March 2026

Version 0.1:
Road-based transport modes, with scope for future expansion

Mobility Cluster
Social Value of Mobility

value balancing alliance

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About the VBA

The Value Balancing Alliance (VBA) is a coalition of around 30 multinational companies committed to driving sustainability by measuring and valuing corporate impacts on nature and society. Our world has been running through the most significant structural change in the last 250 years. We experience the environmental credit crunch: The paradigm of economic growth building on infinite resources is over. We enter the impact economy – requiring a new understanding of value creation[1]. VBA's mission as a not-for-profit alliance is to jointly create a globally applicable and comprehensive methodology together with the International Foundation for Valuing Impacts, Inc. (IFVI) and the Capitals Coalition for measuring sustainable value creation – impact accounting. Impact accounting has been successfully tested over the last fifteen years by leading companies across regions and industries. It gains more and more traction as a solution to translate ESG metrics into the language of business (monetization) and turning the sustainability reporting challenge into a force for value creation. The VBA is pioneering impact accounting in various collaborations, which contextualizes sustainability data and translates it into comparable monetary values, reflecting corporate impacts across the entire value chain.

About the VBA Mobility Cluster

The Mobility Cluster was formed in response to the interest of VBA member companies in better understanding and measuring the social value of mobility, as well as the downstream impacts of products and services sold in the mobility sector. Recognizing that many of the sector's significant impacts occur downstream, these companies identified the need for sector-specific guidance to complement the existing VBA methodology. The goal is to facilitate the application of impact accounting to the specific needs of the mobility sector, with a particular emphasis on downstream impacts. This involves developing sector-specific guidance for implementing existing impact accounting methodologies, as well as identifying, measuring, and valuing additional product impacts unique to the mobility industry. To address this need, the VBA initiated the Mobility Cluster, bringing together its methodology team, member companies including Kirchhoff, Michelin, Volkswagen, and ZF, external industry experts, as well as pro bono consultants. In addition, workshops with various representatives of the mobility sector are conducted to gather a holistic overview of the transportation industry, products & services, end-users and other stakeholders. Over the course of the project, the cluster held regular meetings and workshops to co-develop and review methodological guidance, share insights, and gather feedback from external valuation experts. This collaborative approach ensures that this guidance is grounded in both practical experience and robustness.

[1] UBS (2023). The Rise of the Impact Economy,

Executive Summary

This methodology aligns with the IFVI/ VBA General Methodology for Impact Accounting and the IFVI/VBA Framework for Industry-specific Product Impacts[2] and presents the Social Value of Mobility framework, developed by the VBA Mobility Cluster to assess the societal impacts of mobility products and services, with a particular focus on the use phase. The methodology quantifies both positive and negative effects of mobility and enables a monetized evaluation of downstream impacts for an entity. The methodology is designed to be used alongside existing impact accounting methodologies and does not replace assessments of sector-agnostic indicators such as GHG emissions, water use, or occupational health and safety. It instead complements them by capturing product-specific impacts. While focused on road-based transport modes and European geographies in its current version, the methodology is designed to be scalable and open to further extension.

The methodology captures three core categories of impact:

- **Enhanced quality of life,** based on user benefit derived from access to mobility, monetized through household expenditures and the Value of Time approach,
- **Economic activity enabled**, assessed through a Ghosh input-output model to estimate the downstream Gross Value Added (GVA) linked to transport activity,
- **Health-related impacts from accidents**, including loss of human health, healthcare costs, and lost wages, following the Occupational Health and Safety valuation methodology jointly developed by IFVI and VBA.

Country-specific data and assumptions are used to ensure relevance and comparability, with most data sourced from Eurostat, OECD, and the International Transport Forum (ITF). Impacts are monetized using value factors multipliers per passenger-kilometer or tonne-kilometer.

In alignment with Life-Cycle-Assessment (LCA) practices and GHG protocols, the methodology uses a "no transport" reference scenario, assuming that without the product or service, no equivalent mobility would occur to enable methodological consistency.

Attribution techniques are proposed to allocate social value between infrastructure and vehicles, and further down the value chain using revenue-based, volume-based, or value-added approaches depending on data granularity and availability.

This methodology has been co-developed with industry practitioners and is currently in its piloting phase. It can be refined further in terms of geographies, modes of transport, and the utilization of more granular attribution data.

[2] IFVI/VBA (2025). *Framework for Industry-Specific Product Impacts*.

1. Introduction

1.1. Document Purpose

1. The purpose of this document is to introduce the draft industry-specific methodology for product impacts of the mobility sector, with specific focus on the social value associated with mobility resulting from entity's sold products/services (henceforth, Social Value of Mobility methodology). The methodology focuses on generalizable impacts across different modes of transport and vehicles, with specific focus on road transport.

2. The products and services of the mobility sector vary significantly. This methodology statement aims to enable discussions how this methodology can be applied to other mobility services or modes of transport.

3. This methodology of mobility builds on the General Methodology 1: Conceptual Framework for Impact Accounting, General Methodology 2: Impact Measurement and Valuation Techniques, and the Framework for Industry-Specific Product Impacts, produced by the International Foundation for Valuing Impacts (IFVI) and VBA. Additionally, this methodology builds on insights from established transportation appraisal guidelines of governments and international organizations, such as the UK Department for Transportation (UK DfT), the Netherlands Institute for Transport Policy Analysis (KiM), the OECD International Transport Forum (ITF), or the EU Handbook on External Costs from Transportation, as well as publications of the impact management ecosystem, including Capitals Coalition, Impact Economy Foundation, Impact Management Platform, and Social Value International.

4. This draft methodology has been developed for piloting by VBA's Mobility Cluster. It has received formal approval as part of the impact accounting methodology produced in the partnership of IFVI and VBA and governed by an independent Valuation Technical & Practitioner Committee (VTPC). Piloting the methodology serves as a valuable effort to provide relevant information for the feasibility and decision-usefulness of the results to companies and to evaluate valuation techniques, which will assist in methodology development processes.

5. The Social Value of Mobility methodology measures and values the industry-specific downstream (esp. use phase) product impacts of corporate entities of the mobility sector in monetary terms for the purpose of preparing impact accounts and generating impact information. The Social Value of Mobility methodology can be used to inform internal decision-making and investment decisions, and to understand the significance of the impacts related to the transport of people and goods.

6. This industry-specific methodology aims to complement the already measured and valued downstream impacts by entities. By focusing the societal value generated and eroded through mobility-related products and services, this methodology enables companies to assess more holistically how their offerings positively and negatively affect society.

7. It is important to emphasize that the Social Value of Mobility methodology is designed to complement, not replace, sector-agnostic topic methodologies that capture entities' environmental, economic and social impacts across the value chain, such as greenhouse gas emissions, water pollution, or occupational health and safety, among others. These general indicators are essential for understanding an entity's full footprint (see Figure 1).

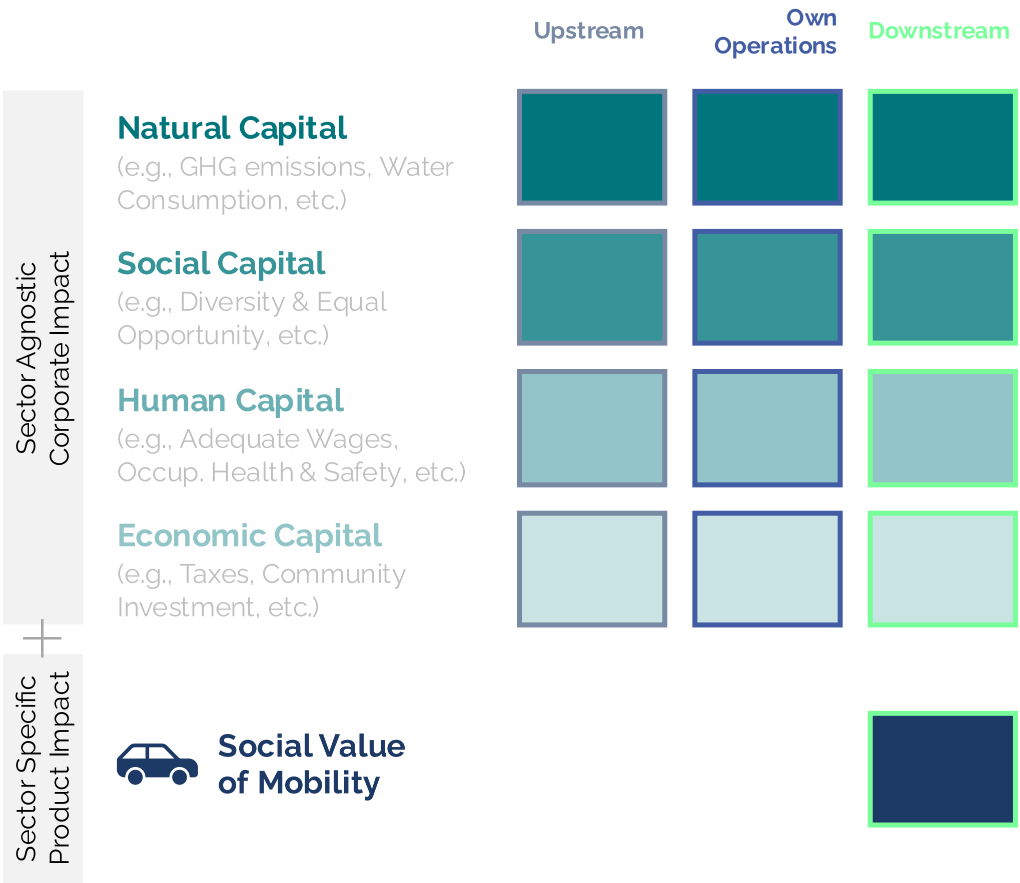

Figure 1: Overall impact footprint, including sector-agnostic and sector-specific product impacts.

8. As such, the product-level impact valuation presented here should only be applied in conjunction with broader corporate impact assessments. Evaluating industry-specific product impacts in isolation, without accounting for the associated impacts of production, operations, and value chain, can lead to an incomplete and potentially misleading representation of an entity's overall impact on nature and society.

1.2. Topic Background

9. Mobility describes the means to gain access to destinations, activities, services, and goods, and is delivered through various modes of transport, such as road, rail, air, inland waterways, sea, or pipelines.[3] It includes both the transportation of people and goods and is enabled by a system of vehicles, infrastructure, and supporting services.

10. The quality of people's lives and economic activity are fundamentally influenced by mobility, as it enables access to employment, education, healthcare, markets, and contributes to social inclusion and subjective well-being.

11. Mobility plays an increasing role in prosperity. Between 2000 and 2019, global passenger travel has more than doubled, driven by urbanization, rising incomes, and expanded infrastructure.[4] Road transport is the dominant mode for both people and goods, accounting for approximately 80% of passenger transport and 70% of freight movement globally.[5]

12. This methodology covers the industry-specific product impacts in the mobility sector measuring the social value of road mobility with specific focus on passenger cars, buses and trucks.

1.3. Key Concepts and Definitions

13. The Social Value of Mobility materializes during the use phase of the final product or service[6], when people or goods are transported from A to B. The impacts determining the Social Value of Mobility can be both positive, such as enhanced accessibility and negative, such as mobility-related accidents.

14. To assess and measure the industry-specific product impacts of the mobility sector, referred to as the Social Value of Mobility that an entity provides, key value drivers are considered. For passenger transport, impact is assessed per kilometer travelled by an individual (passenger km), while for freight transport, it is measured per tonne-kilometer (tonne km) in line with established frameworks and measurement units in the industry[7]. Both transportation of people, and transportation of goods can be assessed in different modes of transport, such as roads, rails, waterways and aviation. This framework considers both the transport of people and transport of goods as an outcome of the provision of mobility. As a definition, this framework considers the following distinction between transportation of people and transportation of goods:

    a. Transportation of people

    The movement of people through various transportation modes, whether motorized or non-motorized, collective or individual, plays a fundamental role in both transport efficiency and personal mobility. This dynamic interaction is essential for economic growth, as it facilitates countless

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[3] UN-Habitat: Mobility and Transport | UN-Habitat (unhabitat.org); OECD/ITF (2019). *Glossary for Transport Statistics, 5th Edition.*
[4] International Transport Forum (ITF) (2021). *ITF Transport Outlook 2021*.
[5] World Bank (2023). *Transport Sector Overview.*
[6] IFVI/VBA (2025). *Framework for Industry-Specific Product Impacts.*
[7] ITF (2023). ITF Transport Outlook 2023, OECD Publishing; ITF (2015). Performance measurement in freight transport, OECD Publishing; European Commission: Directorate-General for Mobility and Transport (2020). *Handbook on the external costs of transport* (EU Handbook); EU, UN, ITF (2019). *Glossary for Transport Statistics*, EU Publication

activities and underpins a thriving society[8]. Passenger transport has been analyzed on country level for kilometers covered on the road, by passenger cars and buses, and on rails by trains in pass km.

b. Transportation of goods

Freight transport, which encompasses the movement of goods via transport networks, is measured in tonne-kilometers, representing one tonne of goods transported over one kilometer. Just as the transportation of people drives economic and social activity, freight transport ensures the seamless flow of goods essential to economic stability and growth[9]. Transport of goods has been analyzed for road and freight transport on country level for average tonne km per vehicle.

15. Recognizing the complementary roles of both transport and mobility perspectives highlights their collective contribution to economic development and societal well-being, reinforcing the broader Social Value of Mobility.

16. In capturing the Social Value of Mobility, the negative externalities of accidents, congestion, and traffic noise represent critical components. According to established frameworks such as the UK Department for Transport (DfT), accidents are defined as incidents involving injury or fatality, accounting for casualty severity (fatal, serious, slight), and broader societal costs such as lost output[10]. Congestion is typically assessed by quantifying the time lost due to traffic delays and the associated economic inefficiencies[11]. Traffic noise encompasses the health, and well-being impacts of unwanted sound exposure, including sleep disturbance, annoyance, and increased cardiovascular risk[12].

1.4. Scope and Assumptions

17. This methodology is designed to capture industry-specific impacts of the mobility sector, incl. OEMs, their supply chain and mobility service providers. It includes impacts on people's quality of life from the access to goods and services and destinations (also referred to as user benefits), enabled economic activities, and health impacts as well as healthcare costs and lost wages from accidents. Other impacts, e.g., traffic noise, unreliability and inconveniences caused by congestion and resulting extensive travel time have been excluded from this methodology for now and are subject to further development of the methodology. Environmental and social impacts which are already captured in other topic methodologies are also excluded from the specific scope of this methodology to avoid double counting of impacts. For impacts related to existing topic methodologies (e.g., GHG emissions, or water consumption), the user can refer to the respective methodologies and apply those to downstream value chain with consistent assumptions.

18. The Social Value of Mobility methodology includes impacts from road transport, specifically the measurement and valuation of impacts related to the use of

[8] Eurostat (2021). *Passenger Mobility Statistics.*
[9] OECD (2022). *Freight transport indicator.*
[10] TAG (2022). *Unit A4.1 Social Impact Appraisal.*
[11] European Commission: Directorate-General for Mobility and Transport (2020). *Handbook on the external costs of transport (EU Handbook);* ITF (2023). *ITF Transport Outlook 2023*, OECD Publishing
[12] European Commission: Directorate-General for Mobility and Transport (2020). *Handbook on the external costs of transport (EU Handbook).*

passenger cars, buses and trucks. Other modes of transport are not included yet and are subject to future development.

19. The methodology is designed to estimate the total user benefit from transportation of people and goods. The effects of monetary prices paid by consumers in exchange for products or services related to mobility are not included in this approach and subject to further development of the methodology.[13]

Box 1: Relationship to public policy appraisal frameworks

The Social Value of Mobility methodology builds on several foundational elements of the UK Department for Transport's TAG framework, in particular its treatment of user costs and the monetization of travel time savings through willingness-to-pay approaches. However, key differences in purpose and scope exist. While TAG is tailored for comparing future transport scenario options with and without a proposed scheme, this methodology adopts a corporate accounting perspective, assessing the full societal footprint of existing mobility offerings. Unlike TAG, which centers on welfare improvements and public investment decisions, the Social Value of Mobility framework introduces a "no-transport" reference scenario to capture both positive and negative impacts of mobility as experienced today. This approach is more suitable for corporate impact accounting but may yield impact magnitudes that differ from those seen in policy-focused cost-benefit-analysis (CBA) models. Accordingly, this methodology does not replace a TAG-compliant appraisal and is not designed for public infrastructure project evaluation.

20. The methodology applies several assumptions to calculate the Social Value of Mobility, aiming for consistency with life-cycle assumptions from applying the GHG protocol. These include:

    a. Average lifetime of vehicles, vehicle parts (e.g., tires) or connected products (e.g., mobility services),

    b. Assumption for average annual milage of passenger cars, buses and trucks and occupancy rates,

    c. Simplification of vehicle types, focusing on passenger vehicles, buses and trucks,

    d. Realization of Social Value of Mobility as interplay of vehicle and road infrastructure (relevant for attribution of impacts),

    e. Lower bound estimate for user benefit,

    f. Capturing mobility on country level. Not across countries (data availability), no differentiation between urban and rural transportation,

    g. Closed economy (excluding cross-border economic effects) for modelling enabled economic activities,

    h. Assuming an equal contribution of transport of people and transport of goods to economic activities enabled.

[13] See IFVI/VBA (2025). *Framework for industry-specific product impacts*.

21. Other road vehicle types like bikes, motorbikes, or e-scooters are excluded from this first draft methodology.

2. Impact Pathway

2.1. Summary

22. The Social Value of Mobility impact pathway serves as the foundation of the presented methodology (see Figure 2). This impact pathway outlines a series of consecutive, causal relationships, beginning with the required inputs to produce vehicles and to enable the use of transport services and infrastructure, and linking mobility-related outcomes, such as access, accidents, unreliability & inconvenience, and traffic noise pollution, to changes in the well-being of individuals and society in terms of user benefits and related changes in their quality of life as well as indirectly enabled economic activities.

23. Detailed components of this pathway are elaborated in the following sections, culminating in the measurement and valuation of mobility-related impacts.

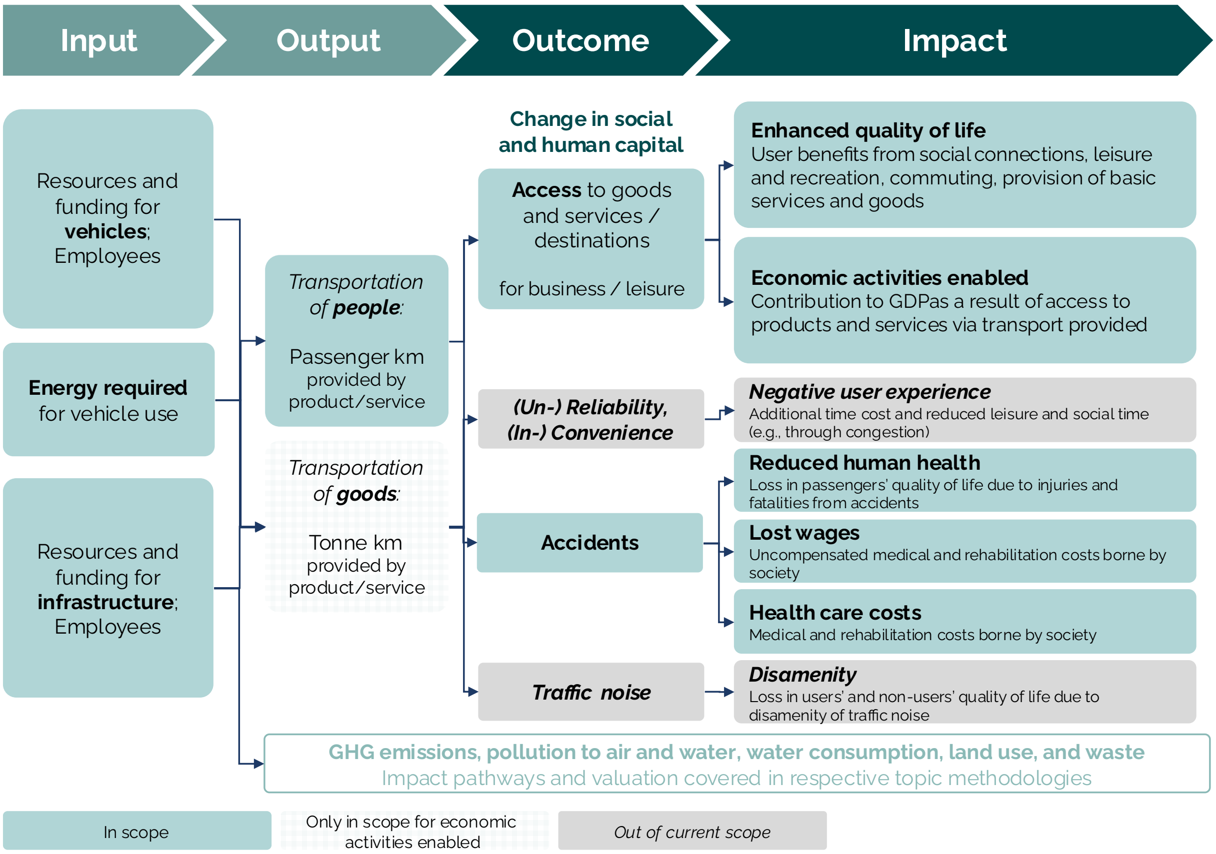

Figure 2: Simplified Impact Pathway for the Social Value of Mobility

2.2. Description and Notes

24. The **input** to the Social Value of Mobility impact pathway consists of resources to produce vehicles and transport infrastructure, the energy required for vehicle use, along with the resources needed to operate these systems, such as materials for

vehicle maintenance and fuels for their operation, which together enable the delivery of transportation.

25. The **output** involves the transportation of people and goods across space, as described in Section 1.3.

26. The **outcomes** of this pathway relate to both the accessibility enabled by mobility and the negative externalities it may generate. Key outcomes considered within the scope of this methodology include improved access to services and goods, as well as adverse effects such as unreliability & inconveniences, accidents and traffic noise (Section 4.1). While congestion is reflected in the underlying travel time data[14], associated user dissatisfaction, such as unreliability and inconveniences, are currently excluded from the scope of impact valuation. Traffic noise is not yet measured in the methodology.

27. The **impacts**, defined as changes in well-being resulting from these outcomes, include:

- **Enhanced quality of life** through, for instance, improved access to employment, education, healthcare, and social participation (Section 4.1.1);
- **Economic activities enabled** by the efficient movement of people and goods, facilitating productivity and trade (Section 4.1.2);
- **Reduced human health** due to transport-related accidents and injuries, including physical harm, psychological distress, and diminished capacity to participate in personal and societal roles (Section 4.1.3);
- **Increased healthcare costs** associated with the treatment and rehabilitation of accident victims, placing financial burdens on individuals and health systems (Section 4.1.3);
- **Lost wages** incurred by individuals unable to work due to injury or disability, leading to a reduction in household income (Section 4.1.3).

28. Literature and transport appraisals identify additional impacts associated with the transport of people and goods, such as disamenity from traffic noise and additional time cost and reduced leisure due to congestion. While these additional impacts are acknowledged, they fall outside the current scope of this methodology due to data and valuation constraints.

3. Impact Driver Measurement

29. Impact drivers for the Social Value of Mobility methodology align with the most established measurements in the mobility sector and leading transport appraisal guidelines. Impact drivers consider both the transport of people and the transport of goods.

[14] Underlying travel time data from EUROSTAT reports actual travel times and not free flow travel time. In this case is congestion, leading to extended travel time, represented in the methodology.

30. The defined impact drivers align with the guidance provided in the General Methodology and Framework for Industry-specific Product Impacts.[15]

3.1. Data requirements

31. The Social Value of Mobility methodology builds on the following impact drivers to calculate the associated impacts (see Table 1):

Table 1: Data requirements

<table>
<tr><th colspan="2">Data Required</th><th>Country 1</th><th>Country 2</th><th>Country 3</th><th>Country n</th></tr>
<tr><td colspan="2">Data from entity:</td><td></td><td></td><td></td><td></td></tr>
<tr><td rowspan="12">For OEMs</td><td colspan="5">Transport of people</td></tr>
<tr><td colspan="5">Number of vehicles sold by type:</td></tr>
<tr><td>Battery Electric Vehicle (BEV) Car</td><td></td><td></td><td></td><td></td></tr>
<tr><td>Plug-in Hybrid Electric Vehicle (PHEV) Car</td><td></td><td></td><td></td><td></td></tr>
<tr><td>Conventional (Diesel/Gasoline) Car</td><td></td><td></td><td></td><td></td></tr>
<tr><td>Conventional Bus</td><td></td><td></td><td></td><td></td></tr>
<tr><td>Electric Bus</td><td></td><td></td><td></td><td></td></tr>
<tr><td>Average lifetime milage per vehicle type</td><td colspan="4">Assumption from application guidance: 200.000 km for pass. cars</td></tr>
<tr><td colspan="5">Transport of goods</td></tr>
<tr><td colspan="5">Number of vehicles sold:</td></tr>
<tr><td>Heavy Truck (N2 and above)</td><td></td><td></td><td></td><td></td></tr>
<tr><td>Average lifetime milage of Heavy Trucks</td><td colspan="4">Assumption from leading appraisal guidance and LCAs: 1.000.000 km</td></tr>
<tr><td rowspan="9">For Suppliers of OEMs (exemplary: Tire manufacturer)</td><td colspan="5">Transport of people</td></tr>
<tr><td>Number of tires sold for pass. cars</td><td></td><td></td><td></td><td></td></tr>
<tr><td>Number of tires sold for busses</td><td></td><td></td><td></td><td></td></tr>
<tr><td>Average lifetime milage per tire type</td><td colspan="4">Assumption from application guidance: 50.000 km for pass. car tires</td></tr>
<tr><td>Average no. of tires per bus</td><td colspan="4">TBD – feedback from Piloting required</td></tr>
<tr><td colspan="5">Transport of goods</td></tr>
<tr><td>Number of tires sold for Heavy Trucks</td><td></td><td></td><td></td><td></td></tr>
<tr><td>Average lifetime milage of Heavy Truck tire</td><td colspan="4">Assumption from leading appraisal guidance and LCAs: 1.000.000 km</td></tr>
<tr><td>Average no. of tires per Heavy Truck</td><td colspan="4">TBD – feedback from Piloting required</td></tr>
</table>

[15] IFVI/VBA (2024). *General Methodology 1 – Conceptual Framework for Impact Accounting*; IFVI/VBA (2024). *General Methodology 2 – Impact Measurement and Valuation Techniques [Exposure Draft]*; IFVI/VBA (2025). *Framework for Industry-Specific Product Impacts*.

For Mobility Service Providers	***Transport of people***				
	Provided passenger km per country				
	Transport of goods				
	Provided tonne km per country				
Data from other sources *(if unknown by entity)*					
	Average vehicle occupancy rate per country				
	Average annual milage per vehicle				

32. For calculating the provided transport of people, the **number of provided passenger km** needs to be calculated. While mobility service providers often can directly extract these data from their systems, OEMs and suppliers of OEMs are required to calculate these numbers based on the following equations:[16] Wherever more accurate data on provided passenger km on country level is available, it should be used. In cases of data gaps, the assumptions outlined above may be applied to estimate provided passenger km.

For OEMs:

$$Pkm_{VT} = \sum_{VT} (sold\ vehicles_{VT} * LT\ milage_{VT} * occupancy_{VT})\ for\ each\ country$$

(Eq. 1)

Where:

Pkm_{VT} = Provided passenger km per vehicle type

VT = Vehicle Type (BEV Car; PHEV Car; Conventional (Diesel/Gasoline) Car; Conventional Bus; Electric Bus)

Sold $vehicles_{VT}$ = Number of sold vehicles by vehicle type

LT $milage_{VT}$ = Average lifetime milage in km per vehicle type

$Occupancy_{VT}$ = Average occupancy rate per vehicle type

For Suppliers of OEMs (exemplary for tire manufacturers):[17]

$$Vehicles\ supplied_{VT} = \sum \left(\frac{Tires\ sold_{VT}}{T\ required_{VT} * \frac{LT\ milage_{VT}}{Tire\ LT\ milage_{VT}}} \right) for\ each\ country$$

(Eq. 2)

[16] Building on calculation of number of passenger km by OECD IFT (2023).

[17] Depending on the intermediate good of the supplier to the OEM, the equation would need to be adapted to the parameters that allow for translation into vehicles by type.

$$Pkm_{VT} = \sum_{VT} (Vehicles\ supplied_{VT} * LT\ milage_{VT} * Occupancy_{VT})\ for\ each\ country$$

(Eq. 3)

Where:

Vehicles $supplied_{VT}$ = Number of vehicles supplied by vehicle type (fully equipped)

Tires $sold_{VT}$ = Number of tires sold by vehicle type

T $required_{VT}$ = Average number of tires required per vehicle, by vehicle type

Tire LT $milage_{VT}$ = Average tire lifetime milage per vehicle type

33. To determine the transport provided of goods, the **tonne km provided** or enabled by the entity are required. Also here, mobility service companies might be able to extract those numbers directly from their systems. For OEMs and suppliers of OEMs, the following equations allow calculating the provided tonne km.

For OEMs:

$$Tkm = \sum (Trucks\ sold * (\frac{Truck\ LT\ milage}{Truck\ A\ milage}) * Truck\ Tkm)\ for\ each\ country$$

(Eq. 4)

Where:

Tkm = Provided tonne km

Trucks sold = Number of trucks sold

LT $milage_{Truck}$ = Average truck lifetime milage

A $milage_{Truck}$ = Average annual truck milage

Truck Tkm = Annual average tonne km per truck per region; can be calculated as fright transport (in tonne km per country)/Trucks in use (per country)

For Suppliers of OEMs (exemplary for tire manufacturers):[18]

$$Trucks\ supplied = \frac{Tires\ sold_{Truck}}{T\ required_{Truck} * \frac{LT\ milage_{Truck}}{Tire\ LT\ milage_{Truck}}}\ for\ each\ country$$

(Eq. 5)

$$Tkm = Trucks\ supplied * \left(\frac{Truck\ LT\ milage}{Truck\ A\ milage}\right) * Truck\ Tkm\ for\ each\ country$$

[18] Depending on the intermediate good of the supplier to the OEM, the equation would need to be adapted to the parameters that allow for translation into trucks supplied.

(Eq. 6)

Where:

Trucks supplied = Number of trucks supplied (fully equipped)

Tires sold$_{Truck}$ = Number of truck tires sold

T required$_{Truck}$ = Average number of tires required per truck

Tire LT milage$_{VT}$ = Average tire lifetime milage per vehicle type

34. Consistent with the calculation of environmental impacts, such as GHG emissions, the lifetime impacts of the vehicle are assigned to the year of sales.[19]

35. Following the calculation of passenger and tonne-kilometers enabled by the mobility sector, the next step is to attribute the resulting Social Value of Mobility across relevant market participants. Section 4.4 introduces attribution techniques that have been identified as most suitable for the mobility sector by mobility cluster practitioners.

3.2. Data Sources, Gaps, and Uncertainty

36. All data points used in this analysis are required at the country level to ensure consistency, comparability, and the ability to scale across regions. While global coverage is preferred, the current dataset focuses primarily on European countries, serving as a foundation for future expansion. Wherever more accurate data on country level and per vehicle type is available, it should be used.

37. To assess the **outputs**, passenger mobility data, measured in passenger-kilometers, is sourced from the OECD International Transport Forum (ITF) Annual Transport Trends and the IRF Inland Surface Passenger Transport database. Where direct data is missing, estimates are made using the IRF Total Vehicles In Use (2022) dataset, assuming an average lifetime mileage of 200,000 km and an occupancy rate of 1.3 for passenger cars. For buses, a multiplier of 400,000 passenger-km per vehicle is used, based on OECD and IRF data. For freight transport, tonne-kilometer data and vehicle stock are derived from Eurostat.

38. To quantify **impacts**, the assessment includes both user benefits and economic activities enabled. Household consumption is derived from Eurostat (2024), COICOP 3-digit data, with finer disaggregation based on 5-digit COICOP shares from 2020. Currency conversion to USD is based on exchange rates from the World Bank database. Travel time is captured through EUROSTAT time-use surveys and World Bank labour force data (2022), reflecting average travel experience in the working population (15+ years). The value of time is taken from the EU Handbook on External

[19] See for reference the GHG Protocol for value chain accounting: GHG Protocol (2011). *Product life-cycle accounting and reporting standard*; GHG Protocol (2011). *Corporate Value Chain (Scope 3) Accounting and Reporting Standard*.

Costs of Transport (2019), updated to Euro 2016 using GDP deflators, and based on UK Department for Transport data (ARUP, 2015).

39. To estimate **economic activities enabled** by mobility (e.g., indirect GVA multiplier), the OECD Inter-Country Input-Output (ICIO) Tables can be utilized. The impact per pass km and impact per tonne km represent the indirect gross value added (GVA) multiplier, wages, taxes and profits, of each pass km or tone km in each country. They are quantified based on the input-output Ghosh model, which allows to estimate the indirect GVA produced by companies that use mobility as a necessary input for their production process -"enabled" GVA.

40. For **health-related impacts** (due to accidents) such as healthcare costs and lost wages due to road traffic accidents, the ITF Road Injury Database and Eurostat (road fatalities) are used. Lost workdays are estimated based on injury classifications (temporary, long-term, fatal), with underlying assumptions provided by VBA methodology. Wages and labour force statistics come from Eurostat's adjusted full-time salary data and employment activity by age and sex.

41. Preparers should strive to measure the Value of Mobility in a manner that is complete, neutral, and free from error. This includes faithfully representing the provided passenger and tonne km and capturing all impacts associated with the Social Value of Mobility.

42. Especially for suppliers of OEMs or mobility services, obtaining the exact number of pass and tonne km provided downstream might be challenging, especially in earlier stages of the value chain. Building on average data and some key assumptions for the average lifetime milage of a vehicle or specific components can help to simplify these calculations and to overcome data gaps.

4. Outcomes, Impacts, and Valuation

43. Enhanced quality of life, also referred to as user benefit, and the economic activities enabled are valued using distinct approaches, while the impacts related to accidents, such as reduced human health, healthcare costs, and lost wages, are valued by adopting the IFVI & VBA occupational health and safety methodology.

4.1. Outcomes and Impacts

4.1.1. Enhanced quality of life (User benefit)

44. To assess the user benefit of mobility from the perspective of passenger transport, this methodology follows the approach outlined by the UK Department for Transport (DfT) and the Netherlands Institute for Transport Policy Analysis (KiM). To estimate the total user benefit in a country, the approach combines **household expenditures**[20] – including consumer spending on mobility, vehicle and transportation insurance, and motor vehicle taxes – with the **time spendings** as a multiplication of the travel time in hours and the Value of Time (VoT) as users perceive both financial and time-related costs when making mobility decisions.[21]. This approach is grounded in consumer

[20] For EU countries, the household expenditures can be retrieved from EUROSTAT (2024). *Final consumption expenditure of households by consumption purpose* (COICOP 3 digit).
[21] TAG (2022). *UNIT A1.3 User and Provider Impacts.*

surplus theory, which quantifies the benefits individuals derive beyond their incurred costs. Accordingly, consumers assign value to mobility through both their monetary household expenditures and the time they invest in travel. This method provides a lower-bound estimate of the overall value of mobility, omitting additional societal or economic benefits that may not be directly captured through individual preferences.

45. In this context, household expenditure refers to the lower bound monetary costs of using and owning transport. These are assessed at the country level using the internationally recognized COICOP classifications from the UN[22], capturing the financial dimension of mobility-related user benefits. The **expenditures** component in this methodology comprises the following elements:

- The **consumer spending** can be derived from household consumption expenditure on transportation, as posed in the KiM approach, which follows a similar approach by classifying mobility-related household expenditures using CBS's detailed version of COICOP[23]. Relevant expenditure categories include the purchase of vehicles, passenger transport services, fuel and lubricants, and vehicle maintenance.
- **Traffic and transportation insurance costs** are determined using data on insurance expenditures for traffic and transport, specifically focusing on premiums written for vehicle-related insurance policies.
- **Motor vehicle tax** considers sales & registration taxes, annual ownership taxes, and others.

46. **Time spendings** are calculated by multiplying the total travel time per country, which varies by mode of transport, with the Value of Time (VoT), which differs depending on the purpose of the trip and the mode of transport. Together, the time spendings monetize the lower bound time investment into mobility in each country. The VoT is deemed a central notion in transport cost-benefit analyses, policy making in the transport sector and overall evaluating the benefits of transport[24].

- **Travel time** invested is captured in the total annual travel time per country. Travel time is invested by the country's population, primarily reflecting the labor force (see chapter 4.3). It is measured annually at a country's level, differentiates between modes of transport and reflects the actual travel time of the people of a country.
- The **Value of Time (VoT)** is captured in this methodology by purpose (e.g., business trip, leisure trip) to also incorporate the perspective of wages during a business trip and are needed on a country level. This methodology uses the data from the EU handbook on external cost of transport (EU Handbook)[25] which estimates values for the European countries based on GDP per capita by country, also posing the potential to transfer values to additional countries. To transfer the values to current

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[22] UN (2018). *Classification of Individual Consumption According to Purpose (COICOP)*, Statistical Papers; COICOP is the UN standard for classifying household expenditures by purpose.
[23] KiM – Netherlands Institute for Transport Policy Analysis (2019). *Mobility Report 2019* (Mobiliteitsbeeld 2019) - CBS is the Dutch national statistics agency that uses and extends COICOP to produce more detailed national statistics. KiM uses CBS's COICOP-based expenditure data to analyze mobility-related household spending in the Netherlands.
[24] U.S. Department of transportation (2014). *Guidance on Value of Time*; UK Department for Transport, 2015, *Values of travel time savings and reliability: final reports;* Meunier, D. & OECD International Transport Forum (ITF) (2019). *Mobility Practices, Value of Time and Transport Appraisal.*
[25] European Commission: Directorate-General for Mobility and Transport (2020). *Handbook on the external costs of transport* (EU Handbook), building on data from UK Department for Transport (DfT ARUP (2015). *Provision of market research for value of travel time savings and reliability*, Non-Technical Summary Report).

calculations, the VoT values presented in the EU Handbook have been inflation-adjusted.
The VoT invested reflects the economic significance of travel time. This is typically assessed through the **Willingness-To-Pay** (WTP) of mobility users, which quantifies the monetary value individuals place on saving one hour of travel time[26].

47. In accordance with recognized methodologies, the valuation of travel time and reliability is commonly determined using the WTP, which is predominantly assessed through Stated Preference (SP) surveys. WTP reflects the maximum financial amount an individual is willing to pay for time savings[27], which serves as a proxy for the value they place on mobility. While VoT is traditionally used to estimate the benefit of time savings, in this framework, as in the approach used by the Dutch Railways and the Netherlands Institute for Transport Policy Analysis (KiM)[28], it is applied more broadly to value total travel time, not just time reductions. This generalization allows for the monetization of travel time itself, recognizing that the results must be interpreted as a lower-bound estimate.

48. Based on the UK Department for Transport (DfT ARUP), this study differentiates between mode of transport and trip purpose (commuting/business and personal)[29], whereas the commuting and business VoT is derived from several surveys incorporating the employer's perspective of WTP for time savings inherently incorporating wages.

49. To calculate the enhanced quality of life (user benefit) per passenger km in each country, the following equations can be used:

$$UserB = ExTrans + TimeSpend\ (Time_{work} * VoT_{work} + Time_{personal} * VoT_{personal})$$
$$for\ each\ country$$

(Eq. 7)

$$UserB\ Pkm\ = \frac{UserB}{Pkm}\ for\ each\ country$$

(Eq. 8)

Where:

UserB = Total user benefit in USD per year in a country

ExTrans = Expenditure for transport in USD

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[26] TAG (2022). *UNIT A1.3 User and Provider Impacts.*
[27] DfT ARUP (2015). *Provision of market research for value of travel time savings and reliability*, Non-Technical Summary Report, p.4.
[28] KiM – Netherlands Institute for Transport Policy Analysis. (2019). *Mobility Report 2019* (Mobiliteitsbeeld 2019). Ministry of Infrastructure and Water Management.
[29] DfT ARUP (2015). *Provision of market research for value of travel time savings and reliability*, Non-Technical Summary Report, p.15.

TimeSpend = Travel time spend by user of mobility

$Time_{work}$ = Share of travel time for work

$Time_{personal}$ = Share of travel time for personal / leisure activities

VoT_{work}= Value of time for work travel

$VoT_{personal}$= Value of time for personal / leisure travel

UserB Pkm = User benefit per passenger km per year in a country

Pkm = Total number of passenger km per year in a country

50. The estimation of the Value of Time (VoT) within this methodology is disaggregated by trip purpose (i.e., work and personal/leisure) and takes the average of long-distance and short-distance trips, at the country level. The primary source of VoT data is the EU Handbook on the External Costs of Transport[30], which draws upon foundational estimates from the UK Department for Transport[31] and extrapolates values for other European countries based on GDP per capita. To ensure temporal relevance, the original VoT figures have been adjusted for inflation using data from the World Bank covering the period 2016 to 2022. Additionally, currency conversions to US Dollars are performed using official exchange rates published by the World Bank. The VoT is then multiplied with the travel time spent. The labor force includes individuals aged 15 and older, consistent with the minimum age surveyed in EUROSTAT's travel time survey[32]. Therefore, the travel time per mode of transport per individual has been multiplied with the country's labor force to retrieve the total annual travel time per country.
51. To attribute a country's overall value of mobility to a specific service or product provided by an entity, the total value first needs to be assigned accordingly. This requires separation between contribution to mobility enablement by **infrastructure and vehicles**, as both pillars of mobility are interdependent and collectively enable mobility in a country. Infrastructure refers to road infrastructure only (see section 4.4.1 for more details).

4.1.2. Economic activity enabled

52. The economic activity enabled represents the indirect gross value added (GVA), comprising wages, taxes, and profits, generated by companies that use mobility (both the transport of people and goods) as a necessary input for their production processes. This "enabled" GVA reflects the economic value transportation unlocks across other industries.
53. The estimation is based on the Ghosh input-output model, which tracks how outputs from the transportation sector are distributed throughout the economy as inputs for further production (see Box 2 for more detail on Ghosh input-output models). National

[30] European Commission: Directorate-General for Mobility and Transport (2020). *Handbook on the external costs of transport* (*EU Handbook*)
[31] ARUP (2015). *Provision of market research for value of travel time savings and reliability.*
[32] Eurostat (2018). *Time spent on travelling by mode of transport.*

input-output tables from 2019 were used for each country (the most recent pre-COVID year), sourced from the OECD.[33] These tables cover 20 industry sectors and reflect domestic economic linkages. A closed economy assumption is applied, meaning cross-border effects are excluded. For countries with non-euro currencies, exchange rates as of December 31, 2024, are used.[34]

54. To calculate the impact, the model first estimates the total downstream GVA generated by the transportation sector's indirect consumption, that is, production used by other industries rather than final household demand. This avoids double counting with the impact of enhanced quality of life. The total GVA effect is then normalized by each country's total passenger km and tonne km to produce specific GVA multipliers per country.

55. It is assumed that the transport of people and goods contribute equally to enabling economic activity, resulting in a 50/50 attribution of the total enabled GVA. This means half of the estimated GVA is assigned to total national passenger km and the other half to tonne km. This simplifies the allocation and introduces a conservative approach in the face of current data limitations.[35]

56. To quantify the impact, the model first estimates the total downstream GVA generated by the transportation sector's indirect consumption, that is, production used by other industries rather than final household demand. This approach ensures that impacts captured under enhanced quality of life are excluded, thereby avoiding double counting. The total GVA effect is then normalized by each country's total passenger km and tonne km to produce specific GVA multipliers.

Box 2: Gosh input-output model

The Ghosh input-output model is a supply-driven economic model that estimates how the output of one industry supports production in other sectors by tracing the flow of goods and services across the economy. Unlike the demand-driven Leontief model, which focuses on input requirements, the Ghosh model tracks how outputs are distributed as inputs to downstream industries.

By applying the inverse Ghosh matrix, which captures infinite rounds of economic transactions, the model enables the calculation of an indirect GVA multiplier—representing the total wages, taxes, and profits (i.e., Gross Value Added) generated indirectly across the economy due to increased supply from a specific sector, such as transportation.

[33] https://www.oecd.org/en/data/datasets/input-output-tables.html.
[34] Exchange rates extracted from World Bank Database, for countries with non-euro currencies; all values then have been translated into USD to match with currency of other impact calculations.
[35] The 50/50 attribution between transport of people and goods is supported by sources such as the U.S. Transportation Satellite Accounts (Bureau of Transportation Statistics & BEA, 2023) and the OECD/ITF methodologies for Transport Satellite Accounts (ITF, 2020), which show comparable GDP contributions from household (passenger) and business (goods) transport.

4.1.3. Reduced human health, healthcare costs, and lost wages

57. The impacts resulting from road traffic accidents, including reduced human health, healthcare costs, and lost wages, are assessed in accordance with the IFVI & VBA Occupational Health and Safety (OHS) methodology.[36] The Social Value of Mobility methodology adapts the three impacts assessed in the OHS methodology:

    a) **Lost wages** resulting from reduced productivity due to temporary injury, long-term incapacity, or death (proportional to working population),

    b) **Healthcare costs** associated with treatment of injuries and fatalities,

    c) **Reduced human health**, reflecting the burden of premature mortality.

58. The methodology captures these impacts in monetary terms on a country level and sets out a normalization to a per passenger km/tonne km metric. For ease of application, this section only sets out the required inputs for the OHS methodology to apply the valuation logic introduced in the IFVI & VBA OHS methodology. For details on the specific valuation approaches please refer to the OHS methodology statement.

59. The assessment is based on the following data inputs (see Table 2):

Table 2: Data inputs overview

Data required	Data sources
Number of non-fatal injuries	OECD: Road injuries; datagaps might be filled with EUROSTAT data
Number of long-term incapacity cases[1]	Assumption based on OECD/ITF guidance and national road safety statistics (UK, DE): serious injuries ≈10–20% of reported injuries; SafetyCube shows 19–33% of medically serious (MAIS3+) injuries lead to long-term disability. Conservative upper bounds applied: 20% × 33% ≈ 7% long-term incapacity cases (rounded).
Temporary injuries[37]	Remainder of non-fatal injuries (93%) categorized as temporary injuries.
Total workdays lost due to temporary injuries	Country-specific multipliers available in OHS methodology (severity recommendator)
Number of fatalities	OECD: Road fatalities; datagaps might be filled with EUROSTAT data

[36] IFVI/VBA (2026). *Social methodology 1 – Occupational health & safety topic methodology*.
[37] National road safety statistics (e.g., from United Kingdom and Germany) indicate that serious injuries represent a minority of police-reported non-fatal road injuries, typically in the range of approximately 10–20%, while definitions and reporting practices differ significantly across countries. OECD/ITF methodological guidance (2011) therefore recommends caution when interpreting police-based severity categories and promotes the use of medically defined serious injuries (AIS/MAIS3+) for assessing long-term consequences. Research from the SafetyCube project shows that approximately 19–33% of medically serious injuries result in long-term or lifelong disability. For this calculation, a conservative approach is adopted by applying the upper bound of both ranges, resulting in an assumed share of approximately 7% (rounded) of all reported non-fatal injuries leading to long-term incapacity, with the remainder classified as temporary injuries under the OHS definition.

60. While originally designed for occupational settings, most of these impact dimensions, particularly those related to health and healthcare costs, are equally relevant and transferable to the context of mobility-related accidents. Reference Scenario to determine the outcomes:

61. To ensure consistency with Life Cycle Assessment (LCA) practices and established methodologies for quantifying use-phase impacts on the product level, such as GHG emissions, this methodology adopts a reference scenario aligned with the GHG Protocol, the IFVI & VBA GHG Emissions Methodology, and the IFVI & VBA Framework for Industry-Specific Product Impacts. Under this approach, it is assumed that without the existence or sale of the product or service, no transportation activity, passenger or tonne km, and associated outcomes and impacts would be realized.

62. This implies that the baseline scenario assumes zero substitution by alternative transport modes. In other words, in the absence of the sold vehicle or transport service (e.g., passenger car, bus, or freight truck), no equivalent transport activity would take place via other available options such as rail, public transport, or non-motorized modes.

63. This assumption ensures methodological consistency and compatibility with existing LCA and GHG accounting frameworks[38], facilitating comparability across impact topics. It enables a comprehensive assessment of product-related impacts during the use phase, which is often the most material stage for road transport products.

4.2. Monetary Valuation

64. The valuation of the individual impacts is outlined below, building on value factors to estimate the relative importance, worth, or usefulness of changes in well-being indicators in monetary terms.

65. These value factors are calculated for each impact per passenger and tonne km for each country as described above to be multiplied then by the calculated passenger km and tonne km of the different vehicle types or attributed to the supplied components of the vehicle (see also section 4.4.2 for this).

66. To translate passenger km into valued impacts, the following value factors should be applied:

    a. Enhanced quality of life (user benefit)

$$VF_{UserB} = UserB\ Pkm * Attribution_{Vehicle} \quad \text{for each country}$$

(Eq. 9)

    b. Economic activity enabled

$$VF_{Economic} = \frac{indirect\ DS\ GVA}{Pkm} * 0.5 \quad \text{for each country}$$

(Eq. 10)

[38] ISO 14040; ISO 14044; European Commission - Product Environmental Footprint; WBCSD & WRI – GHG Protocol Value Chain Guidance

Where:

UserB Pkm = User benefit per passenger km per year in a country

$Attribution_{Vehicle}$ = Share of user benefit per passenger attributed to the vehicle

Indirect DS GVA = Total downstream indirect GVA effects in a country

Pkm = Total number of passenger km per year in a country

c. Reduced human health from road accidents:

   See VSL-Multipliers for temporary injuries, long-term injuries, and fatal injuries in OHS methodology

d. Healthcare costs from road accidents:

   See Healthcare cost valuation for temporary injuries, long-term injuries, and fatal injuries in OHS methodology

e. Lost wages from road accidents:

   See lost wages valuation in OHS methodology

   Please note that other than in the OHS methodology, the valuation of lost wages from road accidents should be adjusted based on the proportion of the working population. This is because not all accidents involve individuals in the active workforce and therefore do not always result in lost wages. To account for this, the valuation should be scaled according to the share of the working population in each country.

$$VF_{LostWages} = Lost\ wages\ valuation\ in\ OHS * Share\ of\ working\ population\ in\ a\ country$$ [39]

(Eq. 11)

67. For converting tonne km into the Social Value of Mobility, the following value factor can be applied:

$$VF_{Economic} = \frac{indirect\ DS\ GVA}{Tkm} * 0.5 \quad \text{for each country}$$

(Eq. 12)

Where:

Indirect DS GVA = Total downstream indirect GVA effects in a country

Tkm = Total number of tonne km per year in a country

[39] The World Bank – World development indicator databank includes labor force data by country: https://databank.worldbank.org/reports.aspx?source=2&series=SL.TLF.TOTL.IN&country=#

4.3. Attribution of impacts

4.3.1. Consideration of Infrastructure and vehicles

68. To allocate the impacts associated with passenger mobility between the vehicle (user-driven consumption) and infrastructure (public capital provision), a value-added production function is applied. The approach models the production of the total passenger km in a country as the result of combined contributions from private household expenditures and public infrastructure investments. This enables the attribution of the time invested, as product of travel time and VoT, proportionally to the actor responsible for enabling the transportation, either the vehicle or the infrastructure.[40]

69. Infrastructure in this context refers to the road infrastructure only. Infrastructure for other modes of transport (e.g., rail) and infrastructure for fuel provision are not included.

70. The attribution is based on the cost composition for all realized passenger km in a country, which includes:

    a. **Household expenditures (HouseEx)**:
    Covering private spending on road transport (e.g., vehicle purchase, maintenance, fuel) and related insurance. To ensure consistency with public spending data, household expenditures are considered net of taxes. This adjustment avoids double counting, as public infrastructure is largely tax funded.

    b. **Infrastructure expenditures (InfraEx)**:
    Representing the share of road infrastructure spending attributed to passenger transport, based on its relative share in total traffic volumes (passenger-km vs tonne-km).

    c. These components are used to calculate the **production cost of total passenger kilometer ($Cost_{Pkm}$) in a country and year**:

$$Cost_{Pkm} = HouseEx + InfraEx \quad for\ each\ country$$

(Eq. 13)

71. To determine the share of impacts from passenger transport **attributed to the vehicle ($Attribution_{Vehicle}$)**, the share of household expenditures in the overall production costs is calculated (see Figure 3 for illustration of the underlying logic):

$$Attribution_{Vehicle} = \frac{HouseEx}{Cost_{Pkm}} \ for\ each\ country$$

(Eq. 14)

[40] Following recommendations of the UK DfT (2024).

Figure 2: Attribution of user benefit to infrastructure and vehicle

4.3.2. Attribution across the value chain

72. To fairly attribute the Social Value of Mobility to entities across the value chain, different attribution categories have been identified[41]. To choose the most appropriate attribution category, data availability and industry specifics play a crucial role (see Figure 4 for overview):

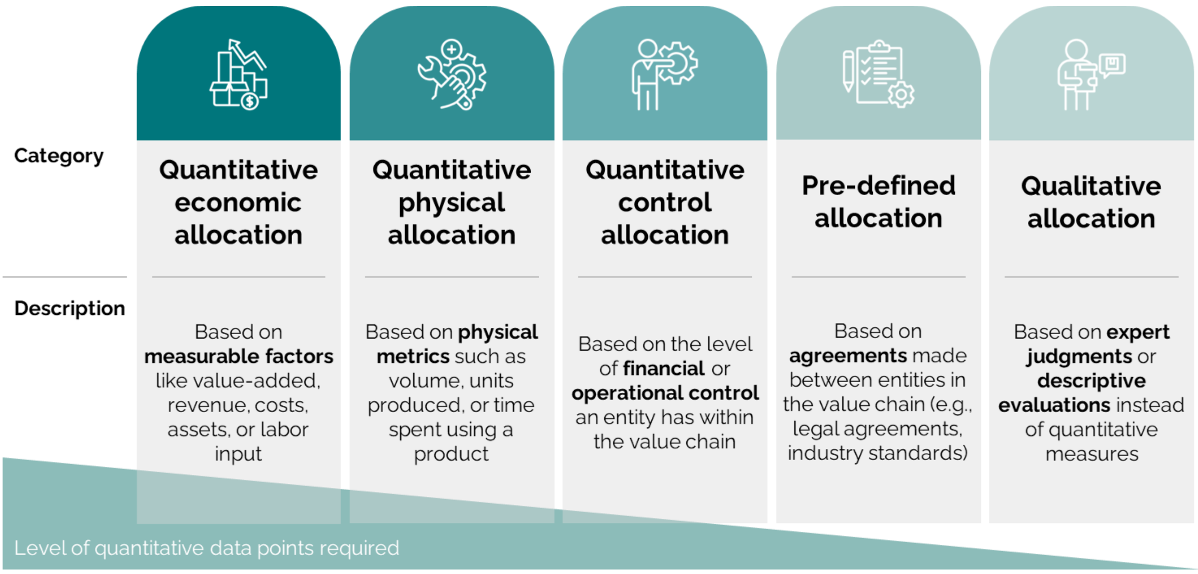

Figure 4: Attribution categories for attribution along the value chain

73. Each attribution category poses attribution techniques, which show either a high degree of alignment with the mobility sector or only pose a low relevance for the mobility cluster overall: The quantitative economic allocation techniques **Value-**

[41] IFVI/VBA (2025). *Framework for Industry-Specific Product Impacts.*

added, **Revenue-based** as well as the quantitative physical allocation technique **Volume-based** have been identified by cluster participants of practice as the most suitable allocation technique for attributing impacts and respectively social value to entities along the value chain in the mobility sector.

74. In the mobility sector, various suppliers contribute to the production of vehicles that enable the transportation of people and goods. One example for a revenue-based attribution would be a screw manufacturer supplying an automotive manufacturer (see example calculation in Figure 5). Attributing annual passenger kilometer provided by one sold car to the screw manufacturer is one example of how upstream suppliers contribute to the mobility value chain.

Exemplary Revenue -based attribution calculation for screw manufacturer (occupation rate 1.3)

Market Price of one screw:	EUR 0,10
Number of screws per vehicle:	1.000
Total cost of screws per vehicle:	EUR 100
Market price of a vehicle:	EUR 50.000
Screw manufacturer revenue-attribution:	**0,2%**
Total pass km per vehicle (lifetime km x occ. rate):	260.000 pass km
Screw manufacturer pass km attribution:	**520** pass km

Figure 5: Calculation example for exemplary revenue-based attribution along the value chain of a vehicle

5. Future Development

75. The Social Value of Mobility methodology represents the mobility cluster's and experts' latest understanding of the impacts from transport of people and goods and their valuation. However, further refinements and additions will help evolving the methodology and improving accuracy, comparability, and completeness. Piloting and further engagement with stakeholders will help to advance the methodology.

76. Opportunities to further advance the Social Value of Mobility methodology include:

    a. Expanding the scope of included impacts, such as the reduced quality of life due to excessive or unreliable travel times (e.g., congestion) and health-related effects from noise exposure, which are acknowledged as impacts in the pathway but are out of scope for a constituent valuation approach.

    b. Extending the methodology to other vehicle types for road transport (e.g., motorbikes and bikes), other modes of transport (e.g., rail), and increase geographic coverage.

    c. Further standardizing assumptions for key parameters (e.g., accident severity distributions) and data sources (e.g., data sources from the OECD ITF or EUROSTAT draw from various national reports which not fully align on categorization or measurement).

    d. Integration of vehicle-specific safety features into the accident rate modelling, allowing for more differentiated assessments based on the protective technologies of the vehicle fleet.

77. Significant updates on any of the above, among other developments in the ecosystem will be used to inform future updates to the Social Value of Mobility

methodology, which will be discussed and incorporated in the work of the VBA Mobility Cluster.

6. Appendix

Appendix 1 ***Attribution***

To validate and refine the selection of appropriate attribution techniques, the VBA conducted a series of workshops with valuation practitioners, supply chain experts, and sustainability leads from across the mobility sector, including suppliers, OEMs, and transportation providers. Through these collaborative sessions, Value-added, Revenue-based, and Volume-based approaches were identified as the most applicable techniques for attributing social value in the mobility context.

Value-added attribution allocates impact proportionally based on each entity's contribution to the total value created within the industry. For example, if an automotive supplier contributes 10% of the gross value added in the vehicle production process, it is attributed 10% of the produced passenger or tonne km.

Revenue-based attribution links impact to each entity's share of total revenue or market value within the value chain. A public transport provider generating 15% of total mobility-related revenues in a country would be attributed 15% of the produced passenger or tonne km.

Volume-based attribution distributes impact based on the physical volume of goods or services produced or sold by each entity relative to the total product volume. For example, consider a screw manufacturer that supplies 500,000 kg of screws annually to the automotive sector, where the total volume of components used in vehicle production amounts to 50 million kg. In this case, the screw manufacturer would be attributed 1% of the produced passenger or tonne km.

Appendix 2 ***Calculation input table of Social Value of Mobility***

Data input sheet

Country/Region		Vehicle type						Provided passenger km (estimations based incl. external data sources) per year					Provided tonne km (estimations based incl. external data sources) per year
Identifier (for internal purposes only)	Country (drop-down list from passkm list)	Battery Electric Vehicle (BEV) Car	Plug-in Hybrid Electric Vehicle (PHEV) Car	Conventional (Diesel/Gasoline) Car	Conventional Bus	Electric Bus	Heavy Truck (N2 and above)	Battery Electric Vehicle (BEV) Car	Plug-in Hybrid Electric Vehicle (PHEV) Car	Conventional (Diesel/Gasoline) Car	Conventional Bus	Electric Bus	Heavy Truck (N2 and above)
Id	**Reference Country**	**no. sold vehicles**	**no. sold vehicles**	**no. sold vehicles**	**no. sold vehicles**	**no. sold vehicles**	**no. sold vehicles**	**pass. km/country**	**pass. km/country**	**pass. km/country**	**pass. km/country**	**pass. km/country**	**tonne km/country**
C1	Croatia	12000						202,800,000	0	0	0	0	0
C2	Estonia			12000			9500.0	0	0	202,800,000	0	0	5,700,000,000
C3	Hungary							0	0	0	0	0	0
C4	France		200					0	3,380,000	0	0	0	0

Calculation table can be accessed through Value Balancing Alliance e.V. (Contact us)

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(in alphabetical order)

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