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中汽中心 | 数据
汽车工业节能与绿色发展评价中心
Energy-saving and Green Development Assessment Center of Automobile Industry

RESEARCH REPORT ON GREEN DEVELOPMENT INDEX(GDI) FOR AUTOMOTIVE ENTERPRISES 2020 汽车企业绿色发展指数研究报告

Automotive Data of China Co., Ltd. 中汽数据有限公司

2020

Research Report on Green Development Index (GDI) for Automotive Enterprises 2020

汽车企业绿色发展指数研究报告

汽车工业节能与绿色发展评价中心
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http://www.auto-eaca.com/

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通过建立我国统一的绿色发展信息披露通用标准，引导企业定期、规范、准确的公开绿色发展信息并对信息负责，支撑汽车行业绿色高质量发展。

中汽中心 | 数据

专家赠言 | MESSAGE FROM EXPERTS

邓向辉

中国工业节能与清洁生产协会 副秘书长

随着我国工业绿色低碳发展的推进，中汽数据有限公司受工业和信息化部节能与综合利用司委托，开展的汽车企业绿色发展信息披露机制研究，既是对国家绿色发展战略的深刻落实，也是推进汽车全产业链绿色低碳发展的创新管理手段。

报告以指数为切入口，围绕汽车行业和企业绿色发展情况，展开实时研析，基于科学方法编制，为汽车行业和企业提供专业化信息与数据分析，能够综合衡量汽车行业的绿色发展能力，综合评估汽车行业绿色发展产生的综合效益和面临的发展环境。

报告通过数据与图表，不仅展现了 2020 年汽车行业的绿色发展水平，为行业绿色发展信息披露树立绿色标杆，推动企业内部建立绿色发展信息公开机制，同时针对性分析汽车企业在绿色发展方面的优势与不足，为确定企业绿色发展重点提供价值基准和决策依据。

钟绍良

世界钢铁协会北京代表处 首席代表

中汽数据编制的《2020 年汽车企业绿色发展指数研究报告》，开创了中国工业领域企业公示绿色发展指数的先河。该报告不但为政府决策部门、汽车企业、汽车消费者和相关投资机构提供了一份全面、客观、中立的绿色发展指标，更为汽车产业链的上下游企业，尤其是原材料供应企业的绿色发展提供了方向性指引。希望并相信该报告将在全球汽车行业产生广泛的影响力，在碳中和的历史潮流中，跟踪评价并引领汽车行业的绿色发展。

刘永东

中国电力企业联合会 标准化管理中心主任

中国经济已经进入新的发展阶段，创新、协调、绿色、开放、共享的新发展理念将是中国发展的新方向、新要求。行业的绿色发展需要一个公开公正、客观量化的评价体系，企业的绿色发展也需要一个对标体系。自 2019 年起，中汽数据有限公司受工业和信息化部节能与综合利用司委托，开展汽车企业绿色发展信息披露机制研究。在结合国际先进经验和工信部节能司绿色制造工程技术要求的基础上，经过大量行业调研以及专家研讨，形成了工业企业绿色发展指数核算方法，同时，建立起一套涵盖汽车全产业链的企业环境信息披露指南，为企业编制绿色发展报告、核算绿色发展指数提供了一套工具包。为扩大行业影响力，示范推动汽车行业绿色发展，2019 年还组织行业专家研究发布了《汽车企业绿色发展报告编制指南》和《汽车企业绿色发展指数核算方法》，并在 2019 年首次发布汽车企业绿色发展指数。

2020 年的企业绿色发展指数进一步丰富了披露内容，增加了企业绿色发展情况，有助于增进企业间的交流，促进企业进步，推动汽车行业的整体绿色发展。

* 排名不分先后

专家赠言 | MESSAGE FROM EXPERTS

刘岱宗

世界资源研究所 可持续城市部门主任

《2020 年汽车企业绿色发展指数研究报告》通过对 49 家中国规模化汽车企业披露的绿色低碳相关信息，进行了专业整理和分析，从而量化评估了汽车行业绿色发展水平及信息透明度。这项研究工作不仅为利益相关各方，例如政府、消费者、投资人，提供了评估工具，还能有效引导汽车企业建立良好的绿色发展信息披露机制，协助企业建立环境风险防范机制，并制定具有针对性的绿色低碳改善升级解决方案，为中国汽车企业的绿色低碳化发展提供了重要支撑。

卢春阳

中国信息通信研究院 泰尔终端实验室 博士

《2020 年汽车企业绿色发展指数研究报告》首先确定了汽车企业绿色发展指数定义、核算范围、核算指标及权重，发布了 2020 年汽车企业绿色发展指数 top20 研究成果。从行业整体水平、企业层面、指标层面三个维度对汽车企业信息披露水平进行了分析。重点介绍了汽车企业绿色发展先进经验，包括汽车企业能源管理、清洁生产、产品生命周期碳排放、供应链管理、绿色制造体系、汽车轻量化、车内空气质量、产品能源使用、绿色运输物流等。最后对政府机构、生产企业和投资者给出了建议。中汽数据开展的这项工作非常具有创新意义，对汽车行业实现碳达峰碳中和目标具有重要意义。

周波

中国化学与物理电源行业协会动力电池应用分会
标准化工作组与行业研究部主任

《2020 年汽车企业绿色发展指数研究报告》是基于中汽数据有限公司发布的环境信息规范研究上的又一研究成果，汽车绿色发展指数定义了相关指标，对整个汽车产业链都有指导意义，绿色发展是目前汽车产业重点考虑的，怎样更好的推进产业的零排放建设，离不开企业的绿色发展信息披露，2020 年汽车企业绿色发展指数研究报告也很好的对披露水平差异做了分析，对于中国汽车企业信息披露制度的建立发展带来显著而深远的意义。

陈安

国家级经济技术开发区绿色发展联盟秘书处 技术总监

汽车产业是中国国民经济的重要支柱产业之一，汽车的绿色化、低碳化、轻量化、智能化是现在以及未来主流方向，对中国早日实现 3060 碳达峰、碳中和目标具有战略性意义。《2020 年汽车企业绿色发展指数研究报告》从“点”上引导汽车企业规范、准确、及时公开其绿色低碳信息，从“线”上广泛地引导数以万计的供应链企业开展节能减碳降污工作，从“面”上有力的支撑了企业所在工业园区特别是国家级经开区（整车产量约占全国 40%）产业转型升级与绿色低碳发展。

* 排名不分先后

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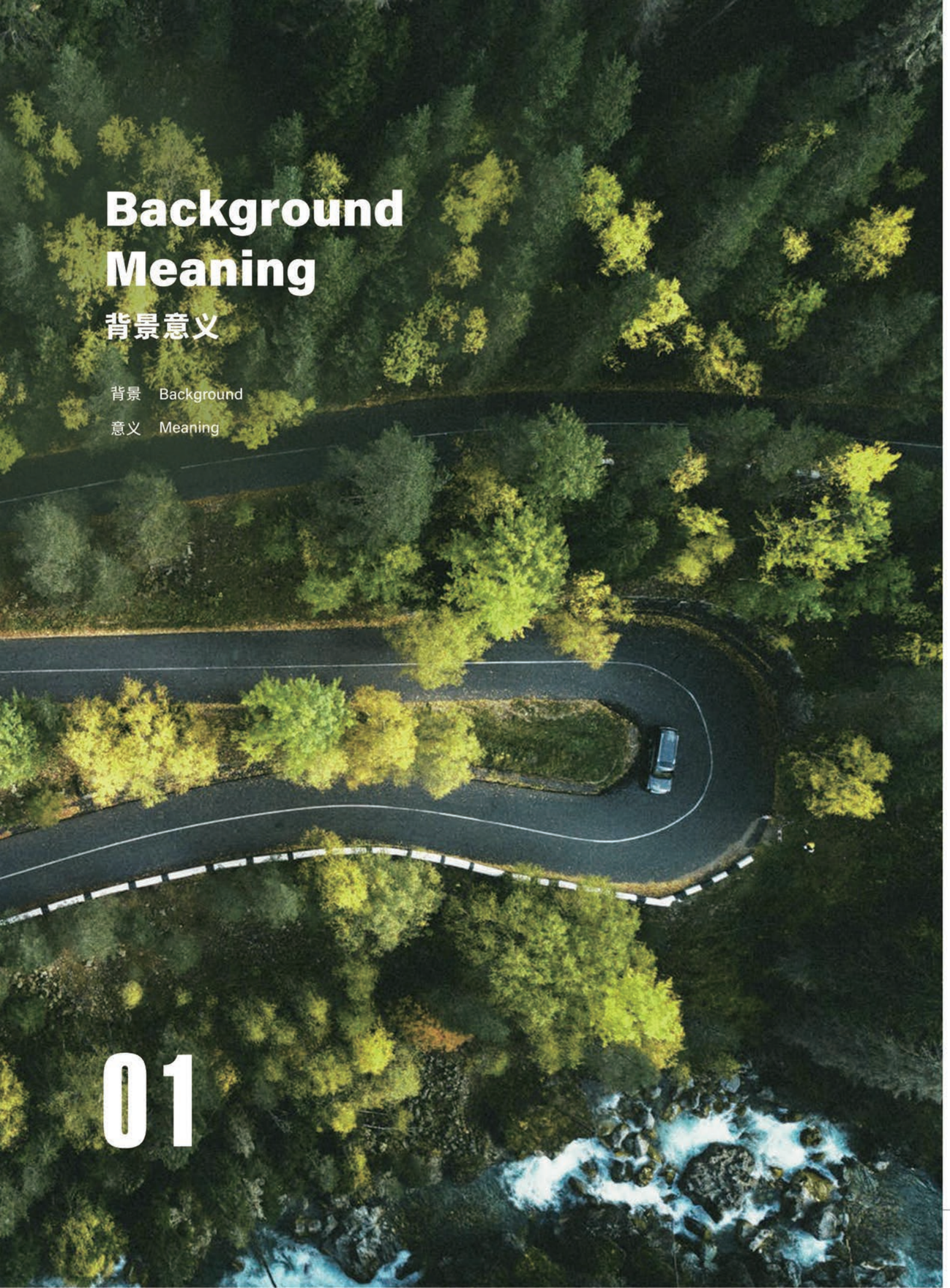


Background
Meaning
背景意义

背景　Background

意义　Meaning

01

▶ 背景 Background

2020 年 12 月 30 日，中共中央总书记、国家主席、中央军委主席、中央全面深化改革委员会主任习近平主持召开中央全面深化改革委员会第十七次会议并发表重要讲话，会议审议通过了《环境信息依法披露制度改革方案》，指出环境信息依法披露是重要的企业环境管理制度，是生态文明制度体系的基础性内容。要针对存在的突出问题，聚焦对生态环境、公众健康和公民利益有重大影响，市场和社会关注度高的企业环境行为，落实企业法定义务，健全披露规范要求，建立协同管理机制，健全监督机制，加强法治化建设，形成企业自律、管理有效、监督严格、支撑有力的环境信息强制性披露制度。

On December 30, 2020, Xi Jinping, General Secretary of the CPC Central Committee, President of the State, Chairman of the Central Military Commission, and Director of the Central Committee for Comprehensively Deepening Reform, presided over the 17th meeting of the Central Committee for Comprehensively Deepening Reform and delivered an important speech, which considered and adopted the *Reform Plan for the Legal Disclosure System of Environmental Information*, pointing out that the legal disclosure of environmental information is an important enterprise environmental management system, and is the basic content of the system of ecological civilization. To address the outstanding problems, we should focus on the corporate environmental behaviors that have a significant impact on the ecological environment, public health and the interests of citizens and are highly concerned by the market and the society, implement the corporate legal obligations, improve the regulatory disclosure requirements, establish the collaborative management mechanisms, improve the supervision mechanism, strengthen the rule of law, and form a mandatory disclosure system of environmental information with self-regulation, effective management, strict supervision, strong support.

信息披露是全球公共管理的一大创新变革，是事中事后监管的重要前提，将有利于推进政府、企业、团体组织、公众等实现上下同欲，提升行政效率和公信力。信息披露已在欧美等发达国家及地区的可持续发展管理中取得了显著成效。随着我国工业绿色低碳发展的深入推进，在“放管服”背景下，构建汽车行业绿色发展信息披露机制，拟成为“十四五”期间推进汽车全产业链绿色低碳发展的创新管理手段。

Information disclosure is a major innovative change in global public management and an important prerequisite for in-event and post-event supervision, which will help to promote the government, enterprises, organizations and the public to achieve the same goal and enhance administrative efficiency and credibility. Information disclosure has achieved remarkable results in sustainable development management in developed countries and regions such as Europe and America. With the deepening of the green and low-carbon development of China's industry, the construction of a green development information disclosure mechanism for the automotive industry in the context of the "management and administration" is intended to be an innovative management tool to promote the green and low-carbon development of the entire automotive industry chain during the “14th Five-Year Plan” period.

自 2019 年起，中汽数据有限公司受工业和信息化部节能与综合利用司委托，开展汽车企业绿色发展信息披露机制研究。通过建立汽车企业绿色发展指数（GDI）对汽车企业绿色发展信息透明度和绿色发展水平实施定量评估。我们的目标是通过建立我国统一的绿色发展信息披露通用标准，引导企业定期、规范、准确的公开绿色发展信息并对信息负责，支撑汽车行业绿色高质量发展。

Since 2019, Automotive Data of China Co., Ltd. has been commissioned by the Department of Energy Conservation and Comprehensive Utilization of the Ministry of Industry and Information Technology to conduct research on the green development information disclosure mechanism of automotive enterprises. We implement quantitative assessment of green development information transparency and green development level of automotive enterprises by establishing Green Development Index (GDI) of automotive enterprises. Our goal is to guide enterprises to disclose green development information in a regular, standardized and accurate manner and be responsible for the information by establishing a unified general standard for green development information disclosure in China, so as to support the green and high-quality development of the automobile industry.

在结合国际先进经验和工业和信息化部节能与综合利用司绿色制造工程技术要求的基础上，经过大量行业调研以及专家研讨，2019 年中汽数据研究发布了《工业企业绿色发展报告编制指南》和《工业企业绿色发展指数核算方法》，建立一套涵盖汽车全产业链的企业环境信息披露指南，为企业编制绿色发展报告、核算绿色发展指数提供了一套工具包，对披露内容的方向、方法、标准、数据来源提出规范化指引。综合考虑行业影响力，我们率先在汽车行业推进绿色发展报告发布，组织行业专家研究发布了《汽车企业绿色发展报告编制指南》和《汽车企业绿色发展指数核算方法》。并于 2019 年 12 月首次发布汽车企业绿色发展指数研究成果。

Based on the combination of international advanced experience and the requirements of green manufacturing engineering technology of the Department of Energy Conservation and Comprehensive Utilization of the Ministry of Industry and Information Technology, and after extensive industry research as well as expert discussions, in 2019, China Automotive Data Research released the *Guideline for the Preparation of Green Development Report for Industrial Enterprises* and the *Accounting Methods for Green Development Index for Industrial Enterprises* to establish a set of guidelines for corporate environmental information disclosure covering the whole industrial chain of automobile. It provides a set of toolkits for enterprises to prepare green development reports and account for green development indices, and proposes standardized guidelines on the direction, methods, standards and data sources of disclosure content. Taking into account the influence of the industry, we took the lead in promoting the release of green development reports in the automotive industry, and organized industry experts to study and release the *Guidelines for Preparing Green Development Reports for Automotive Companies* and the *Accounting Methods for Green Development Index for Automotive Enterprises*. In December 2019, we first released the research results of the Green Development Index for Automotive Enterprises.

2020 年，中汽数据有限公司在工业和信息化部节能与综合利用司的指导下，继续开展工业企业绿色发展信息披露机制建设支撑工作，定量评估汽车企业绿色发展信息透明度及绿色发展水平。按照《汽车企业绿色发展指数核算方法》的要求和流程，我们于 2020 年 7 月正式启动汽车企业绿色发展指数核算工作，并已于 2020 年 12 月 15 日在北京发布 2020 年汽车企业绿色发展指数研究成果，推出一批优秀绿色发展信息披露企业，以在行业形成示范效应。同时，上线了“工业企业绿色发展报告公示平台”，平台将支撑畅通企业绿色发展信息披露渠道，展现企业绿色发展优秀成果，为政府、社会大众等提供获取企业绿色发展信息的便捷通道。

In 2020, under the guidance of the Department of Energy Conservation and Comprehensive Utilization of the Ministry of Industry and Information Technology, Automotive Data of China Co., Ltd. continues to carry out the construction support work of green development information disclosure mechanism of industrial enterprises to quantitatively assess the transparency of green development information and green development level of automotive companies. In accordance with the requirements and procedures of the *Accounting Methods for Green Development Index of Automotive Enterprises*, we officially started the accounting work of green development index of automobile enterprises in July 2020 and published the research results of green development index of automobile enterprises in Beijing on December 15, 2020, and launched a number of outstanding green development information disclosure enterprises to form a demonstration effect in the industry. At the same time, the "Industrial Enterprise Green Development Report Publicity Platform" was launched, which will support the smooth disclosure of enterprise green development information channels, show the excellent achievements of enterprise green development, and provide a convenient channel for the government and the public to obtain enterprise green development information.

▶ 意义 Significance

绿色发展信息披露对于政府、企业、消费者、投资者等利益相关者具有重大意义。

Green development information disclosure is of great significance to stakeholders such as government, enterprises, consumers and investors.

政府部门 Government Departments

全面掌握企业绿色发展水平，提高政府决策科学化、民主化、法治化水平。

Comprehensively grasp the level of green development of enterprises and improve the scientific, democratic and legal level of government decision-making.

企业 Enterprises

展现企业绿色发展形象；助力企业绿色发展的自我梳理、行业对标、自我提升。

Show the image of green development of enterprises; help enterprises to self-composition, industry benchmarking and self-improvement of green development.

消费者 Consumers

了解企业绿色发展水平，增加对企业绿色发展的监督，践行绿色消费。

Understand the level of green development of enterprises, increase the supervision of green development of enterprises and practice green consumption.

投资者 Investors

增加投资判断准确性，提升绿色融资效率，降低投资人的投资风险。

Increase the accuracy of investment judgment, improve the efficiency of green financing, and reduce the investment risk of investors.

汽车企业绿色发展指数（GDI）

02

指数定义　Index Definition

核算范围　Accounting Scope

核算指标　Accounting Indicators

Green Development Index (GDI) for Automotive Enterprises

汽车企业绿色发展指数（GDI）
Green Development Index (GDI) for Automotive Companies

汽车企业绿色发展指数（GDI）是对汽车企业绿色发展信息透明度和绿色发展水平的定量评估体系。

The Green Development Index (GDI) is a quantitative assessment system for the transparency of green development information and the level of green development of automotive companies.

核算范围
Accounting Scope

核算企业名单范围为工业和信息化部发布的《道路机动车辆生产企业及产品公告》公告中具有规模化产量或受到市场广泛关注的 M1 类汽车整车制造企业。

The scope of the list of accounting enterprises is M1 automobile manufacturing enterprises with large-scale output or widely concerned by the market in the *Announcement of Road Motor Vehicle Manufacturers and Products* issued by the Ministry of Industry and Information Technology.

本报告核算范围按照 2019 年《道路机动车辆生产企业及产品公告》公告中年产量超过 20000 辆以上或受到广泛关注的汽车生产企业确定。2020 年汽车企业绿色发展指数核算涉及企业 49 家，具体核算企业名单见附录：2020 年汽车企业 GDI 核算企业名单。

The accounting scope of this report is determined according to the automobile manufacturers whose annual output exceeds 20,000 vehicles or are widely concerned in the *Announcement of Road Motor Vehicle Manufacturers and Products* in 2019. There are 49 enterprises involved in the accounting of green development index of automobile enterprises in 2020. See Appendix : List of GDI Accounting Enterprises of Automobile Enterprises in 2020 for the specific list of accounting enterprises.

核算指标
Accounting Indicators

核算指标由一级指标和二级指标构成，一级指标包括企业基本信息、发展战略、管理方针、新概念技术应用、优化生命周期设计、降低材料环境影响、减少材料用量、优化生产过程、优化分销系统、优化使用过程、优化回收处理共 11 项。

The accounting indicators consist of primary and secondary indicators. The primary indicators include 11 items, namely basic information about the enterprise, development strategy, management policy, application of new concept technology, optimization of life cycle design, reduction of material environmental impact, reduction of material usage, optimization of production process, optimization of distribution system, optimization of use process, and optimization of recycling and disposal

企业基本信息 Basic Information of the Enterprise

从企业的主要产品、运营范围、产销规模、员工情况等几个方面对企业的基本情况进行说明。

We explain the basic situation of the enterprise from several aspects such as the main products, scope of operation, scale of production and sales, and staff situation.

发展战略 Development Strategy

围绕产品研发、制造工艺和技术等方面，制定企业在未来不同阶段（短期、中期、长期）的发展规划。

We will formulate the development plan of the company in different stages of the future (short, medium and long-term) around product development, manufacturing process and technology.

管理方针 Management Policy

在职业健康安全管理、环境管理、能源管理等体系和制度建设方面的运行情况及取得的成果绩效。

The operation of the system and system construction in occupational health and safety management, environmental management, energy management, etc. and the performance of the results achieved.

新概念技术应用 Application of New Concept Technology

企业在开发符合社会需求的产品系统功能的新思路和实现需求的方法。

Enterprises are developing new ideas and methods to meet the needs of the society.

优化生命周期设计 Optimize Life Cycle Design

企业在延伸技术生命周期（产品性能完好的时间）、美学生命周期（产品外观具有吸引力的时间）和产品的初始生命周期方面所做的工作，从而可以尽量长地使用产品。

The work that companies do to extend the technical life cycle (how long a product performs intact), the aesthetic life cycle (how long a product looks attractive) and the initial life cycle of a product so that it can be used for as long as possible.

降低材料环境影响 Reduce Environmental Impact of Materials

企业在产品原材料的选择上，尽量选择低碳、绿色、环保、无毒无害或低毒低害材料。

Enterprises should try to choose low-carbon, green, environment-friendly, non-toxic and harmless or low-toxic and low-harm materials in the selection of raw materials.

减少材料用量 Reduce Material Usage

企业在产品的开发设计方面，尽可能减少材料使用的数量，包括减少的重量和体积。

In terms of product development and design, enterprises should minimize the amount of materials used, including the reduced weight and volume.

优化生产过程 Optimize Production Process

企业通过优化生产技术，投入高效节能设备，加强生产管理等手段，减少能源资源投入和污染物排放。

By optimizing production technology, investing in high-efficiency and energy-saving equipment and strengthening production management, enterprises can reduce the input of energy resources and pollutant emissions.

优化分销系统 Optimize Distribution System

企业在物流管理、产品包装材料及方式、销售运输方式、储存布局等方面优化分销系统的举措，以最有效的运输方式将产品运输到工厂、经销商及使用者。

Enterprises optimize the distribution system in logistics management, product packaging materials and methods, sales and transportation methods, storage layout, etc., and transport products to factories, distributors and users by the most effective transportation methods.

优化使用过程 Optimize the Process of Use

企业生产的产品在行业中具有的优势，在满足用户需求的条件下，能够减少或尽量降低使用过程中对环境、使用者的影响。

The products produced by enterprises have advantages in the industry, which can reduce or minimize the impact on the environment and users in the process of use under the condition of meeting the needs of users.

优化回收处理 Optimize Recycling Processing

企业在初始生命周期结束后对产品的妥善处理或处置，再利用有价值的零部件和确保废物正确管理，减少产品零部件或材料产生的环境影响。

After the end of the initial life cycle, enterprises should properly treat or dispose of products, reuse valuable parts and ensure the correct management of waste, and reduce the environmental impact of product parts or materials.

每个一级指标下包含若干二级指标，二级指标共 40 项，从定性、定量、改善、行业水平四个考核项进行符合性判定，符合考核项要求，得 1 分，不符合考核项要求，得 0 分，—表示不考核。

There are a number of secondary indicators under each primary indicator, and there are 40 secondary indicators in total. Compliance is judged from four assessment items: qualitative, quantitative, improvement and industry level. If it meets the requirements of assessment items, score 1 point; if it fails to meet the requirements of assessment items, score 0 point, —means no assessment.

具体二级指标见汽车企业绿色发展指数核算指标及权重表（表 1）。

The specific secondary indicators are shown in the table of accounting indicators and weights of green development index of automobile enterprises (Table 1).

表1 汽车企业绿色发展指数核算指标及权重表

Table 1 Accounting Indicators and Weights of Green Development Index of Automobile Enterprises

序号 S/N	一级指标 Primary indicator	二级指标 Secondary indicator	考核项 Assessment items			
			定性 Qualitative	定量 Quantitative	改善 Improvement	行业水平 Industry level
1	企业基本情况 Basic information about the enterprise	主要品牌、产品及服务 Major brands, products andservices	1	—	—	—
2		企业运营范围 Scope of business operation	1	—	—	—
3		所有权性质及法律形式 Nature and legal form of ownership	1	—	—	—
4		企业规模 Enterprise size	1	1	—	—
5		员工人数 Number of employees	1	1	—	—
6	发展战略 Development strategy	短期、中期、长期的整体愿景和战略 Overall vision and strategy for the short, medium and long term	1	—	—	—
7		产品研发战略和目标 Product development strategy and objectives	1	—	—	—
8		制造体系战略规划 Strategic planning of manufacturing system	1	—	—	—
9	管理方针 Management policy	职业健康安全管理体系 Occupational health and safety management system	1	—	—	—
10		环境管理体系 Environmental management system	1	—	—	—
11		能源管理体系 Energy management system	1	—	—	—
12		绿色供应链管理 Green supply chain management	1	1	1	—
13	新概念技术开发应用 Development and application of new concept technology	共享出行 Shared travel	1	1	1	—

序号 S/N	一级指标 Primary indicator	二级指标 Secondary indicator	考核项 Assessment items			
			定性 Qualitative	定量 Quantitative	改善 Improvement	行业水平 Industry level
14	优化生命周期设计 Optimize lifecycle design	产品生命周期碳排放 Carbon emission within product life cycle	1	1	1	—
15	降低材料环境影响 Reduce environmental impact of materials	材料VOC管控 Material VOC control	1	1	1	—
16		材料有害物质管控 Control of hazardous substance in the material	1	—	1	—
17		材料碳排放管控 Control of carbon emission of materials	1	1	1	—
18	减少材料用量 Reduce material usage	汽车轻量化 Automotive lightweighting	1	1	1	—
19	优化生产过程 Optimize production process	能源消耗总量 Total energy consumption	1	1	—	—
20		单车能耗 Energy consumption per vehicle	1	1	1	—
21		水资源消耗总量 Total water consumption	1	1	—	—
22		单车水耗 Water consumption per vehicle	1	1	1	—
23		废水排放 Wastewater discharge	1	1	1	—
24		企业温室气体排放 Corporate greenhouse gas emission	1	1	—	—
25		废气排放 Waste gas emission	1	1	1	—
26		固废排放 Solid waste emission	1	1	1	—

序号 S/N	一级指标 Primary indicator	二级指标 Secondary indicator	考核项 Assessment items			
			定性 Qualitative	定量 Quantitative	改善 Improvement	行业水平 Industry level
27		厂界环境噪声 Environmental noise at plant boundary	1	1	1	—
28		能源在线管理系统 Online energy management system	1	1	1	—
29		绿色工厂 Green factory	1	1	1	—
30	优化分销系统 Optimize distribution system	绿色包装 Green packaging	1	1	1	—
31		绿色运输 Green transportation	1	1	1	—
32		绿色储存 Green storage	1	1	1	—
33		环境认证经销商数量 Number of environmentally certified dealers	1	1	1	—
34	优化使用过程 Optimize the process of use	产品使用能源消耗 Energy consumption for product use	1	1	1	—
35		车内VOC In-vehicle VOC	1	1	1	—
36		车内噪声 Noise inside the vehicle	1	1	1	—
37		尾气排放 Exhaust emission	1	1	1	—
38		绿色产品 Green Products	1	1	1	—
39	优化回收处理 Optimize recycling processing	动力电池溯源 Power battery traceability	1	1	1	—
40		可再利用率和可回收利用率 Recyclability rate and recoverability rate	1	1	1	—

核算方法
Accounting Methods

汽车企业绿色发展指数依据《汽车企业绿色发展指数核算方法》实施。

The green development index of automobile enterprises is implemented according to the Accounting Methods for Green Development Index of Automobile Enterprises.

数据来源
Data Source

汽车企业绿色发展指数核算方法采用的资料数据来源仅限于企业官网（包含企业官方网站、销售网站、企业所属总公司官网）、工业企业绿色发展报告公示平台。

The data sources used in accounting methods for the green development index of automotive enterprises are limited to the official websites of enterprises (including the official websites of enterprises, sales websites, and the official websites of the head office to which the enterprises belong) and the public platform of the green development report of industrial enterprises.

核算流程
Accounting Process

1 确定企业名单并通知核算企业
Determine the List of Enterprises and Notify the Accounting Enterprises

按照核算方法要求的核算范围确定核算目标企业，并通知企业。

Determine the target accounting enterprises in accordance with the accounting scope required by the accounting method and notify the enterprises.

2 收集资料
Collection of Information

通过企业官网和工业企业绿色发展报告公示平台收集汽车企业公开的绿色发展信息。

Collect public green development information of automobile enterprises through the official website of enterprises and the public platform of industrial enterprises' green development report.

3 实施核算
Implementation of Accounting

基于《汽车企业绿色发展指数核算方法》要求，对收集的信息进行核算。

Based on the requirements of the Accounting Methods for Green Development Index of Automotive Enterprises, the collected information is accounted for.

4 结果发布
Results Release

按照年度计划发布年度汽车企业绿色发展指数。

Release the annual Green Development Index for automotive enterprises according to the annual plan.

核算结果
Accounting Results

按照二级指标符合判定要求的考核项得分占所有二级指标考核项总分数的比例进行核算结果计算，即按照以下“GDI指数”计算公式进行计算，总分为百分制，计算结果保留小数点后两位。

Calculate the accounting results according to the ratio of the scores of the assessment items of the secondary indicators meeting the judgment requirements to the total scores of all the assessment items of the secondary indicators, that is, according to the following "GDI index" calculation formula, the total score is a centesimal system, and the calculation results are kept two decimal places.

N_1

符合定性判定要求的考核项数量

The number of assessment items that meet the qualitative judgment requirements

N_3

符合改善判定要求的考核项数量

The number of assessment items that meet the improvement judgment requirements

$$GDI指数 = \frac{N_1+N_2+N_3}{M} X100$$

N_2

符合定量判定要求的考核项数量

The number of assessment items that meet the quantitative judgment requirements

M

所有二级指标的考核项总分数

Total number of assessment items for all secondary indicators

03

2020年汽车企业绿色发展指数TOP20

Top 20 Green Development Index for Automotive Enterprises in 2020

共有 8 家企业分数排名前 3，其中华晨宝马因具备成功经验仍然排名第 1；沃尔沃、蔚来、广汽本田、吉利、广汽丰田、长安按照指数核算指标要求，最大限度披露绿色发展信息，得分点数量一致，并列排名第 2；一汽丰田首次发布绿色发展报告，其中定量和改善信息数量披露水平有待改善，本次排名第 3。

2020 年，汽车企业对绿色发展信息披露重视度加大，企业绿色发展信息披露水平明显提升，经核算分析共有 8 家企业分数排名前 3，其中华晨宝马因具备成功经验仍然排名第 1；沃尔沃、蔚来、广汽本田、吉利、广汽丰田、长安按照指数核算指标要求，最大限度披露绿色发展信息，得分点数量一致，并列排名第 2；一汽丰田首次发布绿色发展报告，其中定量和改善信息数量披露水平有待改善，本次排名第 3。

In 2020, automotive enterprises paid more attention to green development information disclosure, and the level of corporate green development information disclosure was significantly improved. A total of 8 companies ranked top 3 in terms of score after accounting analysis, among which BMW Brilliance still ranked 1st thanks to its successful experience; Volvo, NIO, GAC Honda, Geely, GAC Toyota and Chang' an disclosed green development information to the maximum extent in accordance with the index accounting index requirements, and scored the same number of points, and tied for 2nd place; FAW Toyota released its first green development report, in which the level of quantitative and improved information quantity disclosure needs to be improved, and ranked 3rd this time.

在华乘用车生产企业 2020 年汽车企业绿色发展指数排名前 20 的企业如图所示。

The top 20 passenger car manufacturers in China in the 2020 Automotive Enterprises Green Development Index are shown in the chart.

- No.01 华晨宝马
- No.02 沃尔沃汽车(亚太)
- No.02 蔚来汽车
- No.02 广汽本田
- No.02 吉利汽车
- No.02 广汽丰田
- No.02 长安汽车
- No.03 一汽丰田
- No.04 一汽 - 大众
- No.05 长城汽车
- No.06 福建奔驰
- No.07 比亚迪
- No.08 东风乘用车
- No.09 东风本田
- No.10 北京奔驰
- No.11 东风日产乘用车
- No.12 上汽大众
- No.12 北京现代
- No.13 上汽通用
- No.14 奇瑞汽车
- No.14 东风柳汽
- No.14 广汽菲克
- No.15 北汽新能源
- No.15 神龙汽车
- No.15 宝沃汽车
- No.15 华晨鑫源
- No.16 上汽通用五菱
- No.16 上汽乘用车
- No.16 一汽轿车
- No.17 东风小康
- No.17 北汽股份
- No.17 奇瑞捷豹路虎
- No.18 长安福特
- No.18 广汽三菱
- No.18 江淮汽车
- No.19 长安马自达
- No.19 江铃汽车
- No.20 广汽乘用车
- No.20 东南汽车

Analysis of the Level of Information Disclosure of Automotive Enterprises

全生命周期各阶段细分指标的信息透明度相比上一考核年度均有不同程度的提升，但信息透明度提升空间依然巨大。

04

汽车企业信息披露水平分析

依据《汽车企业绿色发展指数核算方法》对所有企业核算，基于核算结果进行研究分析。

2020 年企业绿色发展信息披露整体水平相比 2019 年有明显提升，大部分企业信息透明度相较于上一考核年度有不同幅度的提升。其中，上市企业信息透明度普遍高于未上市企业，自主、日系和美系等品牌的企业信息透明度进步显著。企业绿色发展信息中定量和改善信息透明度相较于上一考核年度虽有明显提升，但与定性信息披露表现有一定差距。全生命周期各阶段细分指标的信息透明度相比上一考核年度均有不同程度的提升，但信息透明度提升空间依然巨大。

Based on the *Accounting Methods for Green Development Index of Automotive Enterprises* for all enterprises, we conducted research and analysis based on the accounting results.

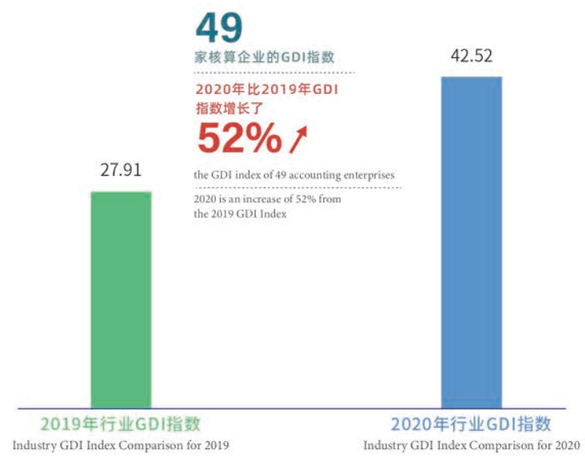
The overall level of corporate green development information disclosure in 2020 has been improved significantly compared to 2019, and most enterprises have improved their information transparency by different degrees compared to the previous assessment year. Among them, the information transparency of listed enterprises is generally higher than that of unlisted enterprises, and the information transparency of enterprises of independent brands, Japanese and American brands has improved significantly. Although the transparency of quantitative and improvement information in corporate green development information has improved significantly compared to the previous assessment year, there is a certain gap with the performance of qualitative information disclosure. The information transparency of subdivided indicators in each stage of the whole life cycle has been improved to various degrees compared with the previous assessment year, but there is still great room for improvement of information transparency.

行业整体水平
Overall Industry Level

经过详细核算，得出 49 家核算企业的 GDI 指数，2020 年企业绿色发展信息披露整体水平相比 2019 年有明显提升。

After detailed accounting, the GDI index of 49 accounting enterprises is derived, and the overall level of corporate green development information disclosure in 2020 is significantly improved compared with that in 2019.

$$\text{行业GDI指数} = \frac{\Sigma \text{企业当年产量} \times \text{企业当年GDI指数}}{\text{所有企业当年总产量}}$$



2019 年和 2020 年行业 GDI 指数对比情况
Industry GDI Index Comparison for 2019 and 2020

汽车行业绿色发展信息透明度较上一考核年度有大幅提升，主要原因是市场占比较大的企业绿色发展信息透明度明显提高。

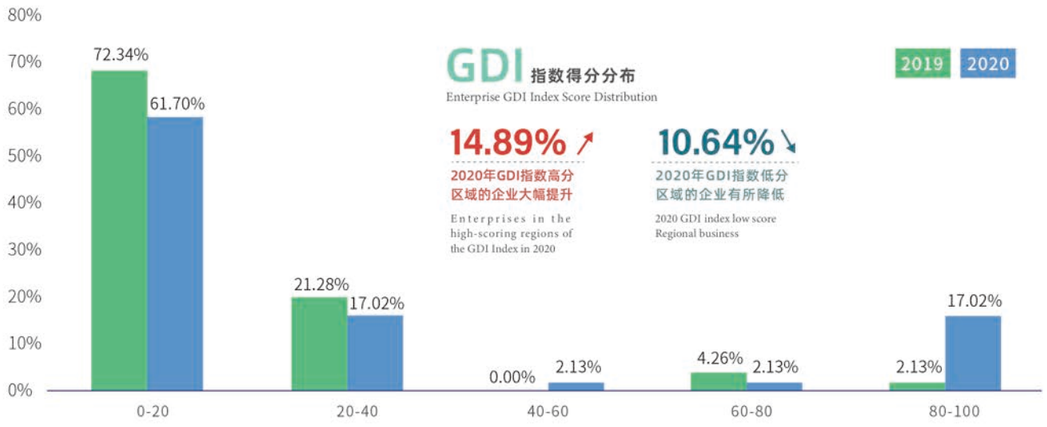
The transparency of green development information in the automotive industry has improved significantly compared with the previous assessment year, mainly because the transparency of green development information of enterprises with a larger market share has improved significantly.

GDI 指数排名前 5 名共 10 家企业，2019 年产量合计 786 万，约占核算企业总产量的 39.6%。在 GDI 指数排名前 10 的 15 家企业中，有 11 家企业产量排名在前 20 中，产量排名前 20 的企业 GDI 指数排名全部在前 20 的范围内。通过企业产量与得分比较分析，虽然产量规模大小与指数得分高低没有绝对的正相关关系，但绿色发展指数较高的企业大部分集中在产量排名靠前的企业中，说明信息披露水平较高的企业往往能够获得更大的市场份额。

There are 10 enterprises in the top 5 in GDI index, with a combined production of 7.86 million in 2019, accounting for about 39.6% of the total production of accounting enterprises. Among the 15 enterprises ranked in the top 10 of the GDI index, 11 enterprises ranked in the top 20 in terms of output, and all the enterprises ranked in the top 20 in terms of GDI index ranking are within the top 20. Through the comparative analysis of enterprise output and score, although there is no absolute positive correlation between the size of output and the index score, most of the enterprises with higher green development index are concentrated in the top ranking enterprises in terms of output, indicating that enterprises with higher level of information disclosure tend to gain a larger market share.

企业层面分析
Enterprise Level Analysis

企业 GDI 指数得分分布 Enterprise GDI Index Score Distribution



大多数汽车企业的绿色发展信息披露工作还处于起步阶段，仅小部分企业具备常态化主动公开保障机制。

Most of the automotive enterprises' green development information disclosure work is still in the initial stage, and only a small number of enterprises have a regular active disclosure guarantee mechanism.

从图中可以看出，2020 年汽车企业 GDI 指数得分分布呈现两极分化的现象，低分区域企业比重仍较大，说明大多数汽车企业在绿色发展信息披露方面依然处于起步阶段。相比 2019 年汽车企业 GDI 指数，2020 年汽车企业 GDI 指数得分在低分区域（0—20 分）的企业数量占比有所降低，比重降低 10.64%；2020 年汽车企业 GDI 指数得分在高分区域（80—100 分）的企业数量占比大幅提升，比重提升约 15%；部分企业从低分区域逐渐向高分区域靠近，相比上一考核年度在信息披露方面有较大进步。

As can be seen from the figure, the distribution of the GDI index scores of automotive companies in 2020 shows a polarization phenomenon, and the proportion of enterprises in the low-scoring region is still larger, indicating that most automotive enterprises are still in the initial stage in terms of green development information disclosure. Compared with the GDI index of automotive companies in 2019, the proportion of enterprises scoring in the low-scoring region (0-20) in the GDI index of automotive enterprises in 2020 is reduced, with a 10.64% decrease in the proportion; in 2020, the proportion of enterprises with GDI index scores in high-scoring areas (80-100 points) increased significantly, and the proportion increased by about 15%; some enterprises have gradually moved closer to the high score region from the low score region, and have made greater progress in information disclosure compared with the previous assessment year.

企业 GDI 指数年度得分变化 Annual Change in Enterprise GDI Index Score

2020 年大部分企业绿色发展信息透明度较上一考核年度有显著提升，企业未定期更新公开信息是指数得分下降的主要原因。

The transparency of green development information of most enterprises in 2020 has improved significantly compared with the previous assessment year, and the failure of enterprises to update public information regularly is the main reason for the decrease in index score.

从企业 GDI 指数年度变化情况来看，GDI 指数上升的企业占比 74.5%，下降企业占比 23.4%，1 家企业 GDI 指数与上一考核年度持平。在指数核算过程中我们发现，有部分企业官网网站公开发布的报告、数据等信息长期保持不变，数据更新不及时，造成企业 2020 年 GDI 指数得分下降。

According to the annual changes of GDI index of enterprises, 74.5% of enterprises have increased GDI index, while 23.4% have decreased GDI index, and one enterprise has the same GDI index as that of the previous assessment year. In the process of index accounting, we found that some enterprises' official websites publicly released reports, data and other information remained unchanged for a long time, and the data was not updated in a timely manner, which caused the enterprises' GDI index scores to drop in 2020.

表 2 2020 年 GDI 指数与 2019 年 GDI 指数变化情况
Table 2 Change in GDI Index in 2020 vs. 2019

企业名称 Company Name	指数得分变化 Index score change	企业名称 Company Name	指数得分变化 Index score change	企业名称 Company Name	指数得分变化 Index score change
一汽 - 大众	▲ 26.04	奇瑞汽车	▲ 7.29	广汽菲亚特克莱斯勒	▲ 6.25
上汽大众	▲ 2.08	比亚迪	▲ 10.42	上汽大通	▲ 1.04
上汽通用	▼ -5.21	广汽乘用车	▲ 2.09	江铃汽车	▼ -4.17
吉利控股	▲ 22.92	一汽轿车	▼ -2.08	奇瑞捷豹路虎	▲ 6.25
东风日产乘用车	▼ -12.5	东风悦达起亚	▲ 1.04	北京宝沃	▲ 6.25
上汽通用五菱	▼ -2.08	长安福特	▲ 8.33	华晨鑫源	▲ 6.25
长城汽车	▲ 19.79	东风小康	▲ 6.25	大乘汽车	▲ 2.08
长安汽车	▲ 60.42	沃尔沃汽车(亚太)	▲ 81.25	东风英菲尼迪	▼ -3.13
东风本田	▲ 3.13	长安马自达	▲ 5.21	东南汽车	▲ 4.17
广汽丰田	▲ 18.75	广汽三菱	▲ 4.17	福建奔驰	▲ 3.13
一汽丰田	▲ 62.50	北汽新能源	▲ 1.04	华晨汽车	▼ -1.04
广汽丰田	▲ 56.25	东风柳汽	▲ 13.54	观致汽车	▲ 4.17
北京现代	▲ 7.29	江淮汽车	▼ -3.31	蔚来汽车	▲ 87.50
北京奔驰	▲ 6.25	神龙汽车	— 0.00	威马汽车	▲ 2.08
上汽乘用车	▼ -2.08	东风乘用车	▲ 12.50	郑州日产	▼ -4.17
华晨宝马	▲ 12.50	北汽股份	▼ -9.38	▲ 上升 — 不变 ▼ 下降	

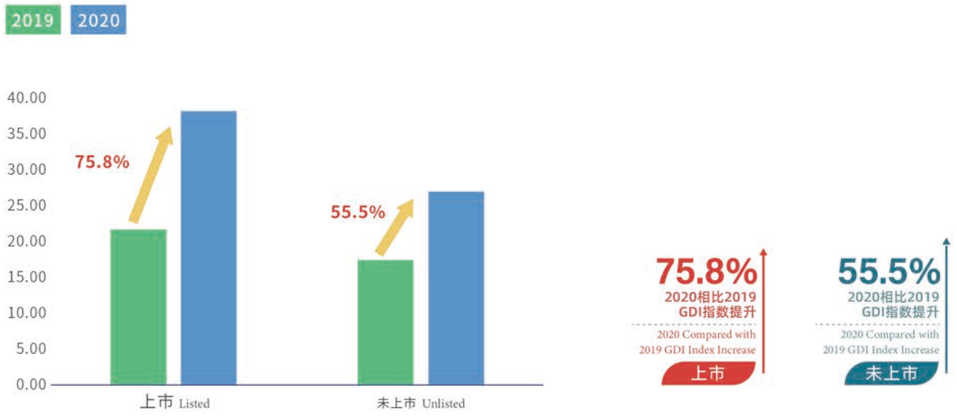
注：特斯拉与小鹏汽车为本年度新纳入核算对象，在此未作对比
Note: Tesla and Xiaopeng Motors are newly included in the accounting for the current year, so no comparison is made here.

汽车企业上市与未上市 GDI 指数平均得分
Average Score of GDI Index for Listed and Unlisted Automotive Enterprises

上市企业绿色发展信息披露管理相对于未上市企业较为完善，信息透明度普遍高于未上市企业。

The management of green development information disclosure of listed enterprises is relatively better than that of unlisted enterprises, and the transparency of information is generally higher than that of unlisted enterprises.

2019 和 2020 年上市企业与未上市企业 GDI 指数平均得分情况
Average GDI Index Scores of Listed and Unlisted Enterprises in 2019 and 2020



从图中可以看出，2019 年汽车企业 GDI 指数和 2020 年汽车企业 GDI 指数的上市企业 GDI 指数平均得分均高于未上市企业 GDI 指数平均得分，且年度提升幅度也高于未上市企业，主要原因是证券市场对于上市企业信息披露有一定的要求。

As can be seen from the figure, the average scores of the GDI index of listed enterprises in 2019 and the GDI index of listed enterprises in 2020 are higher than the average scores of the GDI index of unlisted enterprises, and the annual improvement is also higher than that of unlisted enterprises, mainly because the securities market has certain requirements for information disclosure of listed enterprises.

不同系别车企 GDI 指数平均得分 Average GDI Index Scores of Different Automobile Enterprises

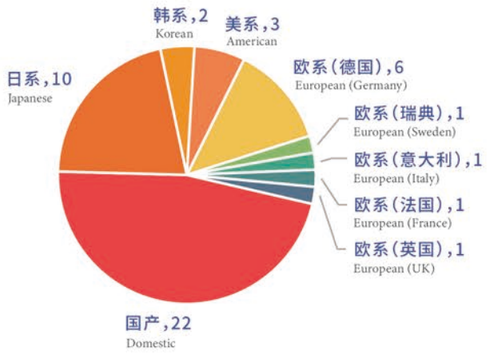
各系别企业绿色发展信息透明度差异较大，自主、日系和美系等品牌的企业信息透明度进步显著。

The transparency of information on green development varies widely among enterprises in each series, with significant progress in information transparency for independent brands, Japanese and American brands.

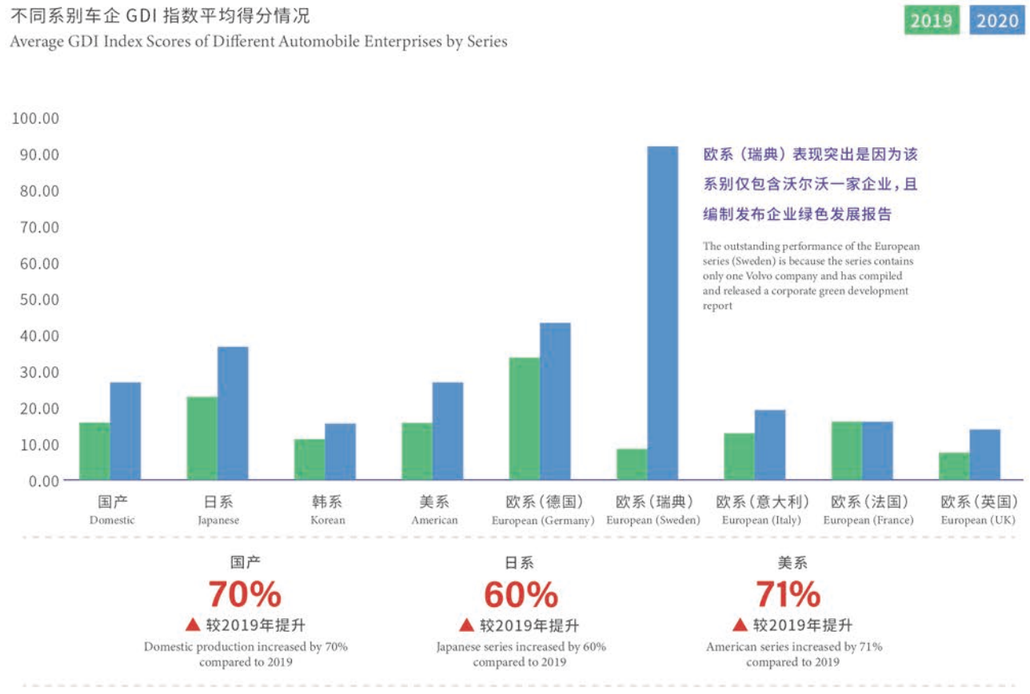
从车企系别来看，核算的 49 家企业包括国产（22 家）、日系（10 家），德系（6 家），美系（3 家），韩系（2 家），其它系别均 1 家（样本数过低不做具体分析），从整体来看，各系别车企 GDI 指数平均得分均有不同幅度提升，从主要系别来看，国产、日系、美系提升较为明显，提升幅度分别为 70%、60% 和 71%。但是国产车企业 GDI 指数平均得分在整体水平上与日系、德系还有一定差距，日系、德系汽车工业起步较早，在信息披露管理方面发展比较成熟，国产车企数量众多，大部分车企信息披露还处于起步阶段，亟需完善信息披露机制，缩小与德系、日系之间的差距。

From the viewpoint of vehicle enterprises, the 49 enterprises accounted for include domestic (22), Japanese (10), German (6), American (3), Korean (2), and 1 for all other companies (the sample size is too low for specific analysis). On the whole, the average score of GDI index of each vehicle company has increased by different degrees. From the perspective of the main series, the domestic, Japanese and American series have improved more significantly, with an increase of 70%, 60% and 71% respectively. However, there is still a gap between the average GDI index scores of domestic car enterprises and those of the Japanese and German systems in terms of the overall level. The Japanese and German automobile industries started earlier and developed more mature in information disclosure management. There are a large number of domestic automobile enterprises, and most of them are still in the initial stage of information disclosure. It is urgent to improve the information disclosure mechanism and narrow the gap with German and Japanese Automobile Enterprises.

核算企业系别分布
Distribution of Accounting Enterprise Series



不同系别车企 GDI 指数平均得分情况
Average GDI Index Scores of Different Automobile Enterprises by Series



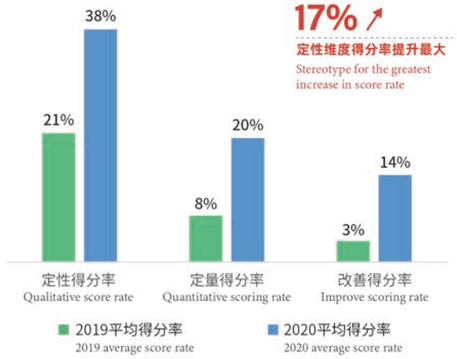
指标层面分析
Indicator Level Analysis

核算指标不同维度得分率 Score Rate of Different Dimensions of Accounting Indicators

企业绿色发展信息中定量和改善信息透明度相较于上一考核年度有明显提升，但不少企业对于定量和改善信息的公开还持观望之态，与定性信息披露表现有一定差距。

The transparency of quantitative and improvement information among enterprises' green development information has improved significantly compared with the previous assessment year, but many enterprises still hold a wait-and-see attitude towards the disclosure of quantitative and improvement information, which has a certain gap with the performance of qualitative information disclosure.

GDI 指数各维度平均得分情况
Average score of GDI index dimension



GDI 指数各维度平均得分率情况
Average score rate of each dimension of GDI index

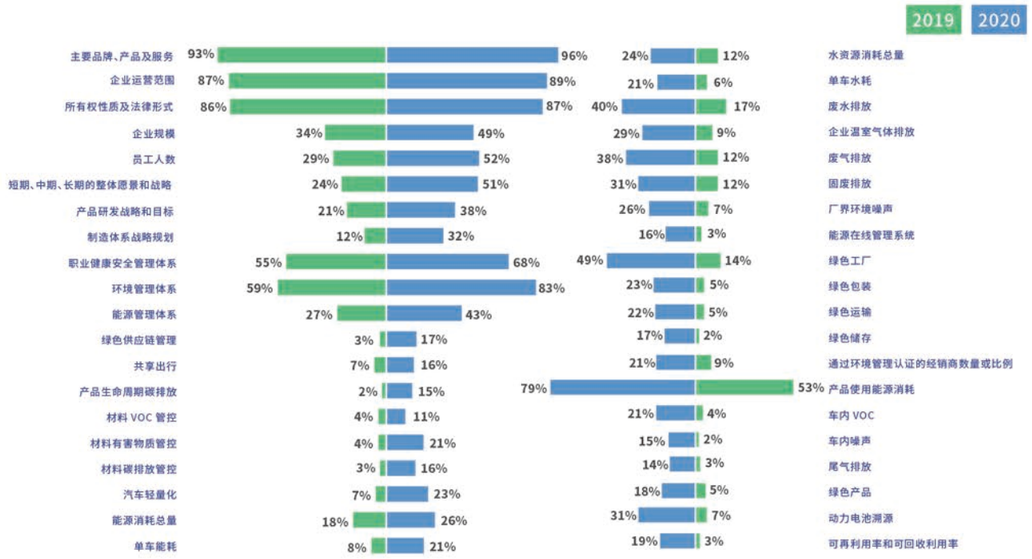
从 GDI 指数各维度得分情况可以看出，定性、定量、改善三个考核维度得分均有所提升。从三个维度得分率可以进一步看出，定性维度得分率提升最大（17%），主要是因为定性信息披露的范围较为宽泛，信息比较笼统，且大多数定性信息属于企业比较常规、基础的信息，企业公开的积极性更大；企业对于公开数据较为敏感，且数据、标准和计算不规范、不清晰，造成定量和改善信息披露表现整体不如定性信息。

From the scores of each dimension of the GDI index, it can be seen that the scores of the three assessment dimensions of qualitative, quantitative and improvement have all improved. From the score rates of the three dimensions, we can further see that the score rate of the qualitative dimension has increased the most (17%), mainly because the scope of qualitative information disclosure is broader and the information is more general, and most of the qualitative information belongs to the more conventional and basic information of enterprises, and enterprises are more active in disclosing it; enterprises are sensitive to public data, and the data, standards and calculations are not standardized and clear, resulting in the overall performance of quantitative and improved information disclosure is not as good as qualitative information.

具体核算指标得分率 Score Rate of Specific Accounting Index

全生命周期各阶段细分指标的信息透明度相比上一考核年度均有不同程度的提升，尤其在产品设计研发、使用阶段提升幅度较大，但信息透明度提升空间依然巨大。

The information transparency of each stage of the whole life cycle has been improved to different degrees compared with the previous assessment year, especially in the stage of product design and development and use, but there is still great room for improving information transparency.



企业 GDI 指数各指标平均得分率情况
Average Score Rate of Each Index of Enterprise GDI Index

指标信息披露表现提升
Indicator information disclosure performance improved

5到8倍

绿色供应链管理 green supply chain management
产品生命周期碳排放 carbon emission within product life cycle
材料有害物质管控 control of hazardous substance in material
绿色储存 green storage
车内VOC in-vehicle VOC
车内噪声 in-vehicle noise

从核算的具体指标来看，相比于 2019 年汽车 GDI 指数核算指标得分率，多个指标信息披露表现有大幅提升，如绿色供应链管理、产品生命周期碳排放、材料有害物质管控、绿色储存、车内 VOC、车内噪声等指标，提升 5~8 倍。但从得分率数据来看，大部分指标得分率还处于较低水平，指标信息披露的提升空间依然较大。

From the specific accounting indicators, compared to the 2019 automotive GDI index accounting index score rate, the performance of several indicators disclosure has improved significantly, such as green supply chain management, carbon emission within product life cycle, control of hazardous substance in material, green storage, in-vehicle VOC, in-vehicle noise and other indicators, improved by 5 to 8 times. However, from the data of score rate, most of the index scores are still at a low level, and there is still much room for improvement of index information disclosure.

05

汽车企业绿色发展先进经验

企业能源管理
Enterprise Energy Management

企业清洁生产
Enterprise Cleaner Production

生命周期碳排放管理
Carbon Emission Management Within Product Life Cycle

供应链管理
Supply Chain Management

绿色制造体系
Green Manufacturing System

汽车轻量化
Automotive Lightweighting

车内空气质量
Air Quality In The Car

产品能源使用
Product Energy Use

绿色运输物流
Green Transport Logistics

Analysis of Advanced Experience in Green Development of Automobile Enterprises

本部分内容基于 2020 年汽车企业公开的绿色发展信息，总结分析行业目前绿色发展先进做法和管理经验，为行业提供参考借鉴。

This part is based on the public green development information of automobile enterprises in 2020, summarizes and analyzes the current advanced practices and management experiences of green development in the industry, and provides reference for the industry.

基于 2020 年汽车企业披露的绿色发展信息来看，当前我国部分汽车企业在绿色低碳发展推进中表现突出，本报告将整理部分优秀企业在企业能源管理、清洁生产、产品生命周期碳排放管理、供应链管理、绿色制造体系创建、汽车轻量化、车内空气质量、能源使用、运输物流等方面的先进经验，供行业参考借鉴。

Based on the green development information disclosed by Automobile Enterprises in 2020, some Chinese Automobile Enterprises are currently performing outstandingly in the promotion of green and low-carbon development. This report will sort out some outstanding companies in corporate energy management, clean production, product life cycle carbon emission management, Advanced experience in supply chain management, green manufacturing system creation, automobile lightweight, in-car air quality, energy use, transportation and logistics, etc., for reference by the industry.

企业能源管理
Enterprise Energy Management

汽车企业工厂主要使用能源类型为电、水、天然气等，为响应国家节能减排号召，全面贯彻落实十八大提出的生态文明建设，行业内普遍重视对企业的能源管理。制定能源管理目标，搭建能源管理体系，建设能源在线管理系统，是行业内的普遍做法。2020 年汽车企业 GDI 指数 TOP3 企业，即华晨宝马、沃尔沃汽车（亚太）、广汽本田、吉利汽车、广汽丰田、长安汽车、一汽丰田均建立了能源在线管理系统，实现了能源使用完整计量、一体化监控、高效管理，为企业节约成本、提升效率。部分优秀企业在能源管理方面下亮点工作如下：

The main types of energy used by automotive enterprises factories are electricity, water, natural gas, etc. In order to respond to the national call for energy conservation and emission reduction, and fully implement the construction of ecological civilization proposed by the 18th National Congress, the industry generally attaches importance to the energy management of enterprises. It is a common practice in the industry to set energy management targets, build energy management systems and construct online energy management systems. In 2020, the Top 3 enterprises in the GDI index of automotive companies, namely BMW Brilliance, Volvo (Asia Pacific), GAC Honda, Geely Automobile, GAC Toyota, Chang' an Automobile and FAW Toyota, have all established online energy management systems to achieve complete measurement of energy use, integrated monitoring and efficient management, saving costs and improving efficiency for enterprises. The highlights of some outstanding enterprises in energy management are as follows.

可再生能源使用 Renewable Energy Use

华晨宝马方面，截至 2019 年底，沈阳基地采用 100% 可再生能源电力，铁西工厂和动力总成工厂内的太阳能分布式发电系统已累计超过 2 万余兆瓦时。2019 年，华晨宝马单车能耗 0.23 吨标煤，同比 2018 年下降 2.4%，单车水耗 3.32 吨，同比 2018 年下降 7.2%。

For BMW Brilliance, by the end of 2019, the Shenyang base adopted 100% renewable electricity. The solar distributed power generation systems in the Tiexi Plant and Powertrain Plant have accumulated more than 20,000 MWh. In 2019, BMW Brilliance consumed 0.23 tons of standard coal per vehicle, down 2.4% compared with 2018, and 3.32 tons of water consumption per vehicle, down 7.2% compared with 2018.

华晨宝马汽车有限公司——太阳能风能集成系统供照明使用
BMW Brilliance Automotive Ltd.——Integrated system of solar panel and wind turbine to generate renewable electricity for lighting.

沃尔沃汽车（亚太）方面，从 2020 年开始，成都工厂在整个生产和运营环节的用电已 100% 采用可再生能源，包括 65% 水电和 35% 风光电，从而将用电环节的二氧化碳排放量从 11，000 吨减少至 0，成为国内首个实现电能碳中和的汽车制造基地。沃尔沃汽车全球制造体系的碳中和电能使用占比已提升至 80%。2019 年，沃尔沃汽车（亚太）单车能耗 2.2 兆瓦时，单车水耗 6.3 吨。

For Volvo (Asia Pacific), starting in 2020, the Chengdu Plant has adopted 100% renewable energy for electricity use throughout production and operations, including 65% hydroelectricity and 35% wind power and photoelectricity, thus reducing CO_2 emissions from 11,000 tons to 0 for electricity use, making it the first car manufacturing site in China to achieve carbon neutrality in electricity. Volvo's global manufacturing system has increased its share of carbon neutral electricity use to 80%. In 2019, Volvo (Asia Pacific) will consume 2.2 MWh of energy per vehicle and 6.3 tons of water per vehicle.

导入先进节能技术 Introduction of Advanced Energy-saving Technologies

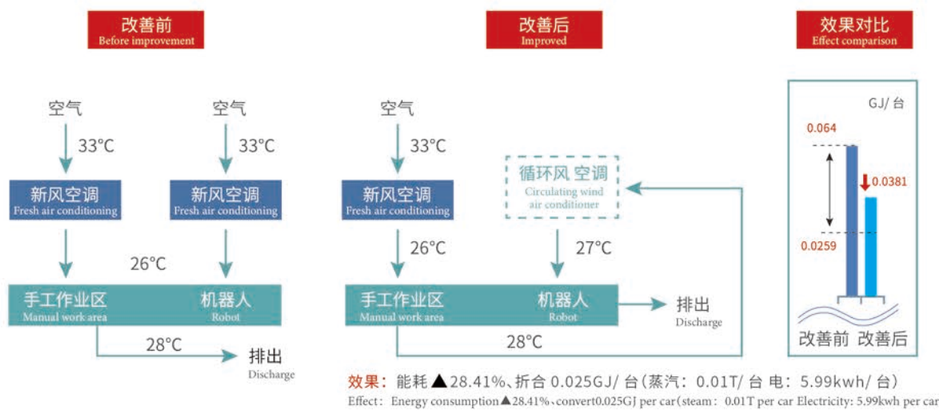
广汽丰田方面，2019 年环保投资 9.9 亿元，全年开展并完成中涂喷房循环风再利用、磁悬浮离心式鼓风机导入等节能改造项目 158 项。

For GAC Toyota, the investment in environmental protection in 2019 was 990 million yuan, and 158 energy-saving renovation projects such as the reuse of circulating air in the spray booth and the introduction of magnetic levitation centrifugal blowers were carried out and completed throughout the year.

中涂喷房循环风再利用，降低空调用能
Reuse of circulating air in the intermediate coating spray room to reduce air conditioning energy consumption

改善前 Before improvement
中涂喷房排风通过烟囱直接排往大气。
The exhaust air of the spray booth is directly discharged to the atmosphere through the chimney

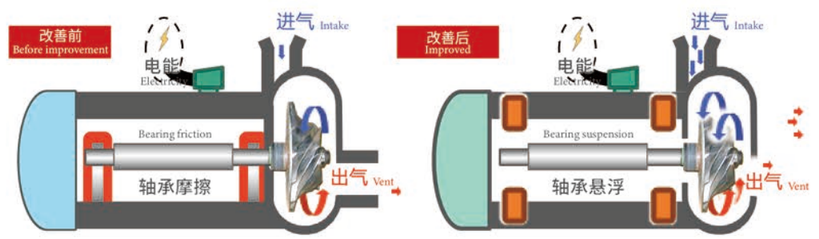
改善后 Improved
将喷房手工作业区域的排风，再利用于机器人喷涂区域，减少空调用能
Exhaust air from the manual work area of the spray booth is reused in the robot spray area to reduce the energy consumption of air conditioning



效果：能耗▲28.41%、折合 0.025GJ/ 台（蒸汽：0.01T/ 台 电：5.99kwh/ 台）
Effect：Energy consumption▲28.41%、convert0.025GJ per car(steam：0.01T per car Electricity: 5.99kwh per car)

导入磁悬浮离心式鼓风机，代替传统机械式鼓风机
Introduce magnetic levitation centrifugal blower instead of traditional mechanical blower

磁悬浮离心式鼓风机轴承为磁悬浮式，运行时不产生摩擦，能源利用效率大幅提升，能耗降低 62.0%。
The bearing of the magnetic levitation centrifugal blower is a magnetic levitation type, no friction occurs during operation, energy utilization efficiency is greatly improved, and energy consumption is reduced by 62%.



沃尔沃汽车（亚太）方面，全体工厂实施的节能高效项目消减了 57000 兆瓦时的年度能源消耗量，以大庆工厂为例，通过一系列的节能措施，包括改造高温水管、回收废气和烘炉余热回用，2019 年单车能耗降低了 11.9%。

For Volvo (Asia Pacific), energy efficiency projects implemented at the off-duty plants eliminated 57,000 MWh of annual energy consumption. At the Daqing plant, for example, energy consumption per vehicle was reduced by 11.9% in 2019 through a series of energy-saving measures, including retrofitting of high-temperature water pipes, recycling of exhaust gases and reuse of waste heat from ovens.

企业清洁生产
Enterprise Cleaner Production

汽车企业积极响应《中国制造 2025》，推行清洁生产，全力建设绿色制造体系。企业通过导入先进的设备、技术，对工厂废水、废气、固废及噪声进行防治、监测及管控。从企业公开的信息来看，实现“废水零排放”，积极降低生命周期碳排放已成为发展共识。部分优秀企业在清洁生产方面下亮点工作如下：

Automotive companies actively respond to Made in China 2025, implement clean production and make every effort to build a green manufacturing system. By introducing advanced equipment and technology, enterprises prevent, monitor and control wastewater, waste gas, solid waste and noise. From the public information of enterprises, achieving "zero waste water discharge" and actively reducing life-cycle carbon emissions have become the consensus of development. The highlights of some outstanding enterprises in the clean production are as follows:

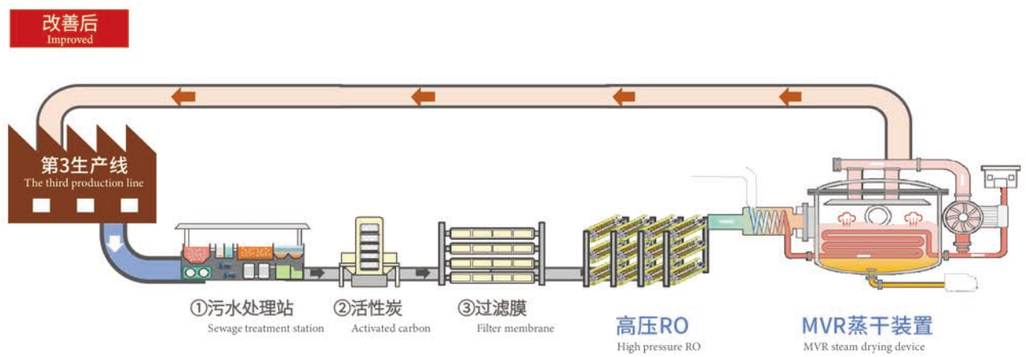
废气管理方面，沃尔沃汽车（亚太）中国工厂通过引进先进减排设施，VOCs 排放降低了 27%；广汽丰田在涂装车间导入日本最新的溶剂回收系统，全年 VOCs 的排放强度仅为 6.61g/m³，远低于国家标准 40g/m³；长安汽车渝北工厂通过锅炉低氮改造氮氧化物从 115mg/m³ 下降到 50mg/m³，减排 65%。

In terms of exhaust gas management, Volvo (Asia Pacific) China plant has reduced VOCs emission by 27% through the introduction of advanced emission reduction facilities; GAC Toyota has introduced the latest Japanese solvent recovery system in the painting workshop, and the annual VOCs emission intensity is only 6.61g/m³, far lower than the national standard of 40g/m³; Chang' an Automobile's Yubei Plant has reduced NOx from 115mg/m³ to 50mg/m³ through boiler low nitrogen transformation, reducing emissions by 65%.

废水管理方面，已有企业实现废水零排放。广汽本田投入巨资，在增城工厂导入先进的环境技术“膜处理技术”，实施 100% 回收重新利用，实现“废水零排放”；广汽丰田第三生产线线建设了汽车行业首例污水蒸干装置系统，实现全厂废水“零排放”；长安汽车废水 COD 排放量减排达到 53.8%。

In terms of wastewater management, enterprises have already achieved zero wastewater discharge. GAC Honda has invested heavily to introduce advanced environmental technology "membrane treatment technology" at its Zengcheng Plant to implement 100% recycling and reuse, realizing "zero wastewater discharge"; GAC Toyota has built the first wastewater evaporation and drying device system in the auto industry for its third production line, realizing "zero wastewater discharge" for the whole plant; Changan Automobile has reduced COD emissions from wastewater by 53.8%.

广汽本田汽车有限公司——污水处理站
GAC TOYOTA MOTOR CO.,LTD——sewage treatment station



产品生命周期碳排放
Carbon Emission within Product Life Cycle

2020 年，中国宣布了应对气候变化国家自主贡献目标，中国从碳达峰到碳中和的时间只有 30 年左右，与发达国家相比时间大大缩短。汽车产业是国民经济的重要支柱产业，汽车产品是消耗石油、天然气等化石燃料，排放二氧化碳的大户，碳减排潜力巨大。

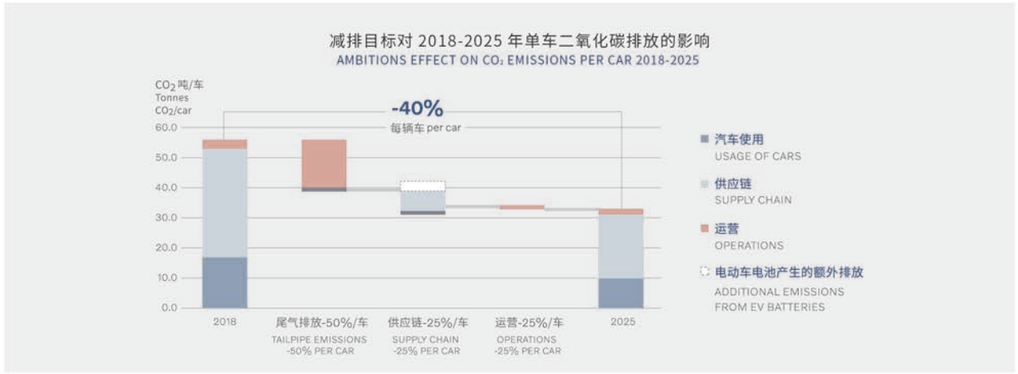
In 2020, China announced its national autonomous contribution target to address climate change, and the time for China to go from carbon peak to carbon neutral is only about 30 years, which is a much shorter time compared with developed countries. The auto industry is an important pillar industry of the national economy, and auto products are a major consumer of fossil fuels such as oil and natural gas, emitting carbon dioxide, with huge potential for carbon reduction.

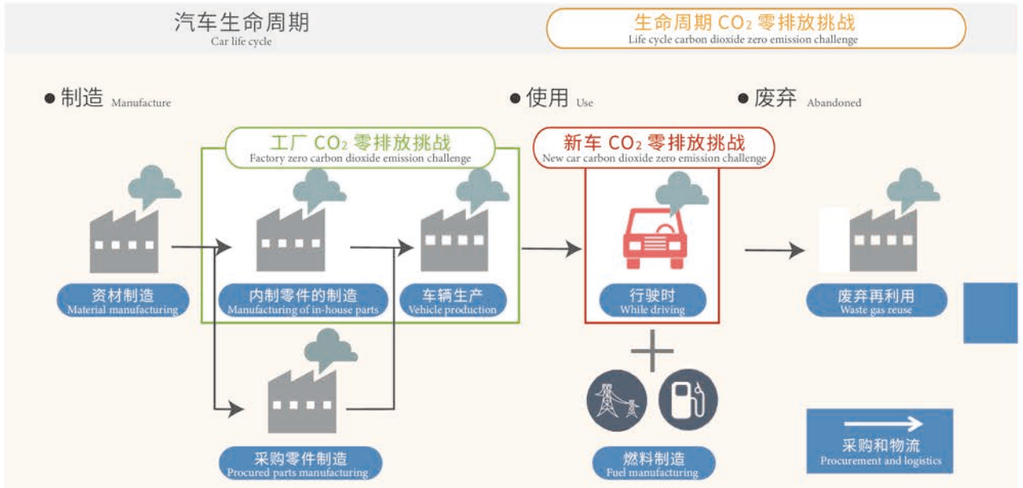
行业中已有多家企业如沃尔沃汽车（亚太）、一汽丰田、吉利汽车均已发布并开展碳减排工作。

Several companies in the industry, such as Volvo Cars (Asia Pacific), FAW Toyota and Geely Automobile, have already released and carried out carbon reduction work.

沃尔沃汽车发布了“2040 环境计划”，力求在 2040 年之前将公司发展成为气候零负荷标杆企业，计划于 2018 年至 2025 年期间将旗下每辆汽车全生命周期中的碳排放平均降低 40%。沃尔沃公开信息显示，沃尔沃亚太区单车碳排放已由 2016 年的 1.39t/ 车降至 2019 年的 0.65t/ 车。

Volvo has released its 2040 Environmental Plan, which aims to develop the company into a zero-load climate benchmark by 2040, with a plan to reduce the life-cycle carbon emissions of each of its vehicles by an average of 40% between 2018 and 2025. Volvo's public information shows that Volvo Asia Pacific's carbon emissions per vehicle have been reduced from 1.39t/vehicle in 2016 to 0.65t/vehicle in 2019.





丰田在 2015 年制定了“六个挑战”，包括：新车碳排放为零、生命周期碳排放为零、工厂碳排放为零等内容。依据《乘用车生命周期碳排放核算方法（2018 版）》，采用汽车生命周期评价模型（CALCM）对一汽丰田卡罗拉进行生命周期碳排放核算分析，核算结果单位行驶里程碳排放值为 226.7gCO2e/km，低于同车型基准值 279gCO2e/km。为进一步加速丰田挑战 2050 的进程，2019 年 12 月，一汽丰田开始检讨中国 LCA 法规对应体制的建立。

In 2015, Toyota formulated the “Six Challenges” , including zero carbon emissions from new vehicles, zero lifecycle carbon emissions, and zero carbon emissions from factories. According to the Accounting Method for Lifecycle Carbon Emission for Passenger Cars (2018 Edition), the lifecycle carbon emission accounting analysis of FAW Toyota Corolla was conducted by using the CALCM and the accounting result is 226.7gCO2e/km per unit mileage, which is lower than the benchmark value of 279gCO2e/km for the same model. In order to further accelerate the process of Toyota’ s challenge 2050, in December 2019, FAW Toyota started to review the establishment of the corresponding system of LCA regulations in China.

吉利汽车发布了 2050 碳中和战略规划，包括低碳车型减排规划、工厂碳减排计划、再生能源清洁能源规划、碳中和措施。通过开展关键零部件和整车全生命周期碳排放评价工作，根据分析结果，对高耗能和高碳排放的材料和工艺进行整改。

Geely Automobile released its 2050 carbon neutrality strategic plan, including low-carbon model emission reduction plan, factory carbon reduction plan, renewable energy clean energy plan and carbon neutrality measures. By conducting a whole lifecycle carbon emission evaluation of key components and whole vehicles, materials and processes with high energy consumption and high carbon emissions will be rectified based on the analysis results.

在中国 2030 年碳达峰和 2060 碳中和的时代背景下，国内车企积极加快制定碳减排战略规划，以应对可能出台的碳排放管理要求。

In the context of China' s 2030 carbon peak and 2060 carbon neutrality era, domestic car companies are actively accelerating the development of carbon emission reduction strategic plans to cope with the possible introduction of carbon emission management requirements.

碳中和 Carbon Neutrality

1. 低碳车型减排规划 Planning of low carbon emission vehicles
2. 工厂碳减排计划 Carbon reduction plan for factories
3. 再生能源，清洁能源规划 Planning of renewable and clean energy
4. 碳中和措施 Carbon neutrality measures

吉利 2050 年碳中和战略规划

供应链管理
Supply Chain Management

完善的供应链管理可以让企业以最低成本来获取最大的利益，同时可以提高企业的工作效率和生产销率。较多汽车企业在绿色供应链方面已开展了较多工作，包括建立企业内部的管理框架、发布管理实施文件等，对供应商筛选准入、监察考核、淘汰退出等多方面制定了与企业发展相匹配的规章制度，提升企业绿色供应链管理水平。

Perfect supply chain management enables enterprises to maximize benefit with the lowest cost and at the same time improves the efficiency and production and sales rate. More automobile enterprises have carried out more work in green supply chain, including establishing internal management framework, releasing management implementation documents, etc., and formulating rules and regulations to match the development of enterprises in various aspects such as supplier screening and access, monitoring and assessment, elimination and withdrawal, etc., so as to improve the level of green supply chain management of enterprises.

华晨宝马致力于将可持续发展标准和绩效融入整个供应链，持续完善风险管理流程和机制，加强对环境、健康和安全（EHS）风险的管控，保障供应链对社会责任和环境要求的合规性，2019 年通过环境管理体系认证的供应商比例为 100%。

BMW Brilliance is committed to integrating sustainability standards and performance into the entire supply chain, continuously improving risk management processes and mechanisms, strengthening the control of environmental, health and safety (EHS) risks and guaranteeing supply chain compliance with social responsibility and environmental requirements, with the proportion of suppliers passing environmental management system certification at 100% in 2019.

绿色制造体系
Green Manufacturing System

按照工业和信息化部节能与综合利用司开展绿色制造体系通知相关要求，汽车企业以促进全产业链和产品全生命周期绿色发展为目的，积极打造绿色工厂、研发绿色产品、建设绿色园区及绿色供应链，全面推进绿色制造体系建设，“十三五”期间，汽车行业创建 312 家绿色工厂、52 家绿色供应链，开发 129 种绿色设计产品。部分优秀企业在绿色制造体系方面下亮点工作如下：

According to the relevant requirements of the notice on carrying out green manufacturing system of the Department of Energy Conservation and Comprehensive Utilization of the Ministry of Industry and Information Technology, automobile enterprises aim to promote the whole industry chain and the whole life cycle of the product green development and actively build green factories, develop green products, construct green parks and green supply chain and comprehensively promote the construction of green manufacturing system. During the 13th Five-Year Plan period, the automotive industry has created 312 green factories, 52 green supply chains and developed 129 green design products. The highlights of some of the outstanding enterprises in the green manufacturing system are as follows:

广汽本田在 2019 年获得广州市绿色供应链管理企业称号，2020 年获得工信部绿色供应链管理企业。打造资源节约、环境友好为导向的采购、生产、营销、回收及物流体系，推动上下游企业共同提升资源利用效率，改善环境绩效，达到资源利用高效化、环境影响最小化。

GAC Honda was awarded the title of Guangzhou Green Supply Chain Management Enterprise in 2019 and the Ministry of Industry and Information Technology Green Supply Chain Management Enterprise in 2020. It aims to build a resource-saving and environment-friendly procurement, production, marketing, recycling and logistics system, to promote upstream and downstream enterprises to jointly enhance resource utilization efficiency, improve environmental performance and achieve efficient resource utilization and minimal environmental impact.

吉利汽车积极打造绿色制造体系，截止 2019 年底，申报并认定成功绿色工厂基地共计 5 家，累计共有 15 款车型产品入选国家工信部绿色设计名单，充分证明了吉利在绿色设计方面的研发能力水平。

Geely actively builds green manufacturing system. By the end of 2019, a total of 5 green factory bases have been declared and recognized as successful, and a total of 15 model products have been selected for the green design list of the State Ministry of Industry and Information Technology, which fully proves the level of Geely's R&D capability in green design.

汽车轻量化
Automotive Lightweighting

轻量化是减低汽车产品能耗的重要方式，在保证产品质量的前提下，降低汽车产品重量，不仅可以降低汽车使用能源的消耗，同时，也有可能为企业的生产制造降低些成本。

在产品轻量化方面，目前行业普遍做法主要从产品结构优化和使用轻质、高强度的新型材料替代传统钢材，以此降低零部件和整车重量。通过提升替代材料的使用率逐年降低产品重量，使用较为普遍的主要是铝及铝合金，主要用于汽车非承重部分，在对有强度要求的部分，根据不同要求使用软钢、高强度钢、热成型钢材等新型钢材。此外，在新型金属材料使用比率提升有限的情况下，非金属材料的使用已经逐渐成为当下比较热门的一种替代材料。

华晨宝马紧跟汽车轻量化最新行业趋势，在内饰设计中引进最新轻量化技术。在 BMW 5 系中引入轻量革面套材料，重量降低了 15% 的同时，保障了环境可持续性和座椅舒适性，同时采用密度较小的天然木纤维替换密度较大的塑料粒子材料制作座椅背板，减重 26%。

Lightweighting is an important way to reduce the energy consumption of automotive products. Under the premise of ensuring product quality, reducing the weight of automotive products can not only reduce the consumption of energy used in automobiles, but also potentially reduce some costs for the manufacturing of enterprises.

In terms of product lightweighting, the current industry practice is mainly to optimize product structure and use lightweight, high-strength new materials to replace traditional steel, so as to reduce the weight of parts and vehicles. By improving the use rate of alternative materials, the weight of products is on the decline year by year. Aluminum and aluminum alloy are commonly used for non-load-bearing parts of the car. In the part with strength requirements, according to the different requirements, new steels such as mild steel, high-strength steel, hot-forming steel are used. In addition, non-metal material has gradually become a more popular alternative material today, given the limited increase in the use rate of new metal materials.

BMW Brilliance follows the latest industry trend of automotive lightweighting and introduces the latest lightweight technology in the interior design. The introduction of lightweight leather cover material in the BMW 5 Series reduces weight by 15% while safeguarding environmental sustainability and seat comfort. Meanwhile, less dense natural wood fiber is used to replace denser plastic particle material for seat backs, reducing weight by 26%.

座椅结构
Seat structure

在保障钢的刚度和安全性的前提下，BMW 5 系座椅结构采用高强度钢，降低钢料厚度和重量。

By application of high strength steel in BMW 5 Series, the thickness and weight of steel plate has been reduced. Meanwhile seat structure stiffness and security remained with no change.

结构厚度和重量降低
he thickness and weight of steel plate have been reduced

座椅面料
Trim cover

BMW 5 系引入了轻量革做为座椅面套材料与常量革和真皮相比，重量降低 15%. 同时保障了环境的可持续性和座椅舒适性，提高了顾客的使用价值。

BWM 5 Series introduces lightweight artificial leather as trim cover material. Compared with standard weight product and real leather, its weight can be reduced by 15%. In the meantime, environment sustainability and seat comfort are maintained, and customer value is increased.

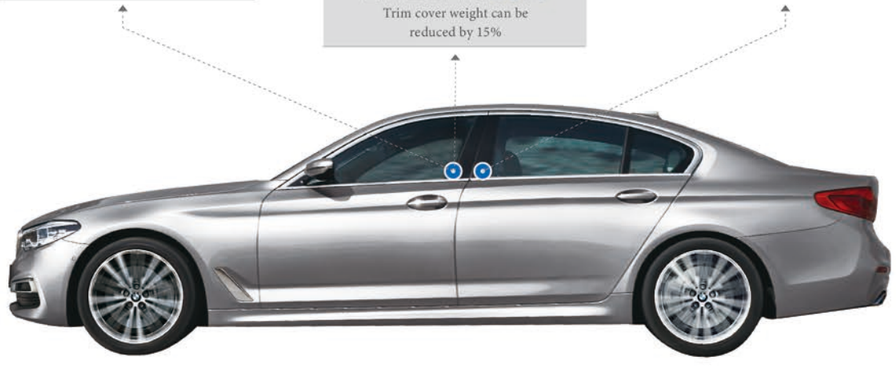
面料重量降低 15%
Trim cover weight can be reduced by 15%

背板
Back panel

BMW 5 系用密度较小的天然木纤维材料替换密度较大的塑料粒子材料制作座椅背板减重 26%。

Back panel is the biggest part of the seat. BMW 5 Series has replaced plastic with natural wood fibre with less density, which contributes to 26% weight reduction.

背板减重 26%
Back panel weight can be reduced by 26%



蔚来汽车通过采用铝、镁、陶瓷、塑料、玻璃纤维或碳纤维复合材料等轻质材料和优化结构设计的方式，新款 ES8 相较于上一代降低 35kg。

By using lightweight materials such as aluminum, magnesium, ceramic, plastic, fiberglass or carbon fiber composites and optimizing the structural design, the new ES8 of NIO is 35kg lighter compared with its predecessor.

镁铝仪表板横梁

镁铝合金的低密度（1.78g/cm³）使其比性能显著提高，具有很好的强度、刚性和尺寸稳定性，加上零件集成化程度高，相对传统刚结构仪表板横梁减重 40%。

Magnesium aluminum instrument panel beam

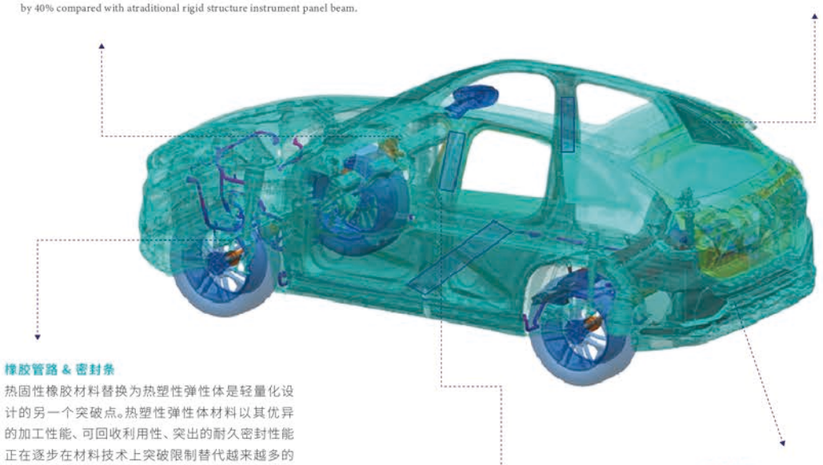
The low density of magnesium-aluminum alloy (1.78g/cm)³enables the specific performance of the magnesium aluminum instrument panel beam to be significantly improved. Owing to the fact that the magnesium-aluminum alloy has good strength, rigidity,dimensional stability and a high degree of inteagration of parts, the weight of the magnesium aluminum instrument panel beam can be reduced by 40% compared with atraditional rigid structure instrument panel beam.

优化设计，减少零件数量

ES6 在 D 柱上端使用了一体铸造内板总成，代替了 ES8 上的冲压件组合方案，零件数量由 4 个变为 1 个，重量下降 1kg, 23.3%。

Optimize the design and reduce the number of parts

According to E56,a one-piece cost inner plate assembly is arranged at the upper end of a D column, which replaces the stamping part assembly combination scheme of ES8. The number of parts is reduced from 4 to 1.and the weight is reduced by 1kg, nomely,23.3%.



橡胶管路 & 密封条

热固性橡胶材料替换为热塑性弹性体是轻量化设计的另一个突破点。热塑性弹性体材料以其优异的加工性能、可回收利用性、突出的耐久密封性能正在逐步在材料技术上突破限制替代越来越多的橡胶零件的应用。冷却水管上热塑性弹性体 TPV 替代 EPDM，从降低壁厚和密度双方面综合减重达 40%。车窗密封条上热塑性弹性体 TPV 替代 EPDM，减重达 35%。

Rubber Pipeline & Sealing Strip

It is another breakthrough in lightweight design to replace the thermosetting rubber material with thermoplastic elastomer. Thermoplastic elastomer with its exellent processing properties, recyclability, and outstanding durable sealing performance are gradually breaking through the limitations in material technology so as to replace an increasing number of rubber parts.The thermoplastic elastomer TPV on a cooling water pipe replaces EPDM, so that the overall weight is reduced by 40% in terms of wall thickness and density. The thermop1astic elastomer TPV on the window sealing strip replaces EPDM, and thus the weight is reduced by 35%.

车身地板横梁，前雪橇板，B 柱内板等

ES6 在车身地板横梁，前雪橇板，B 柱内板等零件上引入了 7 系热成型铝合金板金。7 系热成型在实现相同性能的情况下可以使用更小的料厚，相比 6 系冷冲压铝合金钣金，上述零件共减重 1.94kg, 19.8%。

Body floor beams,front sled plates,B column inner plates,etc.

ES6 introduces series 7 thermal forming aluminum alloy sheet metal on the body floor beams, front sled plates, B column inner plates and other parts. The series 7 thermal forming can use a smaller material thickness while realizing the same performance. Compared with the series 6 cold stamping aluminum alloy sheet metal, the weight of the above parts is reduced by 1.94kg, namely, 19.8%.

尾门内板

蔚来汽车从第一款旗舰车型 ES8 就已使用全塑尾门，但第二款车型 ES6 将追求轻量化的目标继续发展到极致，内板从原来的热固性 SMC 材料替换成了长玻纤增强的热塑性材料，进一步减重 10%。同时，热塑性材料的散发和气味也明显优于 SMC 材料，这是绿色环保的一大进步。

Tailgate inner plate

NIO has used all-plastic tailgates since the first flagship model ES8, and we will develop lightweight of automobiles to the fullest for the second medel ES6. As for the inner plate, the original thermosetting SMC material has been replaced with long glass fiber reinforced thermoplastic material. and thus the weigtht is further decreased by 10%.In the meantime, the emission and smell of thermoplastic material are also significantly better than that of the SMC material, which is a big step forward in environmental protection.

车内空气质量
Air Quality in the Car

汽车作为人们生活的第三空间，座舱环境已经成为社会公共健康的焦点。车内空气质量关乎驾乘人员的身体健康问题，受新冠肺炎疫情的影响，车内空气质量已成为继质量和安全后的又一考量重点（约 46.5% 受访者考虑此因素）。2014-2019 年车内异味投诉量逐年攀升，改善车内空气质量对于提升消费者用车体验至关重要。

As the third space of people' s lives, the cabin environment has become the focus of public health. The air quality in the car is related to the health of drivers and passengers. Due to the impact of COVID-19, the air quality in the car has become another key consideration after quality and safety (about 46.5% of respondents consider this factor.) The number of complaints about odor in the car is rising year by year from 2014 to 2019, and improving the air quality in the car is crucial to enhance consumers' experience with the car.

沃尔沃汽车在致力于环境保护方面有悠久的传统，在过去的 20 多年中，始终致力于保证车内空气质量。其研发的高级空气滤清器（AAC）于 2019 年在中国市场上市，这一全新的空气净化过滤技术能够去除 95% 以上的微小有害物质，车辆也同时搭载一个传感器，它能够显示车内微小有害物质的浓度。

Volvo has a long tradition of commitment to environmental protection and has been working to ensure the quality of the air inside its vehicles for more than 20 years. Its Advanced Air Filter (AAC) was developed and launched in the Chinese market in 2019. This new air purifying and filtering technology is able to remove more than 95% of the tiny harmful substances, and the vehicle is also equipped with a sensor which can display the concentration of tiny harmful substances inside the vehicle.

全自动空气质量系统（IAQS）可测量进气中的有害气体：

IAQS(Interior Air Quality Sysrem)for air quality,measures emissions in the incoming air:

- 一氧化碳浓度较高时调整进气。
- Adjust the air intake if there are high concentrations of carbon monoxide for instance.
- 使用活性炭过滤空气。
- Filters the air with active carbon.
- 减少进气中的氮氧化物、地面臭氧和碳氢化合物等污染物。
- Reduces intake of substances such as nitrogen oxides, ground-level ozone and hydrocarbon.
- 自动远程控制座舱通风和预清洁。
- Automatic remote controlled cabin ventilation and pre-cleaning.

- 在使用远程钥匙或手机启动车辆的同时，或者在车门打开之后，车内风扇可在需要时同步开启最大通风。在你坐进座椅上时，座舱系统已在排出车内有害气体，使座舱内的空气质量更清洁，更健康。即使车辆在酷日下停放了很长时间，它也会将车内温度调整到较为舒适的状态。

- When required, the interior fan will start to the maximum ventilating the interior as soon as you unlock the car using the remote control key or via your phone, or until one of the doors are opened. By the time you take your seat,the cabin is aired out of interior emissions, making the cabin air cleaner and healthier - even if the car is parked for a long time under harsh sun. It also makes the interior temperature more comfortable.

产品能源使用
Product Energy Use

现阶段，汽车行业快速发展带来的能源紧张和环境污染问题愈加突出，控制并不断降低车型燃料消耗量已经成为有效缓解能源和环境压力的重要手段，除了在制造材料、车辆表现等方面创新产品设计、导入先进的节能技术之外，将大力发展新能源汽车，积极导入全新产品，双措并举，成为降低平均燃油消耗量的重要举措。部分优秀企业在产品能源使用方面下亮点工作如下：

At this stage, the rapid development of the automotive industry has brought about increasingly prominent energy tension and environmental pollution problems. The control and constant reduction of the fuel consumption of models have become an important means to effectively alleviate the pressure on energy and the environment, in addition to innovative product design and the introduction of advanced energy-saving technologies in manufacturing materials, vehicle performance, etc., vigorous development of new energy vehicles and introduction of brand new products have become important initiatives to reduce the average fuel consumption. The performance highlights of some of the outstanding enterprises in the product energy use are as follows.

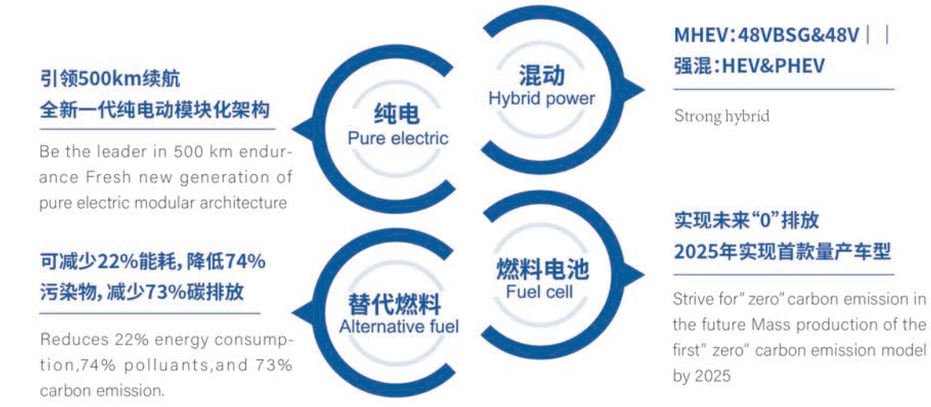
沃尔沃汽车方面，发布电气化战略，同时推出了新的“B”字标的轻度混合动力系统，在实际驾驶中降低了 15% 油耗和排放，2019 年沃尔沃大庆工厂企业平均燃料消耗量为 6.18 升 / 百公里，较 2018 年降低了 11%。

Volvo announced its electrification strategy and launched a new “B” labeled mild hybrid powertrain that reduces fuel consumption and emissions by 15% in real-world driving, with an average corporate fuel consumption of 6.18 liters per 100 kilometers in 2019 at Volvo’s Daqing plant, a decrease of 11% from 2018.

一汽丰田方面，2019 年开始销售“卡罗拉双擎 E+”，加速在现地成熟车型的电动化。“卡罗拉双擎 E+”在现有混合动力卡罗拉的基础上，将镍氢电池更换为锂离子电池，导入插电式混合动力卡罗拉，整车综合能耗从 4.2 升 / 百公里降低至 1.3 升 / 百公里。

FAW Toyota began selling the “Corolla Twin Engine E+” in 2019, accelerating the electrification of mature models in the current location. The “Corolla Twin Engine E+” replaces the NiMH battery with a lithium-ion battery on the basis of the existing hybrid Corolla and introduces a plug-in hybrid Corolla, reducing the overall energy consumption from 4.2 to 1.3 liters per 100 kilometers.

多样化、高效化的电气化技术，从跟随到引领，不断超越消费者需求
From the follower to the leader,diversified and efficient eletrical technology constantly goes beyond consumer needs.



吉利汽车方面，形成以纯电 (BEV)、混动 (PHEV/HEV/BSG)、替代燃料 (甲醇)、燃料电池 (FCV) 多种路线并举的发展模式。其中，智擎纯电技术已经实现三电技术的自主化，达到世界新能源节能技术的领先水平，智擎 MHEV 轻混技术已经实现节油率 15%，到 2020 年将提升至 25%，达到世界领先水平。

Geely Automobile formed a development model with multiple routes of battery electric vehicle (BEV), hybrid (PHEV/HEV/BSG), alternative fuel (methanol) and fuel cell (FCV). Among them, the Smart Engine BEV technology has achieved the independence of battery, motor, electronic control system technologies and reached the world' s leading level of new energy-saving technology. The Smart Engine MHEV technology has achieved a fuel saving rate of 15%, which will be increased to 25% by 2020 and reach the world' s leading level.

绿色运输物流
Green Transport Logistics

汽车企业经过多年的布局与经营，均已成功构筑了公路、铁路、水路以及航空运输并存互补的物流体系。为积极响应国家政策，打赢蓝天保卫战，减少运输过程中的二氧化碳排放量，汽车企业全力推行绿色低碳的运输方式，持续优化网络布局，加大铁水发运量，减少传统公路运输尾气排放对环境的影响，形成绿色物流网络。部分优秀企业在绿色运输物流方面下亮点工作如下：

After years of arrangement and operation, automobile enterprises have successfully built a logistics system with the coexistence of road, railroad, waterway and air transportation. To actively respond to the national policy, carry out the Blue Sky Protection Campaign and reduce carbon dioxide emissions in the transportation process, automobile enterprises have made every effort to promote green and low-carbon transportation methods, continuously optimize the network layout, increase the amount of rail and water transportation, reduce the impact of traditional road transportation exhaust emissions on the environment and form a green logistics network. The performance highlights of some of the outstanding enterprises in green transport logistics are as follows.

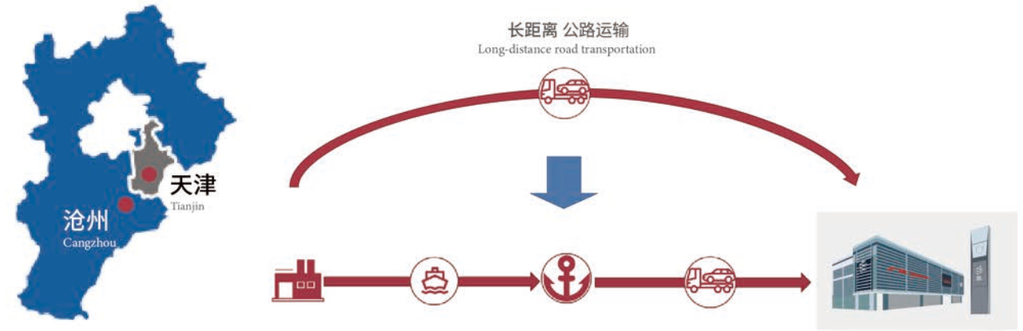
沃尔沃汽车 2019 年开始，成为首家在亚洲和欧洲之间使用双向铁路运输的汽车企业。2019 年与传统方式相比，平均运输每辆车的二氧化碳排放量降低了 60% 以上。

Volvo became the first automotive company to use two-way rail transport between Asia and Europe in 2019. 2019 saw a reduction of more than 60% in average CO_2 emissions per vehicle compared with traditional methods.

广汽本田在 2019 年的整车物流运输路线规划中，更多的线路采取了平均碳排放最低的水路中转运输方式：河北 3 家特约店由公路直发调整为水路运输；江苏省 14 家特约店由铁路中转运输调整为水路中转运输。水路运输占比相较上年度提升 2%。

GAC Honda adopted the waterway transit transport method with the lowest average carbon emissions for more routes in its 2019 vehicle logistics transport route planning: three franchise stores in Hebei were adjusted from direct road delivery to waterway transport; 14 franchise stores in Jiangsu Province were adjusted from rail transit transport to waterway transit transport. The proportion of waterway transportation increased by 2% compared with the previous year.

整车物流案例 Vehicle logistics case



河北&天津示意图
Map of Hebei & Tianjin

原运输方式：公路直发
Original mode of transportation: direct highway

变更后运输方式：公水联运
Transportation after change: public and water combined transportation

蔚来汽车全力推行绿色低碳的运输方式。2018 年 4 月启动了中欧班列运输，从德国汉堡 / 诺依兹运抵中国合肥，全程 9000 多公里，减少了海运产生的碳排放合计 125975kg。

NIO is fully committed to green and low-carbon transportation methods. April 2018 saw the launch of a China-European train transport from Hamburg/-Neutz, Germany to Hefei, China, a journey of more than 9,000 kilometers, reducing carbon emissions generated by sea transport by a total of 125,975kg.

主要建议

政府层面 Governmental Level

企业层面 Enterprise Level

投资者层面 Investor Level

06
Main Suggestions

政府机构
Government Agencies

为企业公开绿色发展信息提供激励机制；将 GDI 指数作为政策引导工具，将消费者和绿色金融投资吸引到信息透明度表现较好的企业。

Provide incentives for companies to disclose green development information; use the GDI index as a policy guidance tool to attract consumers and green financial investments to enterprises with better information transparency performance.

生产企业
Manufacturers

监管企业各部门在生产经营过程中的绿色发展情况；识别改进发展不足之处；增强消费者和投资者对企业的信赖度。

Oversee the green development of all departments of enterprises in the production and operation process; identify and improve development shortcomings; and enhance the trust of consumers and investors in enterprises.

投资者
Investors

采信汽车企业绿色发展指数结果，优先考虑信息披露透明度较高的企业，为其提供优惠贷款，增加投资。

Adopt the results of the Green Development Index for automotive enterprises and give priority to enterprises with higher transparency in information disclosure for preferential loans and increased investment.

07

2020汽车企业绿色发展成果分享

2020汽车GDI指数发布

On-site Release of Automobile GDI in 2020

企业绿色发展先进经验分享

Advanced Experience Sharing on Green Development of Enterprises

信息披露表现优秀企业颁奖

Awarding to Companies with Excellent Information Disclosure Performance

工业企业绿色发展报告公示平台上线

Industrial Enterprises Green Development Report Publication Platform Launched

2020 Green Development Achievements Sharing Session for Automobile Enterprises

2020 年 12 月 15 日，中汽数据有限公司在京召开“2020 年汽车企业绿色发展成果分享会”。工业和信息化部节能与综合利用司有关负责人出席会议并发表重要讲话，强调了将绿色发展信息公开作为推进汽车行业绿色发展的抓手。分享会邀请了来自 80 余家汽车生产企业及国内主流媒体的共计 100 余名代表参加，共同分享了企业绿色发展先进经验及成果、2020 年中国汽车企业绿色发展指数研究成果，并为绿色发展信息披露表现优秀企业颁发奖牌，以发挥示范引领作用。

On December 15, 2020, Automotive Data of China Co., Ltd. held the “2020 Green Development Achievements Sharing Session for Automobile Enterprises” in Beijing. The relevant responsible person from the Department of Energy Conservation and Comprehensive Utilization of the Ministry of Industry and Information Technology attended the meeting and delivered an important speech, emphasizing the disclosure of green development information as a grip to promote green development in the automotive industry. A total of more than 100 representatives from more than 80 automobile enterprises and domestic mainstream media were invited to the sharing session to share their advanced experience and achievements in green development and the research results of the 2020 Green Development Index of Chinese automobile enterprises, and to award medals to enterprises with outstanding performance in green development information disclosure in order to play an exemplary and leading role.

2020 汽车 GDI 指数现场发布
On-site Release of Automobile GDI in 2020

会议现场

Meeting Site

会议现场
Meeting Site

中汽数据有限公司 总经理 郑继虎 发布研究成果
Zheng Jihu, general manager of Automotive Data of China Co., Ltd. released research results

中国汽车技术研究中心有限公司 副总经理 吴志新 致欢迎词
Wu Zhixin, deputy general manager of CATARC gave a welcome address

中汽数据有限公司 副总经理 惠怡静 主持
Hui Yijing, deputy general manager of Automotive Data of China Co., Ltd. presided over the meeting

企业绿色发展先进经验分享
Advanced Experience Sharing on Green Development of Enterprises

华晨宝马业务发展与企业可持续发展总监 Mr.Carsten Mueller-Deiters 分享绿色发展先进经验

Mr. Carsten Mueller-Deiters, director of Business Development and Corporate Sustainability of BMW Brilliance, shared his advanced experience in green development

一汽丰田总经理助理 陈黎明 分享绿色发展先进经验

Chen Liming, assistant general manager of FAW Toyota, shared advanced experience in green development

沃尔沃汽车（亚太）亚太区战略及项目管理副总裁 David Sweet 分享绿色发展先进经验

David Sweet, vice president of APAC Strategy and Project Management of Volvo Car(Asia Pacific) shared his experience in green development

吉利汽车整车工程中心主任 顾鹏云 分享绿色发展先进经验

Gu Pengyun, director of Geely Vehicle Engineering Center, shared advanced experience in green development

广汽本田安全环保部部长 曾奕聪 分享绿色发展先进经验
Zeng Yicong, director of Safety and Environmental Protection Department of GAC Honda, shares advanced experience in green development

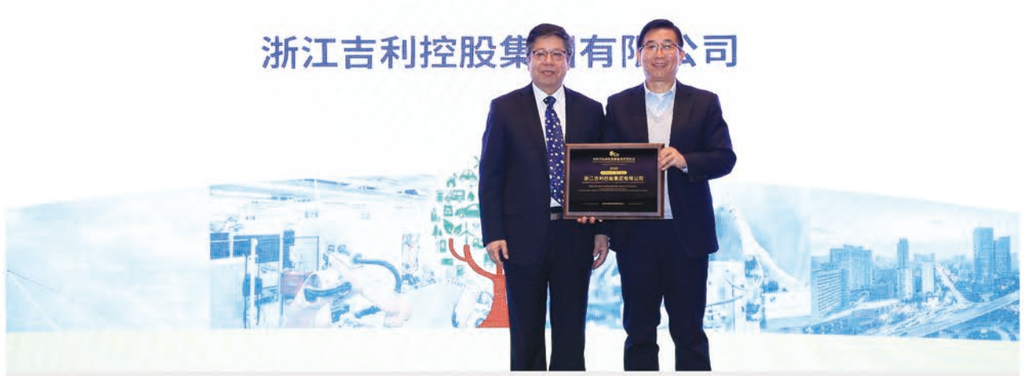
蔚来汽车整车工程环保高级经理 孟大海 分享绿色发展先进经验
Meng Dahai, senior manager of Vehicle Engineering Environmental Protection of NIO shared advanced experience in green development

信息披露表现优秀企业颁奖
Awarding Enterprises with Excellent Information Disclosure Performance

华晨宝马业务发展与企业可持续发展总监 Mr.Carsten Mueller-Deiters 上台领奖
Mr. Carsten Mueller-Deiters, director of Business Development and Corporate Sustainability of BMW Brilliance, received the award on stage.

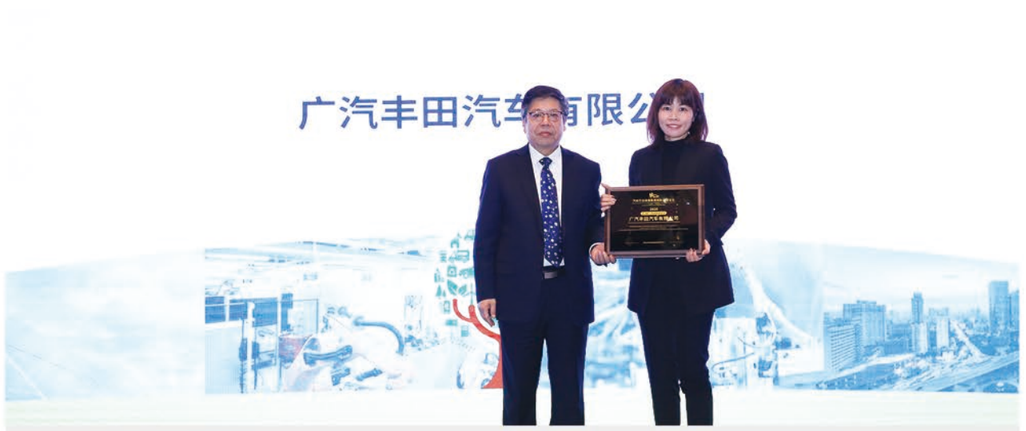
沃尔沃汽车（亚太）亚太区战略及项目管理副总裁 David Sweet 上台领奖
David Sweet, vice president of APAC Strategy and Project Management of Volvo Car(Asia Pacific), received the award on stage

蔚来汽车整车工程总监 王璟 上台领奖
Wang Jiang, director of Vehicle Engineering of NIO received the award on stage.

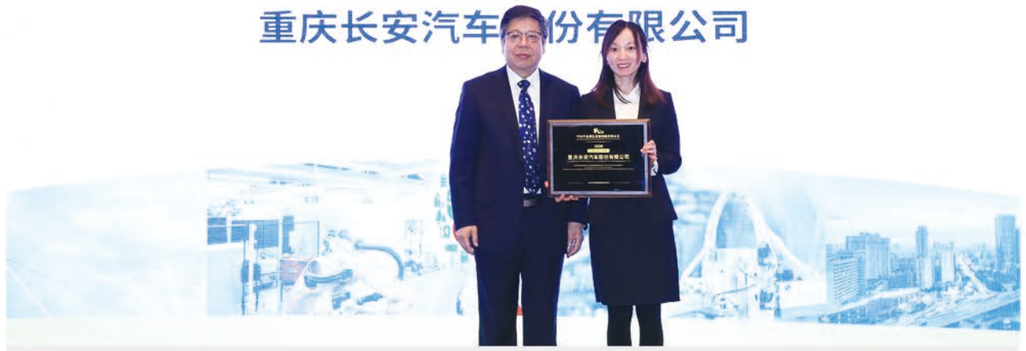


吉利汽车整车工程中心主任 顾鹏云 上台领奖
Gu Pengyun, director of Geely Vehicle Engineering Center, received the award on stage.

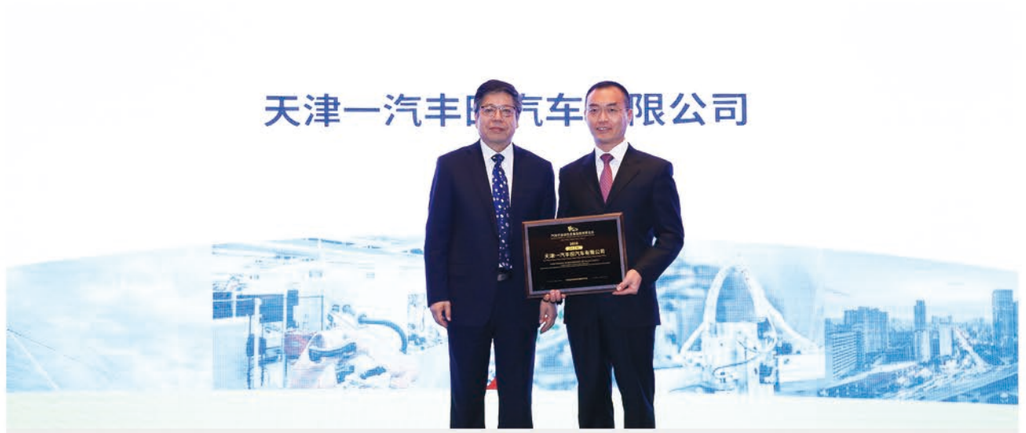
广汽本田安全环保部部长 曾奕聪 上台领奖
Zeng Yicong, director of Safety and Environmental Protection Department of GAC Honda, received the award on stage.



广汽丰田CSR事务局局长 李莹 上台领奖
Li Ying, director of CSR Affairs Bureau of GAC Toyota, received the award on stage



长安汽车北京研究院科研管理经理 赵佳 上台领奖
Zhao Jia, manager of research management of Chang'an Automobile Beijing Research Institute, received the award on stage.



一汽丰田总经理助理 陈黎明 上台领奖
Chen Liming, assistant general manager of FAW Toyota, received the award on stage

工业企业绿色发展报告公示平台上线
Industrial Enterprises Green Development Report Publication Platform Launched

作为汽车行业首家工业节能与绿色发展评价中心，中汽数据始终致力于在汽车节能与绿色发展领域发挥专业第三方服务机构的作用。为进一步支撑和服务企业绿色发展信息公开机制构建，中汽数据组织研究建立了“工业企业绿色发展报告公示平台”，为企业提供绿色发展信息公开专业平台，为社会各界搭建获取企业绿色发展信息的便捷通道。

As the first industrial energy-saving and green development evaluation center in the automobile industry, Automotive Data of China Co., Ltd. has always been committed to playing the role of a professional third-party service organization in the field of energy-saving and green development of automobiles. In order to further support and serve the construction of green development information disclosure mechanism of enterprises, Automotive Data of China Co., Ltd. has organized research and established the “Industrial Enterprise Green Development Report Publication Platform” to provide a professional platform for enterprises to disclose green development information and build a convenient channel for the community to obtain green development information of enterprises.

工业企业绿色发展报告公示平台上线仪式
Launch ceremony of industrial enterprise green development report publication platform

工业企业绿色发展报告公示平台二维码
QR code for the industrial enterprise green development report publication platform

08
媒体关注

央视新闻报道　CCTV News Report
主流媒体报道　Mainstream Media Reports
企业高层采访　Interviews with Senior Management
图片直播关注　Live Broadcast with Pictures

Media Coverage

2020 年汽车企业绿色发展成果分享会获得央视 CCTV-13《朝闻天下》、《新闻 30 分》栏目特别报道，以及北京、天津等地方卫视、人民日报、新华网、懂车帝、今日头条等 80 余家网络媒体、纸媒、自媒体报道关注。此外，邀请了权威媒体对优秀企业进行专访，传播绿色发展先进经验与优秀成果。

The 2020 Green Development Achievements Sharing Session for Automobile Enterprises received special reports from CCTV-13 Morning News and News 30' , as well as reports from more than 80 online media, paper media and we-media such as Beijing, Tianjin and other local TV stations, People' s Daily, Xinhuanet, Dongchedi and Jinri Toutiao. In addition, authoritative media were invited to interview the outstanding enterprises and spread the advanced experience and outstanding achievements of green development.

央视新闻报道
CCTV News Report

央视《朝闻天下》报道
CCTV Morning News Coverage

央视《新闻30分》报道
CCTV News 30' Coverage

主流媒体报道
Mainstream Media Reports

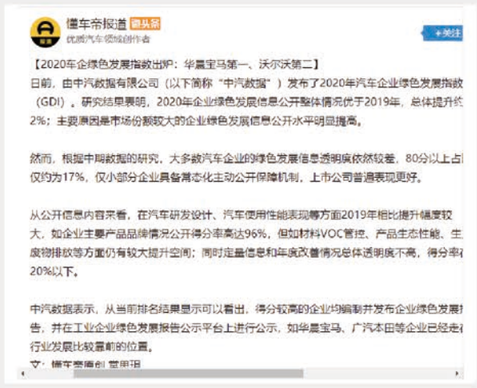
人民日报报道
Coverage by People's Daily

新华网报道
Coverage by Xinhuanet

北京日报报道
Coverage by Beijing Daily

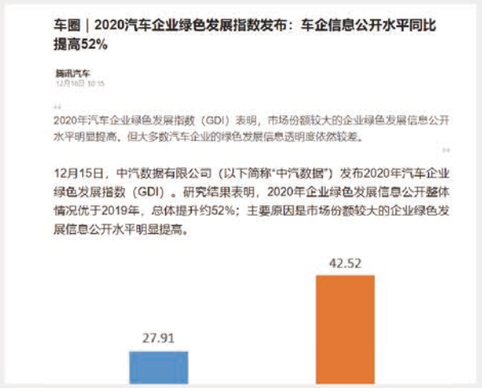
新浪汽车报道
Coverage by Auto Sina

中国消费者报报道
Coverage by China Consumer News



懂车帝报道
Coverage by Dongchedi

搜狐汽车报道
Coverage by Auto Sohu



腾讯汽车报道
Coverage by Tencent Auto

企业高层采访
Interviews with Senior Management

中国汽车技术研究中心有限公司
副总经理 吴志新
接受央视专访

Wu Zhixin,
deputy general manager of CATARC
was interviewed CCTV

吉利汽车整车工程中心主任
顾鹏云
接受媒体采访

Gu Pengyun,
director of Geely Vehicle Engineering
Center, was interviewed by media

华晨宝马总裁兼首席执行
官魏岚德
接受媒体采访

Johann Wieland,
president& CEO of BMW Brilliance
was interviewed by media

广汽本田安全环保部部长
曾奕聪
接受媒体采访

Zeng Yicong,
director of Safety and Environmental
Protection Department of GAC Honda,
was interviewed by media

图片直播关注
Live Broadcast with Pictures

为使行业了解 2020 年汽车企业绿色发展成果分享会详情，会议通过图片直播的方式向社会公开，受到累计 40000 余人次的关注。

In order to make the industry understand the details of the 2020 Green Development Achievements Sharing Session for Automobile Enterprises, the conference was made public to the society through a live broadcast with pictures, which received the attention of more than 40,000 people in total.

2020 年汽车企业绿色发展成果分享会图片直播地址：

The URL of the live broadcast with pictures of the 2020 Green Development Achievements Sharing Session for Automobile Enterprises

https://as.alltuu.com/album/1063324608/?from=timeline

识别二维码，观看现场直播

附录 Appendix

附表：2020年汽车企业GDI核算企业名单

Annex: Check List of GDI for Automotive Enterprises in 2020

序号 S/N	企业名称 Enterprise name
1	一汽-大众汽车有限公司 FAW-VOLKSWAGEN AUTOMOTIVE CO.LTD.
2	上汽大众汽车有限公司 SAIC VOLKSWAGEN AUTOMOTIVE CO., LTD.
3	上汽通用汽车有限公司 SAIC General Motors Corporation Limited
4	浙江吉利控股集团有限公司 Zhejiang Geely Holding Group Co., Ltd.
5	东风汽车有限公司东风日产乘用车公司 Dongfeng Nissan Passenger Vehicle Company
6	上汽通用五菱汽车股份有限公司 SAIC GM Wuling Motors Co Limited
7	长城汽车股份有限公司 GREAT WALL MOTOR COMPANY LIMITED
8	重庆长安汽车股份有限公司 CHONGQING CHANGAN AUTOMOBILE CO., LTD
9	东风本田汽车有限公司 DONGFENG HONDA AUTOMOTIVE CO., LTD.
10	广汽本田汽车有限公司 GAC Honda Automobile Co., Ltd.
11	天津一汽丰田汽车有限公司 TIANJIN FAW TOYOTA Motor Co.,LTD
12	广汽丰田汽车有限公司 GAC TOYOTA MOTOR CO.,LTD
13	北京现代汽车有限公司 BEIJING-HYUNDAI AUTO
14	北京奔驰汽车有限公司 Beijing Benz Automotive Co., Ltd.
15	上海汽车集团股份有限公司乘用车分公司 SAIC Motor Corporation Limited Passenger Vehicle Branch
16	华晨宝马汽车有限公司 BMW Brilliance Automotive Ltd.
17	奇瑞汽车股份有限公司 CHERY AUTOMOBILE CO., LTD

序号 S/N	企业名称 Enterprise name
18	比亚迪汽车有限公司 BYD Automobile Co., Ltd.
19	广州汽车集团乘用车有限公司 GAC Motor Co., Ltd.
20	一汽轿车股份有限公司 FAW Car Co., Ltd.
21	东风悦达起亚汽车有限公司 Dongfeng Yueda Kia Motors Co., Ltd.
22	长安福特汽车有限公司 Changan Ford Automobile Co .,Ltd
23	东风小康汽车有限公司 DFSK Motor Co., Ltd.
24	沃尔沃汽车（亚太）投资控股有限公司 Volvo Cars (Asia Pacific) Investment Holdings Co., Ltd.
25	长安马自达汽车有限公司 Changan Mazda Automobile Co., Ltd
26	广汽三菱汽车有限公司 GAC MITSUBISHI MOTORS Co., LTD
27	北京新能源汽车股份有限公司 Beijing Electric Vehicle Co.,LTD.
28	东风柳州汽车有限公司 Dongfeng Liuzhou Motor Co., Ltd
29	安徽江淮汽车集团股份有限公司 Anhui Jianghuai Automobile Group Co., Ltd.
30	神龙汽车有限公司 DONGFENG PEUGEOT CITROEN AUTOMOBILE COMPANY LTD
31	东风汽车集团股份有限公司乘用车公司 Dongfeng Motor Corporation Passenger Vehicle Company
32	北京汽车股份有限公司 BAIC Motor Corporation Limited
33	广汽菲亚特克莱斯勒汽车有限公司 GAC FIAT CHRYSLER Automobiles Co., Ltd.
34	上汽大通汽车有限公司 SAIC MAXUS Automotive Co., Ltd.

序号 S/N	企业名称 Enterprise name
35	江铃汽车股份有限公司 Jiangling Motors Co., Ltd.
36	奇瑞捷豹路虎汽车有限公司 Chery Jaguar Land Rover Automotive Co., Ltd.
37	北京宝沃汽车有限公司 Beijing Borgward Automobile Co., Ltd.
38	华晨鑫源重庆汽车有限公司 Brilliance Xinyuan Chongqing Automobile Co., Ltd.
39	江西大乘汽车有限公司 Dorcen Automobile Group Co., Ltd.
40	东风英菲尼迪汽车有限公司 Dongfeng Infiniti Motor Co., Ltd.
41	东南(福建)汽车工业有限公司 SOUTH EAST（FUJIAN）MOTOR CORPORATION LTD.
42	福建奔驰汽车有限公司 Fujian Benz Automotive Co., Ltd
43	华晨汽车集团控股有限公司 Brilliance Auto Group Holdings Co., Ltd.
44	观致汽车有限公司 Qoros Auto Co., Ltd.
45	上海蔚来汽车有限公司 NIO Co., Ltd.
46	威马汽车技术有限公司 WM Motor Technology Group Co., Ltd.
47	广州小鹏汽车科技有限公司 Guangzhou Xiaopeng Motors Technology Company Ltd.
48	郑州日产汽车有限公司 Zhengzhou Nissan Automobile Co., Ltd.
49	特斯拉（上海）有限公司 Tesla (Shanghai) Co., Ltd.