中欧汽车碳足迹核算、核查与互认指南

Guidelines for Sino-European Automotive Carbon Footprint Accounting, Verification, and Mutual Recognition

中欧汽车碳足迹互认研究工作组

Sino-European Automotive Carbon Footprint Mutual Recognition Research Working Group

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C-GCAP 中国绿色汽车评价规程

automobile industry chain. Carbon Publicity Platform

green ncap

DEKRA

奇瑞汽车 CHERY AUTO

CHANGAN

NIO

声明

Acknowledgement

本中欧汽车碳足迹核算、核查与互认指南 （以下简称“指南”）由中汽碳（北京）数字技术中心有限公司（以下简称“中汽碳数字”）、C-GCAP、Green NCAP、DEKRA 及中欧汽车碳足迹互认研究工作组（以下简称“中欧互认工作组”）成员单位联合编写，仅供中欧互认工作组相关工作及项目实施参考使用。指南所涉及内容来源于双方实践经验、研究成果及合作方提供的信息，编写过程中已尽可能确保其科学性、准确性与可操作性，但编写方不对因使用本指南内容所产生的任何后果承担法律责任。

This *Guidelines for Sino-European Automotive Carbon Footprint Accounting, Verification, and Mutual Recognition* (hereinafter “the Guidelines”) is jointly prepared by China Automotive Carbon Digital Technology Center Co., Ltd. (hereinafter “Carbon Digital Center”), Green NCAP, DEKRA, and the member organizations of the Sino-European Automotive Carbon Footprint Mutual Recognition Research Working Group (hereinafter “Sino-Euro Automotive LCA”). It is intended solely for reference in connection with Sino-Euro Automotive LCA’s relevant activities and project implementation.

The content contained in the Guidelines are based on practical experience, research results, and information provided by partner organizations from both sides. While every effort has been made to ensure the scientific integrity, accuracy, and applicability of the document, the authors accept no legal liability for any consequences arising from its use.

本指南由中汽碳数字起草，经 C-GCAP、Green NCAP、DEKRA、奇瑞汽车股份有限公司、重庆长安汽车股份有限公司、上海蔚来汽车有限公司等工作组成员修订，最终由中欧互认工作组秘书处校对定稿。

The Guidelines was drafted by Carbon Digital Center, revised by C-GCAP, Green NCAP, DEKRA, Chery Automobile Co., Ltd., Chongqing Changan Automobile Co., Ltd., NIO Co., Ltd. And other working group members, proofread and finalized by the Secretariat of Sino-Euro Automotive LCA.

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前言

Preface

在全球碳中和目标和气候行动持续深化的背景下，中欧在汽车生命周期碳足迹领域的协同逐步走深走实。随着双方绿色发展战略的加速推进，汽车产业所面临的碳合规压力持续上升，建立跨境一致的碳足迹评价机制，成为推动低碳转型、降低企业合规成本、促进绿色贸易畅通的重要支撑。

Amid the global momentum towards carbon neutrality and deepening climate action, enhanced coordination between China and Europe in the field of vehicle life cycle carbon footprint accounting has become both necessary and increasingly substantial. As both sides advance their respective green development strategies, automotive enterprises are facing growing compliance pressure, underscoring the need for an aligned and mutually recognized carbon footprint accounting framework to support low-carbon transition, reduce administrative burden, and facilitate greener cross-border trade.

目前，中欧双方已在绿色评价体系、方法学框架及数据披露平台等方面建立了坚实的合作基础。中国方面，中国汽车绿色评价规程（C-GCAP）作为国家层面推动绿色出行的重要举措，围绕健康、能效和低碳三大维度对汽车性能进行评估，并通过星级评价和可选测试，引导消费者关注绿色性能，推动产品绿色升级。中国汽车产业链碳足迹信息披露平台（以下简称“CPP”）则作为碳足迹数据与方法应用的权威平台，承担行业碳管理相关信息的发布职能。欧洲方面，Green NCAP 作为 Euro NCAP 的“姊妹机构”，通过开展广泛的整车测试和生命周期评估，发布透明且消费者友好的环境绩效结果，为汽车环保表现建立了科学评价基准。两大项目在目标和路径上具有诸多相似之处，尤其在碳足迹核算领域，为进一步深化合作奠定了良好基础。

At present, China and Europe have each built robust cooperation foundations in green evaluation systems, methodology frameworks, and data disclosure platforms. On the Chinese side, the Chinese Automotive Test & Assessment Management Center (C-GCAP) serves as a key national initiative to promote green mobility. It evaluates vehicle performance across health, energy efficiency, and low-carbon dimensions, providing star-based assessments and optional tests that encourage consumer awareness and product-level green advancement. The China Automobile Industry Chain carbon publicity platform (hereinafter "CPP") Platform functions as an authoritative repository for carbon footprint data and methodology application. On the European side, Green NCAP, as a "sibling organization" to Euro NCAP, provides a science-based benchmark for environmental performance rating through extensive vehicle testing, life cycle assessment and transparent and consumer friendly results publication. Both programmes share a number of similarities, which motivates further cooperation exploration, especially in the field of carbon footprint accounting.

在此基础上，中欧机构已初步建立汽车碳足迹互认合作机制。中汽碳数字、C-GCAP 携手 Green NCAP 建立中欧互认工作组，中欧互认工作组已在方法学比对、试点车型核算、平台协同发布和报告结果互认等方面取得阶段性成果，初步搭建起“一算多认”的机制。

On this basis, the organizations from China and Europe have initially established a bilateral cooperation mechanism for vehicle carbon footprint mutual recognition. Carbon Digital Center, C-GCAP and Green NCAP have jointly launched Sino-Euro Automotive LCA. Sino-Euro Automotive LCA has achieved phased progress in methodological comparison, pilot model footprint assessment, coordinated data publication, and mutual acceptance of verified reports, laying the foundation for a "single calculation, multiple recognition" mechanism.

本指南旨在解决企业在碳足迹管理中面临的“重复核算、标准不一、合规成本高”等共性问题。指南引入了统一的技术框架，覆盖核算、核查与互认全过程，致力于提升中欧区域间碳足迹管理的透明度和方法一致性。该指南符合包括 ISO 14040/44 在内的国际标准，并以 ISO 14064-3、ISO 14067 和 ISO 14071 为基础，融合了 CPP、C-GCAP 及 Green NCAP 的实践经验，形成乘用车碳足迹评估的统一路径。

The Guidelines is developed to address common challenges such as duplicated calculations, divergent standards, and high compliance costs faced by enterprises. It introduces a unified technical framework that covers accounting, verification, and mutual recognition processes, aiming to improve transparency and methodological coherence in carbon footprint management between both regions. The Guidelines is in compliance with international standards including ISO 14040/44 and based on ISO 14064-3, ISO 14067 and ISO 14071, and integrates the practical experience of the CPP, C-GCAP and Green NCAP to form a harmonized path for passenger vehicle assessment.

本指南旨在为中欧汽车企业、第三方机构和法规监管相关方提供技术参考。未来，中欧互认工作组将以本指南为基础，持续拓展适用范围，推动互认机制制度化运行，携手构建公开透明、互信互认的国际绿色规则体系。

The Guidelines serves as a technical reference for OEMs, third-party verifiers, and stakeholders in both China and Europe. Going forward, Sino-Euro Automotive LCA will continue to expand the application scope and institutionalize this mechanism, contributing to a globally trusted, transparent, and interoperable green rule system.

第一章 汽车碳足迹核算方法

Chapter 1 Methodology for Automotive Carbon Footprint Accounting

1.1 目的与目标 / Aim and Goal

本指南遵循 ISO 14040/44 标准，基于 ISO 14067，并协调 Green NCAP 与 CPP 的方法学，旨在推动中欧之间碳足迹数据的互认。碳足迹的核算将采用 Green NCAP 的工具和 CALCM 模型进行。

In compliance with ISO 14040/44 and based on ISO 14067 and align with the Green NCAP and CPP methodologies, this specification seeks to facilitate mutual recognition of carbon-footprint data between China and Europe, with calculations carried out using Green NCAP's tools and CALCM.

生命周期评估（LCA）旨在量化欧洲或中国市场在售车辆，基于欧洲或中国能源供给体系及通用全球供应链背景下的温室气体及其他环境排放。其主要重点是通过全生命周期视角，揭示不同车型间的显著性差异，并系统辨识以下要素中的关键影响参数:

Life cycle assessment (LCA) is intended to quantify the greenhouse gas emissions and other environmental impacts of vehicles sold in the European or Chinese market, based on the European or Chinese energy supply system and a generic global supply-chain context. Its primary focus is, from a full life cycle perspective, to reveal significant differences between vehicle models and to systematically identify the key impact parameters within the following elements:

动力系统;

Powertrain;

燃料类型;

Fuel type;

能源需求;

Energy demand;

车辆质量;

Vehicle mass;

电池容量;

Battery capacity;

车辆行驶过程的温室气体及其他环境排放。

Greenhouse Gas (GHG) and other emissions during vehicle driving.

本方法学所支持的 LCA 方法，可广泛应用于汽车行业和交通部门的环境绩效评估、声明与信息披露体系建设。采用该方法学计算得出的碳足迹核算报告可直接作为支持文件，用于 Green NCAP 与 CPP 联合发布的环境信息披露材料和技术文件。

The LCA accounting approach supported by this methodology can be widely applied to environmental performance assessment, declarations and the development of information-disclosure frameworks in the automotive industry and transport sector. Carbon-footprint reports generated using this methodology may be used directly as supporting documentation in the environmental-information disclosures and technical publications jointly issued by Green NCAP and CPP.

本指南采用中欧市场车型实际生产数据进行建模分析，汽车寿命参数设定涵盖车辆全生命周期最大使用年限 16 年及最高总行驶里程 24 万公里。

This Guidelines conducts modeling and analysis based on the actual production data of vehicle models in the Chinese and European markets, with the lifetime parameters set for a maximum service life of 16 years and a total mileage of up to 240,000 km over the vehicle's life cycle.

1.2 系统边界 / System Boundary

为了确定车辆运输服务相关的碳足迹，必须对从原材料和资源开采、到车辆提供运输服务、到车辆报废回收的所有过程进行分析。车辆碳足迹核算的组成要素与系统边界应涵盖所有利用和转化初级能源与物质资源以提供运输服务、并对环境产生影响的技术系统。如表 1 所示，汽车生命周期系统边界覆盖系统的材料的获取和加工阶段、零部件生产阶段、整车生产阶段、使用阶段和生命末期阶段阶段。

To determine the footprint of delivered transportation services, all processes from raw material and resource extraction, through vehicle operation, to the vehicle's end-of-life treatment, must be analysed. The elements and system boundaries of the vehicle carbon-footprint calculation shall encompass every technical system that consumes and transforms primary energy and material resources to provide transportation services and generate environmental impacts. As shown in Table 1, the system boundary covers the Material acquisition and processing stage, component production stage, vehicle production stage, the use stage, and the end-of-life stage.

表 1 汽车生命周期系统边界

生命周期阶段	过程	过程的简要描述
材料获取及加工阶段（A）	整车部件材料（A_1）	原生材料包括：资源开采、加工提纯、原材料生产加工等过程； 再生材料包括：废物的回收、再生材料生产加工等过程。
	轮胎材料（A_2）	原生材料包括：资源开采、加工提纯、原材料生产加工等过程； 再生材料包括：废物的回收、再生材料生产加工等过程。

生命周期阶段	过程	过程的简要描述
	液体材料（A_3）	原生材料包括：资源开采、加工提纯、原材料生产加工等过程； 再生材料包括：废物的回收、再生材料生产加工等过程。
	铅酸电池材料（A_4）	原生材料包括：资源开采、加工提纯、原材料生产加工等过程； 再生材料包括：废物的回收、再生材料生产加工等过程
	动力电池材料（A_5）	原生材料包括：资源开采、加工提纯、原材料生产加工等过程； 再生材料包括：废物的回收、再生材料生产加工等过程。
	其他部件材料（A_6）	除整车部件、轮胎、液体、铅酸电池和动力电池之外部件的材料获取及加工过程。
零部件加工阶段（B）	零部件加工制造（B_1）	重点零部件的生产加工过程。
整车生产阶段（C）	整车冲压（C_1）	白车身（翼子板、车门、发动机罩、行李箱盖、顶盖、其他车身结构件及覆盖件）的冲压过程。
	整车焊接（C_2）	白车身（翼子板、车门、发动机罩、行李箱盖、顶盖、其他车身结构件及覆盖件）的焊接过程。
	整车涂装（C_3）	白车身（翼子板、车门、发动机罩、行李箱盖、顶盖、其他车身覆盖件）的涂装过程。
	整车总装（C_4）	将各独立的汽车零部件和系统（如发动机、底盘、电器和车身等）通过装配线组装成一辆完整的汽车。
	动力站房（C_5）	为生产过程提供电力、压缩空气、冷却水、热水、蒸汽等动力能源的过程。
运输阶段（D）	运输过程（D_1）	材料、零部件、整车、废弃物等物品的运输过程。
使用阶段（E）	燃料生产（E_1）	燃料（包括电力、汽油和柴油等）的生产过程。
	燃料使用（E_2）	燃料（包括电力、汽油和柴油等）的使用过程。

生命周期阶段	过程	过程的简要描述
	部件更换（E_3）	与部件（整车部件、轮胎、液体和铅酸电池）更换、维修保养相关的材料获取及加工过程。
	制冷剂使用（E_4）	制冷剂的逸散过程。
生命末期阶段（F）	报废拆解（F_1）	报废汽车的拆卸、收集、拆解、余能检测、分类、破碎、填埋、焚烧等过程。

Table 1 System Boundary of Automobile Life Cycle

Life Cycle Stage	Process	Brief Description of the Process
Material Acquisition and Processing Stage（A）	Vehicle Component Materials（A_1）	Primary materials, including: resource extraction, processing and purification, and raw-material production and processing; Recycled materials, including: waste collection and recycling-material production and processing.
	Tire Materials（A_2）	Primary materials, including: resource extraction, processing and purification, and raw-material production and processing; Recycled materials, including: waste collection and recycling-material production and processing.
	Fluid Materials（A_3）	Primary materials, including: resource extraction, processing and purification, and raw-material production and processing; Recycled materials, including: waste collection and recycling-material production and processing.
	Lead-acid Battery Materials（A_4）	Primary materials, including: resource extraction, processing and purification, and raw-material production and processing; Recycled materials, including: waste collection and recycling-material production and processing.
	Power Battery Materials（A_5）	Primary materials, including: resource extraction, processing and purification, and raw-material production and processing; Recycled materials, including: waste collection and recycling-material production and processing.
	Other Component Materials（A_6）	Material acquisition and processing processes for components other than vehicle parts, tires, fluids, lead-acid batteries, and power batteries.
Component Processing Stage（B）	Component Processing and Manufacturing（B_1）	Key component production and processing.
Vehicle Production Stage（C）	Vehicle Stamping（C_1）	Stamping process of the body-in-white (fenders, doors, engine hood, trunk lid, roof, other body structural parts and panels).

Life Cycle Stage	Process	Brief Description of the Process
	Vehicle Welding（C_2）	Welding process of the body-in-white (fenders, doors, engine hood, trunk lid, roof, other body structural parts and panels).
	Vehicle Painting（C_3）	Painting process of the body-in-white (fenders, doors, engine hood, trunk lid, roof, other body panels).
	Vehicle Final Assembly（C_4）	Assembly of individual automotive components and systems (such as engine, chassis, electrical systems, and body) on an assembly line into a complete vehicle.
	Powerhouse Facilities（C_5）	Process of supplying energy—electricity, compressed air, cooling water, hot water, steam, etc.—to the production process.
Transportation Stage (D)	**Transportation Process (D_1)**	The transportation processes of materials, components, complete vehicles, waste and other items.
Use Stage（E）	Fuel Production（E_1）	Production process of fuels (including electricity, gasoline, diesel, etc.).
	Fuel Use（E_2）	Use phase of fuels (including electricity, gasoline, diesel, etc.).
	Component Replacement（E_3）	Material acquisition and processing processes related to replacement, maintenance, and repair of components (vehicle components, tires, fluids, and lead-acid batteries).
	Refrigerant Use（E_4）	Leakage/emissions of refrigerants.
End-of-Life Stage（F）	End-of-Life Treatment（F_1）	Processes of disassembling, collecting, dismantling, residual energy detection, sorting, shredding, landfilling, incineration, etc., of end-of-life vehicles.

1.3 车辆技术 / Vehicle Technology

在本技术指南中，“车辆技术”指的是车辆在动力系统构型、能效路径与排放特征方面的技术类型划分，主要涵盖以下两大类典型技术路线:

In this technical Guidelines, “vehicle technology” refers to the classification of vehicles by their powertrain configuration, energy-efficiency pathways, and emission characteristics, and encompasses two main technology routes:

内燃机汽车：该类车辆主要依赖汽油、柴油、生物燃料等化石燃料驱动，通过内燃机将化学能转化为机械能；

Internal combustion engine (ICE) vehicles: These vehicles rely primarily on fossil fuels such as gasoline, diesel, or biofuels, converting chemical energy into mechanical energy via an internal combustion engine;

电动汽车：该类车辆依靠动力电池系统储存电能，通过电动机驱动整车运行，包括纯电动汽车、插电式混合动力汽车及氢燃料电池汽车。

Electric vehicles (EVs): These vehicles depend on a traction-battery system to store electrical energy and use electric motors to propel the vehicle, including battery electric vehicles (BEVs), plug-in hybrid vehicles (PHEVs) and hydrogen fuel cell vehicles (FCEVs).

1.4 评估方法 / Assessment Methodology

本指南使用归因型生命周期评价（Attributional Life Cycle Assessment, ALCA）方法。ALCA 是一种常用的 LCA 方法，用于描述特定产品系统在其生命周期各阶段（如原材料获取、生产、使用、报废）中所“归因”的资源消耗与环境影响。该方法通过静态建模，基于平均数据量化产品系统在当前技术和市场条件下的环境绩效，重点在于识别和量化已发生或正在发生的环境负荷。这些环境负担包括但不限于温室气体（GHG）排放的影响。

The Attributional Life Cycle Assessment (ALCA) is applied in this Guidelines, which is a widely used LCA approach for characterizing the resource use and environmental impacts that can be “attributed” to a given product system over

its life cycle stages (e.g., raw-material acquisition, production, use, and end-of-life). Through static modelling based on average data, ALCA quantifies the environmental performance of the product system under current technological and market conditions, with a focus on identifying and measuring the environmental burdens that have occurred or are occurring. These environmental burdens include, but are not limited to, the impact of greenhouse gas (GHG) emissions.

1.5 功能单位 / Functional Unit

在生命周期评估（LCA）中，整个生命周期内累积的环境影响应归因于功能单位，即系统所提供的服务。在本指南中，所考虑的运输系统通过乘用车提供运输服务。这意味着乘用车在其整个生命周期内产生的影响应归因于驾驶这一功能单位:

In Life Cycle Assessment (LCA), the cumulative environmental impacts over the entire life cycle shall be attributed to the functional unit, i.e. the service delivered by the system. In this Guidelines, the transport system provides mobility via a passenger car, meaning that the car's life cycle impacts are allocated to the functional unit of driving, defined as:

单公里行驶 1 km 作为环境负荷核算的基本单元;

One kilometre driven (1km) as the basic unit for environmental burden accounting;

车辆最大服役周期 16 年内累计行驶里程上限 240,000 公里。

A maximum service life of 16 years with a total lifetime mileage of 240,000 km.

1.6 分配规则 / Allocation Rules

在生命周期评价（LCA）中，当单一生产过程产出多种产品时，需进行环境效应分配。涉及共享单元过程的分配程序（若可行且基于此逻辑）应遵循以下优先级顺序:

In life cycle assessment (LCA), when a single process yields multiple co-products, the associated environmental impacts must be allocated among them. Where a shared unit process is involved (and allocation is both practicable and logically justified), the following hierarchy of methods should be applied:

物理属性分配法：基于产物的物理特性（如质量、数量、运行时长等）进行分配

Physical-attribute allocation: Allocate impacts on the basis of each co-product's physical characteristics (e.g. mass, volume, production quantity, operating hours);

经济价值分配法：当物理属性不适用时，采用经济价值比例分配，例如：废弃物与原生材料的市场价值比率（如再生塑料/原生塑料价格比）;

Economic-value allocation: If physical - attribute allocation is not feasible or does not adequately reflect the differences in environmental burdens, allocate impacts in proportion to the economic value of each co-product. Example: For co-product streams of virgin versus recycled plastic, use the ratio of their market prices to distribute impacts;

1.7 生命末期处理方法 / End-of-life Approach

在分析产品生命末期阶段时，应用截断法（Cut-off），仅计算直接归属于当前产品系统的环境影响，而将回收材料/能源的后续利用所产生的环境效益或负担转移至其他产品系统。

In End-of-Life (EoL) analysis of a product's life cycle, only the environmental impacts directly attributable to the current product system are quantified according to the Cut-off method; any environmental benefits or burdens arising from the subsequent use of recovered materials or energy are allocated to other product systems.

1.8 影响类别 / Impact Categories

所考虑的温室气体包括二氧化碳（CO_2）、甲烷（CH_4）、一氧化二氮（N_2O）、三氟化氮（NF_3）、氢氟碳化物（HFCs）、全氟化合物（PFCs）和六氟化硫（SF_6）。为衡量其对气候变化的影响，采用全球变暖潜势（GWP 100 年时间尺度，简称 GWP 100a）作为指标，所使用的排放因子依据最新的 IPCC 评估报告确定。核算结果以克二氧化碳当量每公里（gCO_2e/km）和吨二氧化碳当量每辆车（$tCO_2e/vehicle$）表示。

The greenhouse gases considered include carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), nitrogen trifluoride (NF_3), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6). To quantify their climate change impact, the Global Warming Potential (GWP 100a) metric is used, with emission factors in accordance with the latest IPCC Assessment Report. Results are expressed as gCO_2e/km and $tCO_2e/vehicle$.

除 GWP 100a 外，还应报告初级能源需求（PED）。所考虑的初级能源包括化石能源（煤炭、石油和天然气）、可再生能源（水电、生物质、太阳能和风能），以及其他能源类型，如核能、废弃物和残余物。初级能源需

求是根据低热发热量计算。核算结果以兆焦每公里（MJ/km）和兆焦每辆车（MJ /vehicle）表示。

Primary Energy Demand (PED) is to be reported besides GWP 100a. The primary energy considered include fossil fuels (coal, oil, and gas), renewables (hydropower, biomass, solar, and wind), as well as other sources such as nuclear energy, waste, and residues. The primary energy demand is calculated based on the lower heating values. Results are expressed as MJ/km and MJ/vehicle.

其他环境影响类别也可根据需要进行计算与披露

Other environmental impact categories may also be calculated and reported.

1.9 取舍准则 / Cut-off Criteria

在生命周期评估中，对于每个部件中按重量计占比低于3%的材料（包括组件、锂离子动力电池、铅酸电池、轮胎和液体等），可以考虑将其排除在计算之外，以简化数据处理和模型计算。然而，为了保证输入材料质量平衡的完整性，须将这些被省略材料的总重量重新分配至该部件中碳排放最高的材料对应的输入项中，确保整体质量平衡不受影响。针对材料省略的具体情况及其原因，应详细进行书面记录和说明。

In life cycle assessment, for any component in which a material accounts for less than 3% of the component’s weight (including sub-assemblies, lithium-ion traction batteries, lead-acid batteries, tires, liquids, etc.), that material may be omitted from the calculation to simplify data handling and model computation. However, to preserve the overall mass balance of input materials, the total mass of all omitted materials must be reallocated to the input item corresponding to the material with the highest carbon emissions within that same component. Detailed written documentation must be maintained, describing the specific omissions and the rationale for each.

1.10 背景数据 / Background Data

背景数据的地理代表性涵盖多个区域，以确保生命周期评价（Life Cycle Assessment, LCA）结果的准确性与适用性。背景数据包括电力结构和电力供应、燃料生产和供应、材料性能、能源需求和碳排放因子等关键参数。

Geographical representativeness of background data spans multiple regions to ensure the accuracy and applicability of Life Cycle Assessment (LCA) results. Background data includes key parameters such as the electricity mix and electricity supply, fuel production and supply, materials properties their and energy demand and carbon emission factors.

中国背景数据：涵盖材料、能源的碳排放因子、零部件更换频率、制造阶段能源使用等关键参数，主要来源于中国汽车生命周期数据库（CALCD）和中国汽车生命周期评价模型（CALCM）；

China background data: primarily sourced from the China Automotive Life Cycle Database (CALCD) and the China Automotive Life Cycle Assessment Model (CALCM);

欧洲背景数据：主要来自 Green NCAP 内部的数据库，补充资料来自国际知名的数据库。

European background data: mainly drawn from Green NCAP internal database, with supplementary sources from renowned international databases.

所使用的数据源应根据适用的使用协议和条件进行适当引用。

The used data sources are to be properly referenced according to the applicable usage agreements and conditions.

1.11 前景数据 / Foreground Data

前景数据（包括车型规格、车辆材料组成、车型生产工艺过程及能耗参数等）由车辆制造商提供，确保数据的准确性和及时性。这些数据反映了具体车型的设计特征和实际运行状况，是生命周期评估中关键的输入参数。

Foreground data including vehicle model specifications, vehicle material composition, vehicle model production process and energy consumption parameters, etc n are provided by the vehicle manufacturer to ensure data accuracy and timeliness. These data reflect the design features of each specific model and serve as critical input parameters in the life cycle assessment.

1.12 数据质量要求 / Data Quality

数据质量的评估应严格依据国际标准 ISO 14067 中第 5、6.3.5、6.3.6、6.4.2 和 6.4.3 条款的要求，以及 ISO 14071 标准的相关规定进行。这些条款涵盖了数据的准确性、一致性、完整性、代表性和透明度等关键质量指标，确保生命周期碳足迹核算的科学性和可靠性。

The assessment of data quality shall be conducted in strict accordance with the requirements of Clauses 5, 6.3.5, 6.3.6, 6.4.2 and 6.4.3 of ISO 14067, as well as the relevant provisions of ISO 14071. These clauses address key quality indicators such as accuracy, consistency, completeness, representativeness and transparency to ensure the scientific rigour and reliability of the carbon footprint calculation.

此外，请参见本指南第二章对于数据质量的进一步说明，包括具体流程和技术要求。

For more information, please refer to the further description of data quality in Chapter Two of the Guidelines, including specific processes and technical requirements.

第二章 汽车碳足迹核查技术规范

Chapter 2 Vehicle Carbon Footprint Data Verification

汽车碳足迹数据核查是确保全生命周期温室气体排放计算和结果准确性、一致性和科学可靠性的重要环节。核查过程以 ISO 14067、ISO 14064-3 和 ISO 14071 国际标准为基础，为中欧碳足迹数据互认提供支持。

Automotive carbon footprint data verification ensures the accuracy, consistency, and scientific reliability of calculations and results across the entire vehicle life cycle. Based on international standards such as ISO 14067, ISO 14064-3 and ISO 14071, this specification aims to support mutual recognition of carbon footprint data between China and Europe.

2.1 核查目标 / Objectives of Verification

核查的主要目标包括:

The primary objectives of verification include:

确保生命周期评估和碳足迹数据符合 ISO 14040/44 标准，并以 ISO 14064-3、ISO 14067 及本指南的相关要求为基础。

Ensuring the life cycle assessment and carbon footprint data are in compliance with ISO 14040/44, and based on ISO 14064-3, ISO 14067 and Guidelines requirements;

验证计算方法和基础数据的科学性和合理性;

Validating the scientific soundness and rationality of calculation methods and underlying data;

提升生命周期评价 LCA 和碳足迹核算结果的透明度、可靠性和可比较性;

Enhancing the transparency, reliability and comparability of LCA and carbon footprint accounting results;

支持低碳创新、法规合规性及碳足迹互认。

Support low-carbon innovation, regulatory compliance, and mutual recognition.

2.2 核查范围与重点 / Verification Scope and Focus Areas

核查的范围包括车辆（包括电池）的材料组成和质量、材料碳排放因子、整车生产阶段的能源类型、来源及用量、车辆使用阶段按油耗或电耗标准计算的合理性等关键节点。

The verification scope includes key parameters such as the vehicle's material composition and properties (including batteries), material carbon emission factors, the type, source and consumption of energy in the vehicle production stage, and the rationality of calculations based on fuel or power consumption standards in the vehicle use stage.

车辆材料信息，包括车辆（含动力电池）的材料组成和质量，包括低碳材料的种类、用量及碳排放因子证明材料;

Vehicle material information: covering the material composition and properties of vehicles (including power batteries), as well as the types and quantities of low-carbon materials and supporting documents for carbon emission factors;

车辆生产信息，包括车辆生产过程中（冲压、焊接、涂装、总装四大工艺及动力站房）消耗的能源类型、来源及用量;

Vehicle production information: including the type, source, and consumption of energy used in the production processes (stamping, welding, painting, final assembly, and power station facilities);

国家或超国家的电力结构和各自的排放因子：具体说明中国和欧洲电网提供的能源构成；包括化石燃料和可再生能源的比例，包括由此所使用的基础设施造成的排放;

National or supranational electricity mix and respective emission factor: specifying the energy composition supplied by China's and Europe's electricity grid; including the proportions of fossil fuels and renewable energy, including the emissions caused by the infrastructure employed therefore;

企业生产阶段的实际电力使用情况，包括电力的来源、类型和用量等（如果适用）;

The actual electricity usage of the manufacture during the production stage, including the source, type and quantity of electricity (if applicable);

车辆能耗数据，车辆使用过程中燃料消耗数值及相应的测试标准。

Vehicle energy consumption data: fuel consumption values during vehicle use and the corresponding testing standards.

2.3 核查流程 / Verification Process

前期准备

Pre-verification Preparation

明确核查范围

Defining the Scope of Verification

指定核查的生命周期阶段：车辆的材料获取及加工（包括动力电池）和车辆生产阶段。

The designated life cycle stage for inspection: the material acquisition and processing (including power batteries) and vehicle production phase.

组建核查团队

Forming of the Verification Team

由中汽碳数字、DEKRA、Green NCAP 三方的专家组成核查团队，负责参考 ISO 14064-3 对车型数据进行符合性审查。

The verification team is composed of experts from China Automotive Carbon Digital, DEKRA, and Green NCAP, and is responsible for conducting compliance reviews of vehicle data, taking into account ISO 14064-3.

制定核查计划

Develop the Verification Plan

确定车型数据收集清单、数据审核日期及流程、核查报告提交截止日。

Determine the data collection sheet for vehicle models, the dates and procedures for data review, and the deadline for submission of the verification report.

数据收集

Data Collection

基础信息

Basic Information

包括企业名称、车型名称、整备质量、燃料类型、燃料消耗量、动力电池类型、动力电池重量和动力电池能量等车型相关基本信息，具体见汽车碳足迹数据收集表-表 1。

Including OEM name, vehicle model name, curb weight, fuel type, fuel/electricity consumption, power battery type, power battery weight, and

power battery energy capacity, etc. For specific details, refer to Automotive Carbon Footprint Data Collection Form - Table 1.

车辆材料信息

Vehicle Material Information

收集车辆（包括电池）的材料组成和质量，具体见*汽车碳足迹数据收集表-表 1*。

Collect the material composition and vehicle properties (including the battery). For specific details, refer to *Automotive Carbon Footprint Data Collection Form - Table 1*.

车辆生产信息

Vehicle Production Information

包括初级能源、二次能源消耗及温室气体直接排放，具体见汽车碳足迹数据收集表-表 2。

Including primary energy and secondary energy consumption, as well as direct GHG emissions. For specific details, refer to *Automotive Carbon Footprint Data Collection Form - Table 2*.

其中，电力信息应包括以下几点内容:

Power Information should include the following:

Ⅰ.记录当前中国、欧盟或欧洲国家平均电力消费结构，包括其中化石燃料、可再生能源及其他的比例。

Ⅰ. Record the current national average power consumption structure in China or European Union or separate countries within Europe, including the proportions of fossil, renewable and other energy.

Ⅱ.如适用，记录核算周期内，工厂生产的电力消耗情况，应避免重复计算，包括:

Ⅱ . Where applicable, record the electricity consumption of factory production within the accounting period, avoiding double-counting, including:

✓电网电力。

✓Grid electricity.

当供应商能够通过合同工具（能源属性证书、电力交易合同等）的形式保证电力供应，应使用供应商特定电力生产的生命周期数据，电力产品应:

When suppliers can guarantee power supply through contractual tools (energy attribute certificates, power trading contracts, etc.), use the life cycle data of the supplier-specific power production. The power product should:

- 传递电力生产单位相关信息以及发电机组特征信息。

- Disclose information about the power generation unit and generator set characteristics.

- 保证唯一的使用权。

- Guarantee exclusive usage rights.

- 由报告实体或报告实体代表追踪、赎回、报废或注销。

- Be tracked, redeemed, retired, or cancelled by the reporting entity or its representative;

- 尽可能接近合同工具的适用期限，并包括相应的时间长度。

- Align as closely as possible with the validity period of the contractual tool and include the corresponding time frame.

✓直供电力：企业与发电站之间具有专用输电线路，且所消耗的电未向第三方出售。

✓Direct-supplied electricity: The enterprise has a dedicated transmission line with the power station, and the consumed electricity is not sold to third parties.

✓内部发电（例如现场发电）且未向第三方出售。

✓Internal power generation (e.g., on-site power generation) not sold to third parties.

排放因子

Emission Factors

基于国际或区域数据库，确认排放因子是否反映最新区域实际。

Based on international or regional databases, confirm whether emission factors reflect the latest regional realities.

核查实施

Verification Execution

采用桌面核查（可以线上进行）或现场核查（如适用）。

Adopt desktop verification (can be performed online) or on-site verification (if applicable).

检查收集数据的一致性、连贯性和完整性。

Check the consistency, coherence, and completeness of the collected data.

Ⅰ.确认车辆材料、生产能耗等数据是否符合定义的边界和目标。

I. Verify whether data on vehicle materials, production energy aligns with defined boundaries and goals.

Ⅱ.检查数据是否完整，无关键缺失。

Ⅱ. Ensure data is complete without critical omissions.

Ⅲ.确保数据符合 ISO 14040/44 标准，并以 ISO 14067:2019 为基础。

Ⅲ. Ensure data is in compliance with the ISO 14040/44 and based on ISO 14067:2019.

数据验证

Data verification

比较车辆数据与源文件或第三方数据，确保其准确性。

Compare vehicle data with source documents or third-party data for accuracy.

I. 车辆材料信息

Ⅰ. Vehicle material information

对 CAMDS、IMDS 或等效 BOM 数据库进行核查，应满足以下要求：

Verify the original data of CAMDS, IMDS, or equivalent BOM databases, which should meet the following requirements:

- 车辆整备质量：收集的车辆材料总质量与车辆整备质量相比，阈值不超过±3%。

- Curb weight: The total mass of the collected vehicle materials compared with the curb weight of the vehicle, with a threshold not exceeding ±3%.

- 零部件/材料质量：抽查重点零部件清单之内的零部件/材料质量，总质量与原始数据一致。

- Mass of parts/materials: Randomly check the mass of parts/materials on the key parts list, and the total mass shall be consistent with the original data.

- 低碳材料（如有）：核查车辆使用的该低碳材料的类型、质量和对应的碳排放因子。

- Low-carbon materials (if any): Verify the material types, mass and corresponding carbon emission factors of low-carbon materials used in the vehicle.

II.车辆生产信息

II. Vehicle production information

对工厂车间读表记录或费用票据进行核查，应满足以下要求：

Verify the meter reading records or expense invoices of the factory workshop, which should meet the following requirements:

- 初级能源消耗总量与实际情况一致。

- The total primary energy consumption is consistent with the actual situation.

- 二次能源消耗总量与实际情况一致。

- The total secondary energy consumption is consistent with the actual situation.

- 温室气体直接排放总量与实际情况一致。

- The total direct greenhouse gas emissions are consistent with the actual situation.

排放因子验证

Emission factor verification

基于国际或区域数据库，确认排放因子是否反映最新区域实际。

Based on international or regional databases, confirm whether the emission factors reflect the latest regional reality.

- CALCD 数据库说明文档

- CALCD database specification document.

- Green NCAP 数据方法学文件

- Green NCAP data methodology document.

现场核查

On-site verification

如有需要，完成现场核实以确认报告过程。

Conduct on-site inspections to confirm reported processes, if applicable.

核查报告

Report Preparation

制定包括范围、主要发现和合规状况的核查报告

Develop a verification report outlining scope, key findings, and compliance status

提供数据和过程改进建议

Provide recommendations for data or process improvements

2.4 数据验证要点 / Key Points for Data Verification

车辆材料数据

Vehicle Material Data

原始数据核查与过程演示：利用 CAMDS、IMDS 或等效 BOM 数据库对车辆原始数据进行核查，并通过文档或流程演示数据整理的全流程，确保数据追溯性

Original Data Verification and Process Demonstration: Verify the vehicle's original data through systems such as CAMDS, IMDS, or equivalent BOM databases, and demonstrate the entire process of data collation via documents or workflows to ensure data traceability

整备质量一致性验证：收集的车辆材料总质量与车辆整备质量的差异需 ≤±3%

Curb Weight Consistency Verification: The difference between the total mass of collected vehicle materials (in *Automotive Carbon Footprint Data Collection Form - Table 2*) and the vehicle's curb weight shall be ≤±3%

关键零部件/材料抽查：随机抽取一定数目的关键零部件/材料，对比其收集的零部件/材料总质量与原始数据（CAMDS、IMDS 或等效 BOM 数据库）一致

Sampling of Key Components/Materials: Randomly select a number of key components / materials, and ensure the total mass of collected components/materials is consistent with the original data (data in or CAMDS, IMDS, or equivalent BOM database system)

低碳材料专项核查：低碳材料包括但不限于再生材料、由清洁能源生产的材料等。若车辆使用低碳材料，需验证以下内容:

Special Verification for Low-Carbon Materials: low-carbon materials include but are not limited to: recycled materials, materials produced by clean energy, etc. If low-carbon materials are used in the vehicle, the following shall be verified:

Ⅰ.低碳材料的总质量是否与申报数据一致。

Ⅰ. Whether the total mass of low-carbon materials is consistent with the declared data.

Ⅱ.材料类型（如低碳排放钢、绿电铝、再生塑料等）或牌号。

Ⅱ. Material types (e.g., low-carbon emission steel, green electricity aluminium, recycled plastic, etc.) or grades.

Ⅲ.对应的碳排放因子及证明材料。

Ⅲ. Corresponding carbon emission factors and supporting documents.

生产能耗数据

Production Energy Consumption Data

证据材料完整性

Integrity of Evidentiary Materials

车型产量、初级能源与二次能源消耗、温室气体直接逸散数据的证据材料完整，且时间范围与《汽车碳足迹数据收集表》中填写统计周期一致，无遗漏和缺失。

The supporting materials for data including vehicle model output, primary and secondary energy consumption, and direct greenhouse gas emissions shall be complete, with the time period consistent with the statistical cycle filled in the *Automotive Carbon Footprint Data Collection Form - Table 3* without any omissions or missing information.

能源购买数据校验

Verification of Energy Purchase Data

初级能源与二次能源购买数据与发票/实测一致。

The purchase data of primary and secondary energy shall be consistent with invoices/measured values.

能源使用数据验证

Verification of Energy Usage Data

初级能源与二次能源使用数据与实测一致（适用时，使用能源管理系统等能源统计系统进行佐证）。

The usage data of primary and secondary energy shall be consistent with measured values (where applicable, evidence shall be provided by energy statistical systems such as energy management systems).

电力数据专项校验

Special Verification for Electricity Data

电力数据需校验是否存在重复计算，绿电/绿证是否真实可追踪。

Electricity data shall be checked for duplicate calculation, and the authenticity and traceability of green electricity/green certificates shall be verified.

能源分配逻辑说明:

Description of Energy Allocation Logic:

说明能源的分配方式和分配过程。

Explain the energy allocation methods and processes.

第三章 汽车碳足迹互认指南

Chapter 3 Vehicle Carbon Footprint Mutual Recognition Guidelines

3.1 方法学协同 / Methodological Alignment

在碳足迹核算方法形成过程中，中欧互认工作组对双方现有方法体系进行了反复对比、专家讨论与持续整合优化，最终明确“互认使用的方法学体系”作为工作组的共识成果。这一体系凝聚了中欧双方联合研究的经验，确保碳足迹核算结果具有可比性和互信基础。

In the development of the mutual recognition carbon footprint methodology, Sino-Euro Automotive LCA conducted in-depth comparisons, expert discussions, and iterative integration of both sides’ existing frameworks. As a result, the group jointly confirmed a “mutually recognized methodological framework”, serving as the consensus outcome and operational foundation. This framework draws on the combined research experience of both parties and ensures comparability and mutual trust in the carbon footprint results.

中欧互认工作组梳理了 Green NCAP 与 CPP 平台的方法学异同，并就功能单位、系统边界、环境影响清单、生命末期阶段处理、取舍原则。背景数据的使用、数据质量评估等若干关键要素进行对齐。

Sino-Euro Automotive LCA has compared the methodological similarities and differences between the Green NCAP and CPP platforms, and has aligned several key elements including the definition of functional unit, system boundary, environmental impact categories, end-of-life treatment, cut-off rules, use of background data, and data quality rating.

功能单位

Functional Unit

Green NCAP 方法学将功能单位定义为系统在其整个生命周期内所提供的交通服务，并将累计的环境影响归因于该服务单位，假设车辆的使用寿命为 16 年，总行驶里程为 240,000 公里。CPP 方法学则将功能单位定义为“1 公里”或“整车生命周期”，其中整车生命周期的假定为 11.5 年、150,000 公里。所采用的功能单位取决于目标市场：欧洲采用 Green NCAP 的方法，中国则采用 CPP 的方法。

The Green NCAP methodology defines the functional unit as the transportation service provided by the system over its lifetime, attributing cumulative environmental impacts to that service over a full vehicle life cycle (with an expected lifetime of 16 years and a mileage of 240,000km). CPP defines the functional unit as either 1 kilometre or the full vehicle life cycle (with an expected lifetime of 11.5 years and a mileage of 150,000 km). The approaches chosen depend on the target market, for Europe - Green NCAP approach / for China – CPP approach.

系统边界

System Boundary

Green NCAP 方法学涵盖生产阶段、使用阶段和生命末期阶段阶段，并进一步细化了使用阶段的内容，包括车辆运行、燃料与电力供应、备件更换以及维护保养等要素。CPP 方法学则涵盖材料生产、整车制造和使用阶段，但不包括材料生产和整车制造过程中的生产基础设施、工业设备及人员相关设施。本指南明确采纳系统边界范围为：材料获取与加工阶段、生产阶段、使用阶段以及生命末期阶段。

Green NCAP includes production, use, and end-of-life phases, with further elaboration on use-phase elements such as vehicle operation, fuel and

electricity supply, spare parts, and maintenance. CPP includes material production, vehicle manufacturing, and use phases, while excluding vehicle production infrastructure, industrial equipment, and personnel-related facilities during material production and vehicle manufacturing. The Guidelines adopts a system boundary that covers the stages of material acquisition and processing, production, use, and EoL.

环境影响清单

Impact and Inventory Categories

Green NCAP 所涵盖的温室气体种类包括二氧化碳（CO_2）、甲烷（CH_4）和一氧化二氮（N_2O），并特别指出生物燃料引起的土地利用变化（LUC）对排放的影响。CPP 所涵盖的范围更广，包含 CO_2、CH_4、N_2O、三氟化氮（NF_3）、氢氟碳化物（HFCs）、全氟化合物（PFCs）和六氟化硫（SF_6），更加强调温室气体种类的全面性。

Green NCAP includes CO_2, CH_4, and N_2O, and notes the effects of land-use change (LUC) for biofuels. CPP includes a broader scope – CO_2, CH_4, N_2O, NF_3, HFCs, PFCs, and SF_6 – emphasizing completeness of GHG coverage.

本指南明确采纳在互认结果披露中应至少包含 CO_2、CH_4 和 N_2O；同时，强烈建议纳入 NF_3、HFCs、PFCs 和 SF_6。

The Guidelines adopts that mutual recognition reporting shall disclose at least CO_2, CH_4 and N_2O. Additionally, the inclusion of NF_3, HFCs, PFCs, and SF_6 is strongly recommended.

本指南明确 PED 应核算的初级能源资源包括：化石能源（煤炭、石油和天然气）、可再生能源（水电、生物质、太阳能和风能），以及其他能源类型，如核能、废弃物和残余物。

The Guidelines adopts PED that the primary energy resources to be accounted for in primary energy demand include: The primary energy resources considered include fossil fuels (coal, oil, and gas), renewables (hydropower, biomass, solar, and wind), as well as other sources such as nuclear energy, waste, and residues.

生命末期阶段处理

End-of-Life Treatment

Green NCAP 方法学中生命末期阶段处理采用避免负荷方法；CPP 方法学中生命末期阶段处理采用截断法）。本指南明确采纳 Cut-off。

Green NCAP applies an “avoided burden” approach, while CPP uses the “cut-off” method. The Guidelines adopts the cut-off approach.

取舍原则

Cut-off Rules

Green NCAP 方法学没有规定取舍原则，CPP 方法学中取舍原则阈值设定为 1%。本指南明确采纳 3%的取舍原则阈值。

The Green NCAP methodology does not stipulate the threshold of the cut-off rules, and in the CPP methodology, it is also set at 1%. The Guidelines adopts the use of a 3% threshold.

背景数据

Background Data

Green NCAP 使用其内部数据库，并辅以国际知名数据库的补充数据；CPP 则采用中国汽车生命周期数据库（CALCD）。本指南明确采纳地域分离的数据策略，即：中国相关的背景数据项（如材料碳因子、

更换频率）采用 CALCD，欧洲相关的背景数据项（如电网结构、排放因子）采用欧洲数据库。

Green NCAP uses internal database, with supplementary sources from renowned international databases. CPP uses the CALCD. The Guidelines adopts a regionally separated database strategy, that is, CALCD was used for background data items of China (such as material carbon factor, replacement frequency), and the European database was used for background data items of Europe (such as power grid structure, emission factor).

所使用的数据源应根据适用的使用协议和条件进行适当引用。

The data sources used should be appropriately referenced in accordance with the applicable usage agreements and conditions.

数据质量评估（DQR）

Data Quality Rating (DQR)

Green NCAP 尚未正式采用 DQR 或类似体系。CPP 采用的是涵盖时间代表性、技术代表性、地域代表性和来源代表性四个维度的定量 DQR 体系。本指南符合 ISO 14067 标准中第 5 条、第 6.3.5 条、第 6.3.6 条、第 6.4.2 条和第 6.4.3 条的相关要求。

Green NCAP has not explicitly adopted a DQR or equivalent system. CPP uses a quantitative DQR system across four dimensions: temporal, technical, geographical, and source representativeness. This guideline is in accordance with the requirements of Clauses 5, 6.3.5, 6.3.6, 6.4.2 and 6.4.3 of ISO 14067.

持续更新机制

Mechanism for Continuous Methodological Updates

本方法学体系不是封闭不变的。未来，工作组将通过持续的联合研究对方法学进行更新和完善，不断引入新的技术成果和最新的数据资料，以提升其适用性和科学严谨性。随着汽车新技术的发展和更精确数据的出现，方法学体系将与时俱进，确保中欧碳足迹核算互认机制始终保持科学有效。方法和数据更新可能导致计算和结果的差异。为了使它们透明和可追溯，项目文档包中的每个报告和文档都应该确定所使用的方法版本。

The adopted methodology is not static. Sino-Euro Automotive LCA will continuously improve and refine it through joint research, incorporating emerging technologies and the latest datasets. As vehicle technologies evolve and higher-precision data become available, the methodology will be updated accordingly to ensure the Sino-European carbon footprint mutual recognition mechanism remains scientifically robust and up to date. Methodology and data updates may lead to difference in calculations and results. To make them transparent and traceable, each report and document in the project documentation package should identify the methodology version being used.

3.2 互认机制 / Mutual Recognition Mechanism

统一方法学作为互认前提

Unified Methodology as a Prerequisite

互认以统一的方法学为基础。C-GCAP、CPP 和 Green NCAP 对碳足迹核算采用共同确认的评价方法与规则体系，所有用于互认的碳足迹结果必须基于工作组认可的方法学，通常遵循 ISO 14067 等国际标准，并结合中欧双边合作框架要求。该基础确保“一算多认”机制的有效实施。

Mutual recognition is founded on the use of a harmonized methodology. C-GCAP, CPP and Green NCAP adopt a jointly recognized accounting framework and evaluation rules for carbon footprint results. All results subject to mutual recognition must be calculated using methodologies approved by Sino-Euro

Automotive LCA, typically aligned with international standards such as ISO 14067 and consistent with the terms of the bilateral cooperation framework. This foundation ensures the effective implementation of a “single calculation, multiple recognition” mechanism.

信息补充与透明保障机制

Information Supplement and Transparency Safeguards

在互认前，任一方有权请求对方补充关键核算信息，如数据类型、建模假设、计算过程说明或核查记录等。补充材料的提交是结果进入互认流程的前提，确保双方在数据一致性、完整性和方法准确性方面无重大异议。

Prior to mutual recognition, either party has the right to request supplementary documentation related to critical accounting inputs, such as data types, modelling assumptions, calculation procedures, or verification records. Submission of such materials is a prerequisite for advancing the mutual recognition process and ensures that both sides share a common understanding of data consistency, completeness, and methodological accuracy.

标准化互认声明发布

Standardized Mutual Recognition Statement

通过核查并达成一致后，碳足迹结果将以“标准化互认声明”的形式发布。该声明基于双方统一模板，明确以下要素：适用车型范围、系统边界、温室气体种类、是否使用绿色电力、数据质量以及所使用的方法学版本号等。标准化声明用于对外披露，支持监管合规、绿色采购与公众透明。

Upon successful verification and consensus, carbon footprint results will be published in the form of a standardized Mutual Recognition Statement. Using a jointly developed template, the statement will specify key elements such as applicable vehicle scope, system boundaries, covered greenhouse gas categories, green electricity usage, data quality and the number of the used methodology

version. The standardized statement is intended for public disclosure and may support regulatory compliance, green procurement, and stakeholder communication.

3.3 数据与报告核查互认 / Mutual Recognition of Data and Report Verification

在本工作组互认指南的规则框架下，双方在此互相认可对方开展的整车生命周期评价（LCA）核算工作，相互认可并接受各自核算的碳足迹结果。在结果接受前，C-GCAP、CPP 和 Green NCAP 应享有执行并成功完成验证的权利，并获得用于核查/验证的方法学、初级及次级数据、以及计算过程的补充材料。鉴于不同案例中数据的详尽程度与准确性可能存在差异，互认声明应附带补充信息，用以说明所开展 LCA 工作的主要特征。

Both parties mutually recognize the life cycle assessment (LCA) activities conducted by each other and accept the carbon footprint results generated in the rules framework of Sino-Euro Automotive LCA's Guidelines. Prior to accepting any result, C-GCAP, CPP and Green NCAP reserve the right to conduct and successfully finish a verification, to request and obtain supplementary materials necessary for verification, including the applied methodology, primary and secondary data, and details of the calculation process. Given that the depth and accuracy of data may vary across cases, the Mutual Recognition Statement should include supplemental information to clarify the key characteristics of the conducted LCA.

为确保碳足迹结果的可信性与互认基础，双方对数据核查与报告审核机制作如下规定:

To ensure the credibility of carbon footprint results and the integrity of mutual recognition, the following arrangements are established for data verification and report audit:

核查执行机构

Verification Authorities

数据核查与报告审核分别由中汽碳数字与 DEKRA 及其他 Green NCAP 授权机构实施。由上述机构出具的任何核查或审核结果并被 C-GCAP、CPP 和 Green NCAP 接受，均为有效并具备互认效力。

Data verification and report auditing shall be conducted by CATARC Digital and DEKRA, along with other institutions authorized by Green NCAP. Any verification or audit conclusion issued by these authorized bodies and jointly accepted by C-GCAP, CPP and Green NCAP shall be considered valid and mutually recognized by both parties.

数据访问与安全机制

Data Access and Security Mechanism

所有核查所涉及的数据与报告资料，仅限“中欧互认工作组”核心成员单位访问。双方须采用加密传输、访问权限控制及访问记录机制，确保信息安全与合规使用。

All data and documents involved in the verification process shall be accessible only to core members of the Sino-European Mutual Recognition Working Group. Both parties shall implement encrypted transmission, access control, and traceable audit mechanisms to ensure data security and regulatory compliance.

互认结果的效力

Validity of Mutual Recognition Results

任一方基于上述授权机构出具的核查或审核结论，被 C-GCAP、CPP 和 Green NCAP 接受后，在对方均为等效有效，无需重复执行审阅流程。相关结论可作为互认声明的重要支撑材料。

Verification or audit conclusions issued by the designated authorities of either party shall be considered equivalent and effective for the other party after being jointly accepted by C-GCAP, CPP and Green NCAP. Such conclusions shall serve as a critical basis for issuing the Mutual Recognition Statement.

3.4 成果发布与推广 / Dissemination and Promotion of Outcomes

为提升中欧互认成果的行业可见度与国际认可度，双方建立联合成果发布与推广机制，规定如下:

To enhance the visibility and international credibility of Sino-European mutual recognition outcomes, both parties have established a joint dissemination and promotion mechanism, with the following provisions:

在专有平台联合发布

Joint Publication on the proprietary platforms

中欧互认的阶段性成果、碳足迹声明、试点案例及方法文件等材料，将通过中方 CPP 平台与欧方 Green NCAP 平台联合发布，确保信息披露一致性与全球可访问性。

Interim results, carbon footprint declarations, pilot case studies, and methodological documents under the mutual recognition framework shall be jointly published via the CPP platform (China) and the Green NCAP platform (Europe), ensuring consistency in information disclosure and global accessibility.

推广路径与传播场景

Communication Channels and Dissemination Scenarios

科研路径：学术出版与期刊（如 LCA 类期刊等）；

Academic pathway: Publication in peer-reviewed journals, including those focused on LCA and environmental assessment;

标准化路径：促进与其他标准化组织及合作机构的互认计划;

Standardization pathway: Promotion of mutual recognition initiatives with other standardization bodies and likeminded organisations;

政策协同路径：多元化的国际平台、论坛和活动;

Policy coordination pathway: diverse international platforms, forums and events;

产业展示路径：在车展、国际采购博览会、绿色供应链大会等活动中面向产业链传播;

Industry outreach pathway: Showcasing results at auto shows, international procurement expos, green supply chain conferences, and related industry events

公众传播路径：通过媒体、多语种解读报告、可视化材料、行业沙龙等方式提升公众理解度;

Public communication pathway: Enhancing public understanding through media coverage, multilingual explanatory materials, visualized communication tools, and stakeholder salons;

企业赋能路径：与 OEM、供应商、平台方合作，嵌入绿色采购、绿色信贷、产品标签等具体应用场景中推广互认结果。

Enterprise enablement pathway: Promoting mutual recognition results through collaboration with OEMs, suppliers, and digital platforms, embedding them into green procurement programs, sustainable finance schemes, and product labelling systems.

鼓励企业使用

Encouraging Industry Adoption

经双方认可的互认成果可广泛应用于企业绿色供应链披露、出口合规材料、绿色采购投标、第三方监管等国际使用场景，以提升企业碳透明度与全球竞争力。

Mutually recognized results are encouraged for use in a wide range of international business contexts, including supply chain transparency reporting, export compliance documentation, green procurement bidding, and third-party regulatory reporting. This facilitates increased corporate carbon transparency and strengthens global competitiveness.

双方共识目标

Shared Objective

双方一致认为，成果发布的最终目标是：以统一的方法学成果和项目数据为基础，共同发布具有国际认可度的碳足迹研究成果（如车型核算结果），并确保双方均可受益，提升中欧双方在全球绿色转型进程中的话语权与影响力。

Both parties agree that the ultimate goal of joint publication is to issue internationally recognized carbon footprint outcomes (e.g. model-specific assessments) based on harmonized methodologies and verified data, ensuring mutual benefit and reinforcing the collective voice and influence of China and Europe in global green transition processes.

3.5 附加条款 / Supplementary Provisions

合作期限

Duration of Cooperation

本指南适用于参与中欧互认工作的所有核心单位，自 2025 年 6 月 16 日起生效，除非双方以书面方式另行终止或修订。

This Guidelines shall apply to all core entities involved in the Sino-European mutual recognition process and shall enter into effect on 16th June, 2025, unless otherwise terminated or amended in writing by both parties.

数据与模型使用范围

Scope of Data and Model Use

本指南所引用的所有数据、计算模型及相关资料，均严格限于中欧互认工作组内部授权使用。未经事先书面同意，不得用于商业推广、对外评估或第三方披露。

如涉及跨境数据传输，须遵守双方适用的数据合规管理规定。第三方可向中欧互认工作组提出信息申请。是否允许获取相关信息，将由工作组成员根据保密协议、数据敏感性以及对专有信息的保护需求进行审议和决定。

All data, calculation models, and related materials referenced in the Guidelines are strictly limited to authorized internal Sino-Euro Automotive LCA use. They shall not be used for commercial promotion, external assessment, or third-party disclosure without prior written consent. In the case of cross-border data transfers, compliance with applicable data governance regulations of both parties is required.

Third parties are eligible to request information from Sino-Euro Automotive LCA. The access to such information will be decided on by the members of Sino-Euro Automotive LCA taking into account the confidentiality agreements and sensitivity of the data, protecting any proprietary information.

保密与知识产权

Confidentiality and Intellectual Property

双方应签署保密协议，就互认过程中涉及的企业数据、建模逻辑、数据库结构等内容作出明确保密承诺。未经数据所有方书面授权，任何单位不得擅自传播、转授或公开指南所含敏感信息。

The parties shall enter into confidentiality agreements to explicitly safeguard enterprise data, modelling logic, database structures, and other sensitive information involved in the mutual recognition process. No party may disclose, sublicense, or share such information without the prior written authorization of the data owner.

指南修订机制

Revision Mechanism

本指南可由中欧互认工作组提出更新建议，经中欧双方技术牵头单位共同确认后修订发布。建议每一年开展一次联合评估，必要时可根据标准、政策或产业变化动态调整方法条款。

The Guidelines shall be updated upon proposal by Sino-Euro Automotive LCA and shall be amended and re-issued upon joint confirmation by the lead technical institutions of both parties. It is recommended that a joint evaluation be conducted annually, with provisions updated as needed in response to evolving standards, regulatory requirements, or industry developments.

缩略语表

Abbreviation Table

缩略 Abbreviation	全称（中文） Full Term (Chinese)	全称（英文） Full Term (English)
BOM	物料清单	Bill of Materials
CALCD	中国汽车生命周期数据库	China Automotive Life Cycle Database
CALCM	中国汽车生命周期碳排放模型	China Automotive Life Cycle Assessment Model
CAMDS	中国汽车材料数据系统	China Automotive Material Data System
DQR	数据质量评估	Data Quality Rating
EoL	生命末期阶段	End-of-Life
GHG	温室气体类	Green House Gas
GWP	全球变暖潜势	Global Warming Potential
IMDS	国际材料数据系统	International Material Data System
LCA	生命周期评价	Life Cycle Assessment
PED	初级能源需求	Primary Energy Demand

参考文献

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   ISO 14040:2006 Environmental management - Life cycle assessment - Principles and framework

2. ISO 14044:2006 环境管理-生命周期评估-要求和指南

   ISO 14044:2006 Environmental management - Life cycle assessment - Requirements and Guidelines

3. ISO 14064-3:2019 温室气体核查和验证指南

   ISO 14064-3:2019 GHG Verification and Validation

4. ISO 14067:2018 温室气体—产品的碳足迹—要求和指南

   ISO 14067:2018 Greenhouse gases - Carbon footprint of products - Requirements and Guidelines

5. ISO 14071:2024 LCA 重要评审过程及核实员资格要求

   ISO 14071:2024 LCA Critical Review Processes and Reviewer Competencies

6. IPCC 国家温室气体排放列表指南

   IPCC Guidelines for National Greenhouse Gas Inventories

7. Green NCAP LCA 方法学

   Green NCAP LCA Methodology

8. Green NCAP LCA 数据文档

   Green NCAP LCA Data Document

9. 中国汽车生命周期数据库（CALCD）

China Automotive Life Cycle Database (CALCD)

10.中国汽车生命周期评价模型（CALCM）

China Automotive Life Cycle Assessment (CALCD)

中欧汽车碳足迹核算、核查与互认指南

Guidelines for Sino-European Automotive Carbon Footprint Accounting, Verification, and Mutual Recognition

中欧互认工作组

SEA LCA

TEL: 022-84379799-9771/022-84379799-2887

Email: sunxin@catarc.ac.cn/zhaotianning@catarc.ac.cn

Add: Floor 8th, Building 7, Zone 2, Zongbu Jidi, Fengtai District, Beijing

PS: 100070