one-third of passenger vehicles. Banks thus tend to develop one set of targets.</p>	<ul style="list-style-type: none"> <li>See comments above.</li> </ul>	

Products	Definition	Reasons to include	Reasons to exclude
<b>Heavy Duty Vehicles (HDV)</b>	<p>Heavy duty trucks mostly include medium-freight trucks as well as heavy-freight trucks.<sup>21</sup></p> <p>Buses are excluded from this definition.</p>	<ul style="list-style-type: none"> <li>High materiality of emissions (around 30% can be attributed to emissions from heavy duty and medium duty trucks<sup>22</sup>).</li> </ul>	<ul style="list-style-type: none"> <li>Data availability on vehicle emissions is limited.</li> <li>Decarbonisation pathways for HDVs will differ fundamentally from that of LDVs so including both into one target would present challenges to choosing a pathway.</li> <li>While electric battery and electric fuel cell trucks remain the key alternative technologies for decarbonisation infrastructure roll out, reducing the total cost of ownership of alternative powertrains is the main barrier to adoption. Unresolved questions on net-zero energy technology adoption could raise questions on viable pathways for HDVs.</li> <li>Ownership/leasing model of the HDV sub-sector means it may warrant a different approach to LDVs and should therefore be considered in a separate trucking/HDV target.</li> </ul>

## 3.2 Financial products

Banks can engage their client base in decarbonisation activities by focusing on their loan books and available financing mechanisms, including captive finance, other finance arms, or direct vehicle loans. Each of the products' benefits and challenges are outlined in Table 3.

**Table 3:** Assessment of financial products for the automotive industry

Financial products	Definition and targeted stakeholder	Reasons to include financial product	Reasons to exclude financial product
<b>General corporate financing</b>	General corporate financing constitutes non-specific debt financing to auto manufacturers.	<ul style="list-style-type: none"> <li>While only few OEMs use general corporate financing, banks can leverage their relationship with clients to incentivise emission reduction along all scopes of emission.</li> </ul>	<ul style="list-style-type: none"> <li>The significant share of OEMs in the automotive sector are debt-free businesses. General financing might constitute only a small portion of financing from a bank.</li> </ul>
<b>Captive finance loans</b>	The subsidiaries of auto manufacturers which provide financial services, such as vehicle loans and leases.	<ul style="list-style-type: none"> <li>Captive arms of OEMs can have some influence on the emission profile of the sold cars, and in cases on types of cars manufactured.</li> <li>Captive finance companies are enabled to structure their lending products against the same committed credit conditions that are defined by the lending financial institution.</li> </ul>	<ul style="list-style-type: none"> <li>Double-counting can potentially occur if captive finance subsidiaries and OEMs (i.e. parent company of the subsidiary) are both clients of a bank and their Scope 3 emissions are accounted separately, especially if lifetime emissions are included in the emission scope of the target.</li> </ul>
<b>Loans to other finance arms</b>	Financing arms of auto manufacturers (such as treasury) which handle various functions such as cash management, liquidity planning and funding, risk management etc.	<ul style="list-style-type: none"> <li>Direct lending or financing to auto manufacturers may be included as proceeds can be used for vehicle manufacturing purposes directly and can thus be linked to financed emissions.</li> </ul>	<ul style="list-style-type: none"> <li>Auto manufacturers can use such financing arms to raise more capital without a designated purposes for net-zero vehicle which are outside of the banks can control. This could lead to under reporting of financed emissions by banks.</li> </ul>

Financial products	Definition and targeted stakeholder	Reasons to include financial product	Reasons to exclude financial product
<b>Direct motor vehicle loans<sup>23</sup> (consumer loans)</b>	<p>Loans issued directly to end customers.</p> <p>Direct motor vehicle loans can further be distinguished between consumer loans (retail offering) as well as financing to fleet owners (corporates, leasing companies, etc).</p>	<ul style="list-style-type: none"> <li>▪ Retail banks can have a significant consumer auto loan footprint and therefore options to indirectly influence consumer behaviour and preferences. The effectiveness of influence can vary depending on the respective consumer segment.</li> <li>▪ Consumer loans are often localized to any given bank's main geographies. The impact can therefore be more direct (in terms of decarbonisation) on that given region.</li> </ul>	<ul style="list-style-type: none"> <li>▪ In practice, loans to fleet owners or logistic companies (such as multi-modal logistic companies and corporate fleets) can be harder to classify due to existing data restraints which causes difficulties to match loans to specific light duty vehicle brands or make/model.<sup>24</sup></li> <li>▪ Leveraging multiple financial products (such as including both consumer loans and auto manufacturer Scope 3 emissions or captive finance) can lead to double-counting.</li> <li>▪ For regions where EV infrastructure is not available (e.g. a grid relying on fossil fuels), vehicle loans favouring net-zero vehicles could lead to unintended consequences (such as leading to actual higher emissions) and raise just transition related issues.</li> </ul>
<b>Indirect financing</b>	<p>Indirect consumer vehicle loans that are issued by a third party, such as dealers or sellers.</p>	<ul style="list-style-type: none"> <li>▪ Indirect financing allows banks to tap into a broader customer base by leveraging the existing network of dealers or sellers.</li> <li>▪ Banks can promote EV adoption and work with dealers/sellers committed to promoting sustainable transportation.</li> </ul>	<ul style="list-style-type: none"> <li>▪ The approaches can introduce challenges in maintaining quality control and managing risk of the lending activities, as well as aligning with sustainability goals due to limited control.</li> <li>▪ Effective indirect financing requires seamless information sharing between the bank and the third-party dealers or sellers. Challenges may arise in establishing secure data sharing protocols, integrating systems, and maintaining data accuracy.</li> </ul>

In addition, other sustainable finance products such as green bonds can be used as part of transition financing. For further information on including capital markets please note the ongoing developments of third-party stakeholders, such as GFANZ, PCAF, etc.

### Box 1: Trends in target setting by NZBA members for the automotive sector (value chain and vehicles)

The following table (Table 4) displays a selection of NZBA member banks across North America, Europe, and Asia & Pacific, showcasing the choices made in their target-setting approach. The examples given are intended to provide an overview of the different decisions and should not be interpreted as prescriptive, representative, or recommending any specific targets. The table serves as a valuable reference for understanding the range of choices and strategies employed by banks in their pursuit of net-zero targets.

Table 4: Trends in target setting (2023): Block 1 Value chain scope and Block 2 Vehicle scope

Autos	ING	Barclays	Lloyds Banking Group	Deutsche Bank	TD Bank Group	DBS Bank
	Europe	Europe	Europe	Europe	North America	Asia & Pacific
<b>Block 1: Value chain scope</b>	Manufacturers	Manufacturers	Manufacturers; End Customer	Manufacturers	Manufacturers	Manufacturers, dedicated power-train manufacturers, Distributors
<b>Block 2: Vehicle scope</b>	LDV	LDV	Manufacturers (LDV, motorcycles) End Customer (LDV)	LDV	LDV	LDV

NB: The analysis is based on target submissions for the automotive sector from NZBA member banks as of July 2023 and only considered publicly available information, such as annual reports. A total of 33 members submitted targets linked to the automotive and trucking sector. Their regional distribution is uneven and included banks from Europe (55%), North America (27%), Central America & Caribbean (3%), South America (9%), Asia and Pacific (3%), and Australia (3%).

Banks represented in Table 4 were selected to showcase the different possible approaches towards automotive target setting as well as highlight regional trends.

In their initial individual target development, NZBA members primarily directed their focus towards vehicle manufacturers (60%) within their portfolio, driven by factors such as data accessibility and direct client interactions. Notably, component manufacturers are currently less represented in these targets. However, it is acknowledged that stakeholders along the supply chain are actively working to reduce the CO<sub>2</sub> footprint of their products. Reporting these efforts in addition to the progress made on their automotive targets can provide important insight into banks' overall client engagement strategies and impacts.



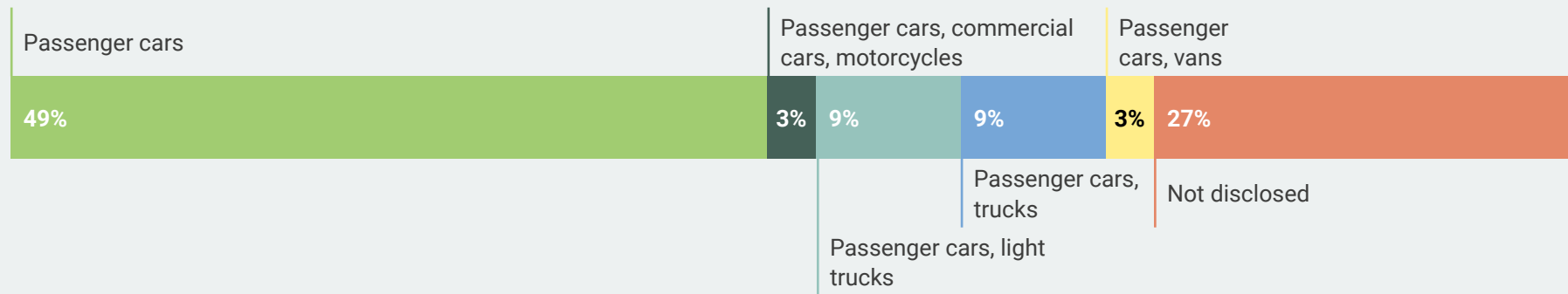
Figure 4: Trends in target setting: Block 1 Value Chain Scope of banks' targets as of 2023

NB: Targets that combine multiple stakeholders in one target are displayed as "multiple". All these targets include manufacturers and at least one other stakeholder. Targets that have been set for different value chain stakeholder respectively are also displayed separately.

This emphasis on manufacturer reflects the recognition of manufacturers' pivotal role in driving decarbonisation efforts throughout the value chain and is aligned with prominent decarbonisation pathways. Conversely, approximately 17% of the targets focus on end-use or distribution, displaying the significance of reducing emissions during the utilisation and distribution phases (Figure 4). Banks that have set targets for multiple stakeholders included both manufacturers and end user/distributors in a common target.



When it comes to the vehicle types chosen, around 97% banks have chosen to focus exclusively on LDVs in their targets while 3% of banks also set separate targets for trucking. 73% of banks have further disclosed their definitions of LDVs (Figure 5). However, 27% have not further disclosed their vehicle scope. Notably, there is a regional disparity in the focus of these targets. For example, European-based banks tend to prioritise LDVs, primarily passenger cars, aligning their targets with current EU legislation and regulations. Conversely, banks based in North America often broaden their scope of LDVs to include trucks, particularly light trucks or pick-up trucks, reflecting market realities and driving behaviours.



**Figure 5:** Trends in target setting among members: Definitions of light duty vehicles (LDVs)

NB: Pertinent to the approach to set combined or individual targets for stakeholders, banks have adjusted their vehicle scope. Banks that have set individual targets for trucking have also set targets for LDVs.

### 3.3 Identifying emission boundaries against a vehicle’s lifecycle

GHG emissions are mainly generated throughout the automotive production and use phases, encompassing various stages from manufacturing to vehicle operation.

Use phase emissions, also known as well-to-wheel emissions, account for the majority of vehicle emissions. These emissions are directly associated with the vehicle’s driving cycle, encompassing both well-to-tank and tank-to-wheel emissions (Figure 6).

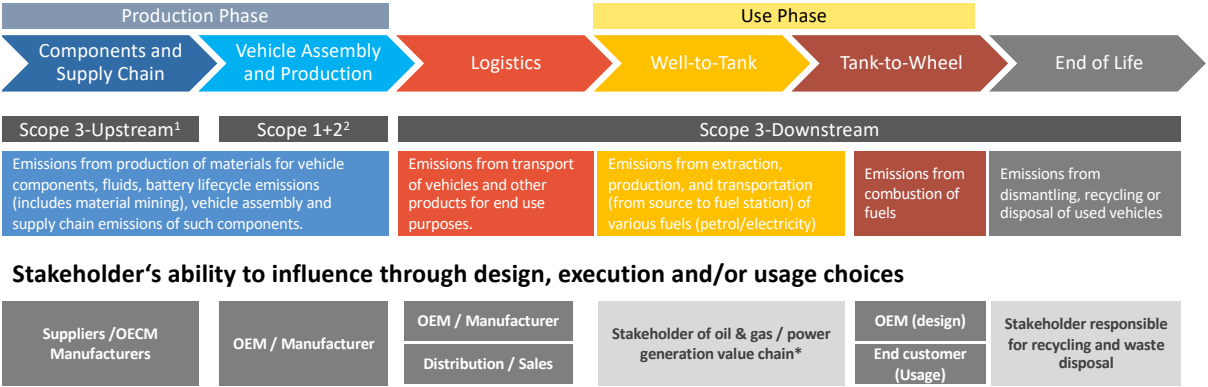


Figure 6: GHG Emissions<sup>25</sup> (NZBA: own depiction)

1. Vehicle component emissions can belong to both Scope 3 upstream or Scope 1 and 2 depending on who manufactures components (third party supplier versus in-house production).<sup>26</sup>
2. Scope 1 and 2 emissions may also include charging refrigerants with significant global warming potential in the vehicle’s air conditioning system, burning hydrocarbons such as petrol and diesel during engine audit at the end of the assembly line to basically start the vehicle and examine it for any defects, during vehicle maintenance and end of life emissions if vehicle manufacturer provides such services.
3. An OEM’s reported Scope 3 emissions are not reflected in this figure.
4. Emissions from extraction overlaps with oil & gas or power generation Scope 3 upstream emissions.

### 3.4 Understanding emissions from production phase

Table 5 further examines the emission from various production stages, providing banks with an overview to comprehend the emissions-related challenges and benefits involved in each stage. This understanding equips banks to effectively address these factors in their analysis and methodology development for target setting.

**Table 5:** Understanding emissions from production phase

Production phase stage	Potential sources of GHG emissions	Benefits of including	Challenges of including
<b>Components manufacture</b>	Emissions from extraction, processing of various materials (such as cast iron, steel, aluminium, <sup>27</sup> etc.) and manufacturing of vehicle components such as engine, body, transmission system etc.	<ul style="list-style-type: none"> <li>An inclusion of emissions increases the emissions coverage (vehicle lifecycle emissions) and encourages manufacturers to source components from greener suppliers.</li> <li>An inclusion does not directly punish manufacturers who manufacture more components in-house.<sup>28</sup></li> </ul>	<ul style="list-style-type: none"> <li>Limited data availability (reliance on annual reports) on emissions and lack of pathway complicates a systematic analysis.</li> <li>An inclusion can lead to double counting if both suppliers and OEMs are in-scope of target.<sup>29</sup></li> </ul>
<b>Battery manufacture and assembly</b>	Emissions from mining and processing of minerals (critical), cell production and pack assembly.	<ul style="list-style-type: none"> <li>An inclusion increases the emissions coverage.</li> <li>Batteries for EVs are gradually drawing interest from a legislative perspective, with some jurisdictions exploring relevant initiatives and opportunities.<sup>30</sup></li> </ul>	<ul style="list-style-type: none"> <li>There are not pathways available for battery manufacturers.</li> <li>Calculating emissions linked to battery manufacturing requires supplementary modelling which is based on third party annual reports.</li> <li>Vehicle manufacturers who produce their own batteries will have higher emissions.</li> </ul>
<b>Vehicle assembly</b>	Emissions due to energy consumption by vehicle assembly plants of manufacturers. This can include but is not limited to charging refrigerants in the vehicle's A/C system, or burning hydrocarbons such as petrol and diesel during engine audit at the end of the assembly line (which start the vehicle and examine it for any defects).	<ul style="list-style-type: none"> <li>Vehicle manufacturers could be encouraged to set emissions reduction targets by switching to renewable energy sources for vehicle assembly and production processes.</li> </ul>	<ul style="list-style-type: none"> <li>Calculating emissions linked to vehicle assembly requires supplementary modelling which is based on third party annual reports.</li> </ul>

## Understanding emissions from use phase

Table 6 further examines the emission from a vehicle’s use phase, providing banks with an overview to comprehend the emissions-related challenges and benefits. This understanding equips banks to effectively address these factors in their analysis and methodology development for target setting.

**Table 6:** Understanding emissions from use phase

Emissions from use phase	Definition	Benefits	Challenges
<b>Well-to-tank emissions</b>	<p>Well-to-tank emissions are emissions due to the extraction, refinement, production, and transportation of various fuels (petrol, diesel, liquefied petroleum gas (LPG), compressed natural gas (CNG), electricity, hydrogen etc.) that are used as primary energy sources for vehicles.</p> <p>These are typically the biggest sources of emissions for EVs and can vary regionally due to different emission intensities of electricity grids.<sup>31</sup></p>	<ul style="list-style-type: none"> <li>▪ Important emissions from early stages of the value chain are encompassed.</li> <li>▪ By incorporating material-embedded emissions, banks adopt a holistic approach to address all associated emissions in the zero-emission vehicle transition.</li> <li>▪ Well-to-tank emissions offer proactive planning for the transition to net-zero, anticipating the significance of grid-related emissions until power generation achieves full decarbonisation.</li> <li>▪ Relevant for banks who do not have oil&amp;gas or power targets or focus on decarbonising the auto manufacturing supply chain specifically.</li> </ul>	<ul style="list-style-type: none"> <li>▪ There is a risk of double-counting as there is overlap to the scope of energy and power targets. A net-zero power sector is the focus of power generation targets, and similarly steel manufacturing will be subject to its own targets for banks where it is a material exposure.</li> <li>▪ There is currently limited transparency and reported data on upstream Scope 3.</li> <li>▪ When including tank-to-wheel emission, any risk of double-counting with power generation targets needs to be addressed.</li> </ul>
<b>Tank-to-wheel</b>	<p>Tank-to-wheel emissions are released due to the combustion of fuel while driving the vehicle. These are also known as tailpipe emissions and are the biggest source of emissions for ICEVs.</p> <p>EVs have zero tailpipe emissions.<sup>32</sup></p>	<ul style="list-style-type: none"> <li>▪ Tank-to-wheel emissions are the most material emissions for an ICEV. The most immediate influence by banks is linked to tank-to-wheel and therefore banks can have the most significant impact.</li> <li>▪ These are major contributors to lifetime energy use and GHG emissions.</li> <li>▪ Most manufacturers report those numbers in their annual disclosure;<sup>33</sup> thus, data is easily accessible to banks.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Reporting of tank-to-wheel related emissions varies across different regions and is dependent on regional disclosure legislation.</li> </ul>

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