CHINA AUTOMOTIVE INDUSTRY
LOW CARBON ACTION PLAN SEMINAR
中国汽车产业链低碳行动计划研讨会

愿景 VISION

通过提供透明的和有可比性的钢铁碳排数据，鼓励钢铁行业脱碳，支持绿色钢铁采购，以加速重工业的减碳进程。

Accelerate automotive industry decarbonization by providing sufficient transparency and comparability of climate data to inform green steel purchasing decisions.

演讲重点 SPEECH SPOTLIGHT

钢铁与汽车行业联动减排的战略意义

The synergy between the steel and automotive industries in reducing emissions.

中文版《钢铁产品碳足迹核算及报告指南》亮点内容以及公众咨询

Spotlight and public consultation of the Steel Emissions Reporting Guidance

推动钢铁-汽车产业链联动减排
《钢铁产品碳足迹核算及报告指南》

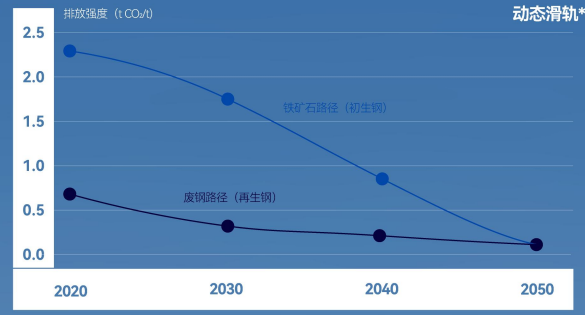
Promoting Steel-Automotive Synergy for Emissions Reduction
Product-level Steel GHG Emissions Reporting Guidance

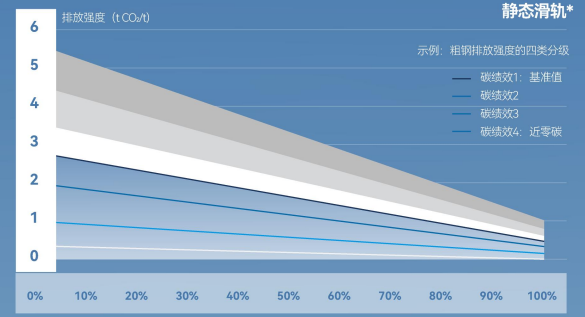
RMI

中汽中心 | 碳经济
中汽碳（北京）数字技术中心有限公司

本项目资料来源RMI

滑轨和减排技术标签
Sliding Scale And Abatement Technology Label





- 滑轨的目的在于平衡两种减碳措施：增加废钢的使用和部署初生钢低碳技术
- 动态和静态滑轨是达到相同目标的两种方法
- **动态滑轨**基于1.5度目标**碳预算**（即IEA NZE）**每年更新**
- **静态滑轨旨在通过**不同的等级区分低碳排放钢
- 使用滑轨将产品排放与减排目标进行对比

减排技术标签

- 采购方可以深入了解滑轨方案中碳排放减少的方式
- 使采购方具备应对供应链中风险的能力（例如，对暴露于上游游离甲烷进行碳捕捉和储存）
- 产品可以有**多个标签**

演讲嘉宾 SPEAKER

李婷
落基山研究所常务董事兼北京代表处首席代表

Dr. Ting Li,
Managing Director & Chief Representative of
Beijing Office, RMI

RMI

中汽中心 | 碳经济

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2023.06.20

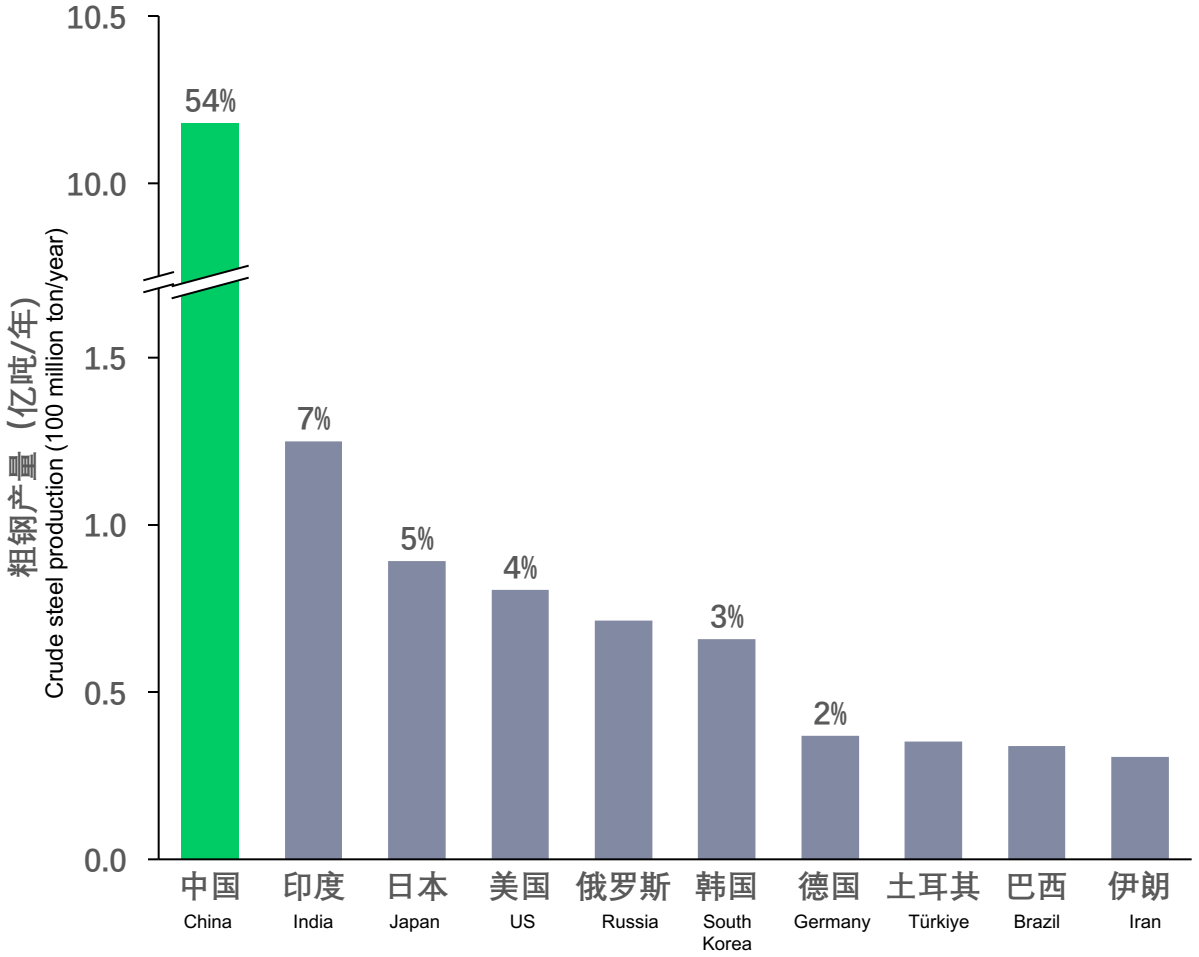

“ 钢铁行业脱碳对汽车行业实现净零排放至关重要。”
“The decarbonization of the steel industry plays a pivotal role in achieving a net-zero future for the automotive industry.”

中国钢铁行业降碳是实现全球气候目标的关键

The decarbonization of China‘s steel sector is vital for meeting the global climate targets.

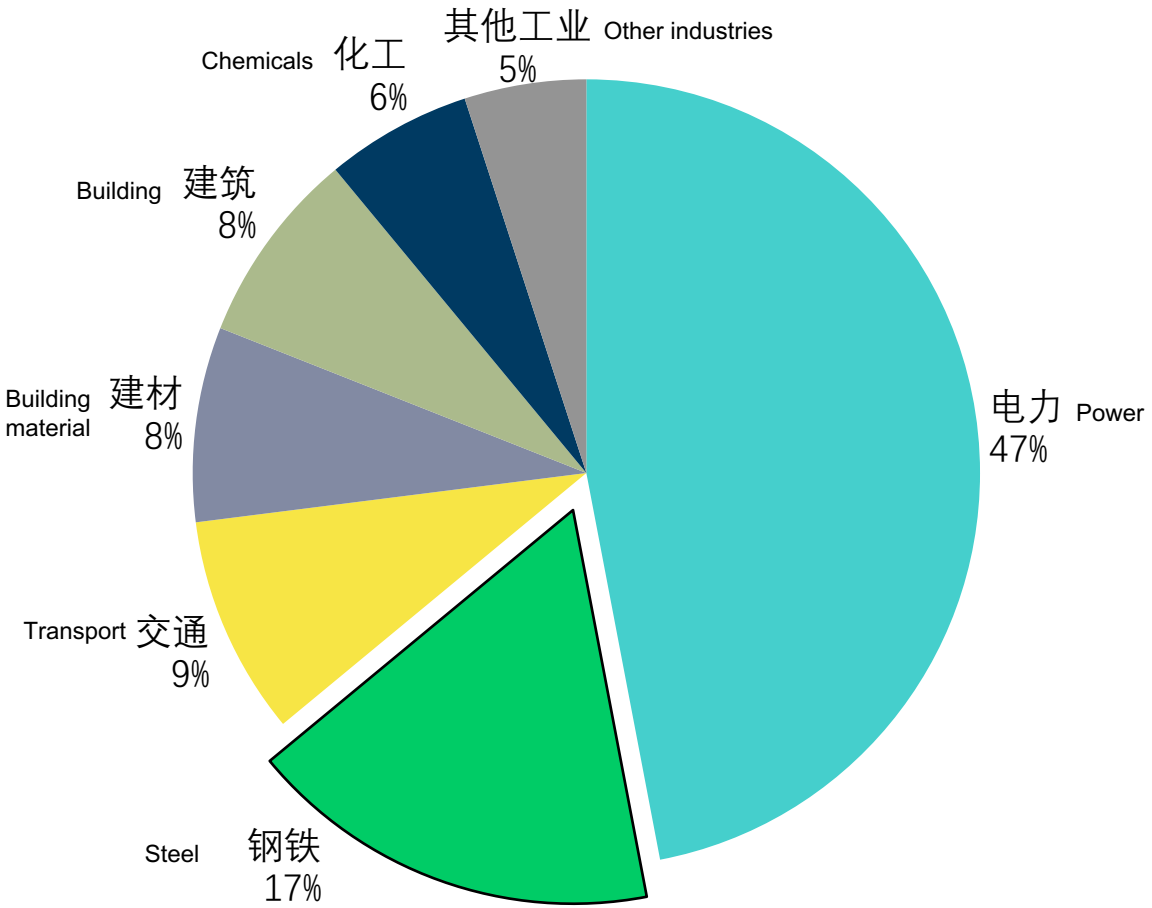
前十大钢铁生产国的粗钢产量和世界占比（2022）

Crude steel production share of the world’s top 10 steel-producing countries (2022)



中国各行业碳排放（2019）

Carbon emissions by sector in China (2019)



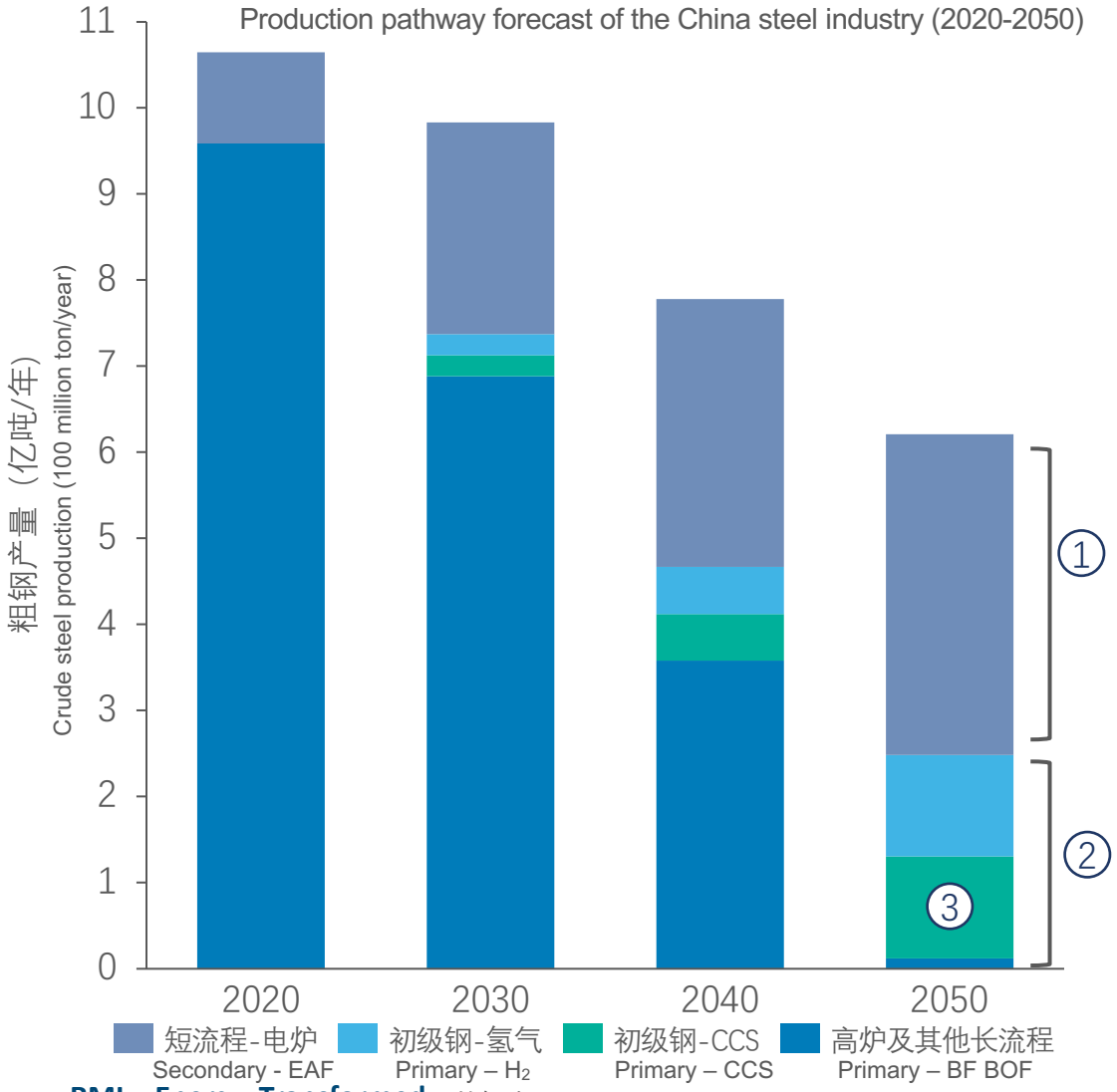
数据来源：世界钢铁协会，RMI

规模化废钢利用与推进初级钢低碳生产路径是钢铁行业转型的关键手段

Key means of transforming the steel industry is to scale up scrap utilization and promote low-carbon emissions primary steel.

中国钢铁行业生产路径的变化趋势（2020-2050）

Production pathway forecast of the China steel industry (2020-2050)



数据来源：RMI

① 废钢 Scrap

- 废钢资源量不断增加，预计从2020年的2.3亿吨增加到2050年的5亿吨，且废钢回收体系逐步完善；Scrap resource increases, reaching 500 million tons in 2050.
- 基于废钢的短流程电炉钢将在未来持续增加，在2050年达到3.7亿吨/年，占粗钢产量的60%。Scrap-based EAF keeps developing, reaching 370 million tons/year in 2050.

② 初级钢 Primary Steel

- 长期来看，废钢资源量有限，且部分高等级钢材较难从消费后废钢制得；Scrap resource limitations. Certain advanced steel products are difficult to make from post-consumer scrap.
- 未来短流程无法满足全部的钢铁需求，钢铁行业需要初级钢的降碳工艺。Secondary steel can't meet all the demand. The steel industry needs the low-carbon technologies of primary steel.

③ 氢冶金 Hydrogen-based

- 氢冶金技术将在中远期占据较大份额，预计2050年占粗钢产量的20%；Hydrogen-based steelmaking is projected to account for 20% of crude steel production by 2050.
- 氢冶金的技术积累和资金规模要求较大，所以应尽早布局氢冶金项目，抓住市场先机。Hydrogen-based steelmaking projects should be deployed early to seize market opportunity first.

政策指导与企业行动共同发力开启钢铁低碳转型

Political leadership and corporate action working together to kick-start the low-carbon transformation of the steel industry.

双碳政策 Milestone Policies （1+N）

1 总体政策 Overarching policies

- *“中共中央国务院关于完整准确全面贯彻新发展理念做好碳达峰碳中和工作的意见”*
- *“2030年前碳达峰行动方案”*

钢铁行业重点 Steel sector focus

- **产能控制** Capacity control
- **废钢利用** More scrap-based
- **提高集中度** Increase concentration
- **氢冶金** Hydrogen solution

N 行业政策和实施政策 Industry and operation-level policies

- *“工业领域碳达峰实施方案”*
- *“工业能效提升行动计划”*
- *“‘十四五’工业绿色发展规划”等*

2025年目标 Targets by 2025

- **13.5%** 规模以上工业**单位增加值能耗**下降 decrease in energy consumption per unit of added value for industry
- **15%** **电炉钢**产量占粗钢总产量比例 EAF ratio target for steel
- **2%** 吨钢综合**能耗降低** decrease in energy consumption per ton steel
- **300 Mt** 钢铁工业利用**废钢资源量**至少 or more use of scrap resources for steel

钢铁企业碳行动 Actions of Leading Companies

BAOWU

- 2023年**碳达峰**，2050年**碳中和**
- 相比2020年， 2035年降低30%碳强度
- 两座100万吨/年**氢基竖炉直接还原示范工程**（广东湛江）
- 2023 carbon peaking, 2050 carbon neutrality
- 30% lower carbon intensity by 2035 from 2020

河钢集团 HBIS GROUP

- 2022年**碳达峰**，2050年**碳中和**
- 相比达峰年，2025年降低10%碳排放，2030年降低30%碳排放
- 120万吨规模的**氢冶金示范工程**（河北张家口）
- 2022 peaking, 2050 carbon neutrality
- 10% less carbon emissions by 2025, 30% less by 2030 from peak

鞍钢集团 ANSTEEL

- 2025年前**碳达峰**，首批**碳中和**
- 相比达峰年，2035年降低30%碳排放
- 万吨级**流化床氢气炼铁**工程示范（辽宁鲅鱼圈）
- Carbon peaking by 2025, one of earliest carbon neutrality
- 30% less carbon emissions by 2035 from peak

建龙集团 JIANLONG GROUP

- 2025年前**碳达峰**，2060年**碳中和**
- 相比达峰年，2033年降低20%碳排放
- 相比2020年，2033年降低25%碳强度
- 30万吨**氢基熔融还原**（内蒙古乌海）
- Carbon peaking by 2025, carbon neutrality by 2060
- 20% less carbon emissions by 2033 from peak
- 25% lower carbon intensity by 2033 from 2020

钢铁与汽车行业联动减排具有减排与战略的双重优势

Collaboration between the steel and automotive industries to reduce emissions has dual benefits for decarbonization and business strategy.

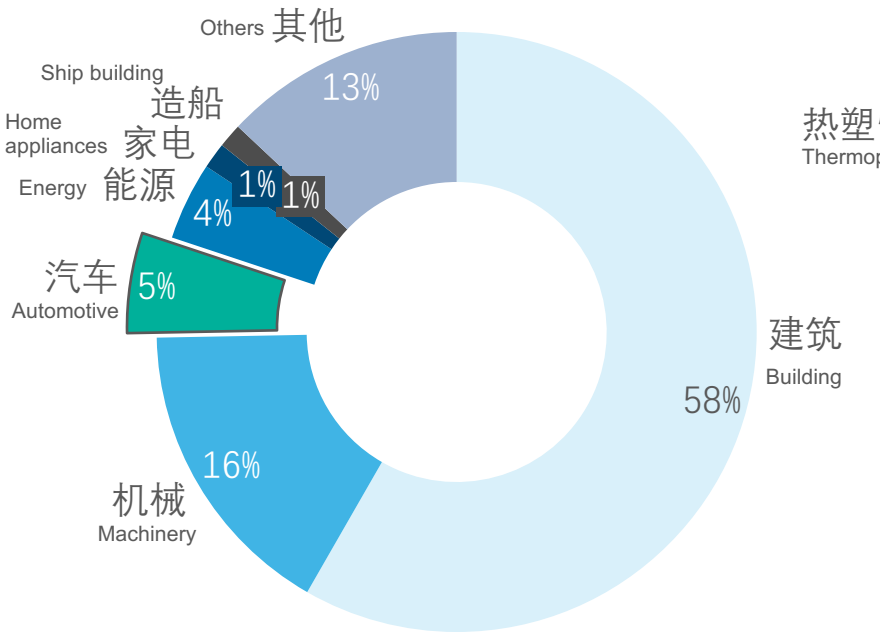
- **汽车：**通过采购低排放钢铁，能促进本行业向全生命周期零排放转型，也能培育低碳排放钢材需求、推动钢铁行业减排

  Automotive: achieving lifecycle zero emissions and nurture low-carbon emissions steel market through procurement actions

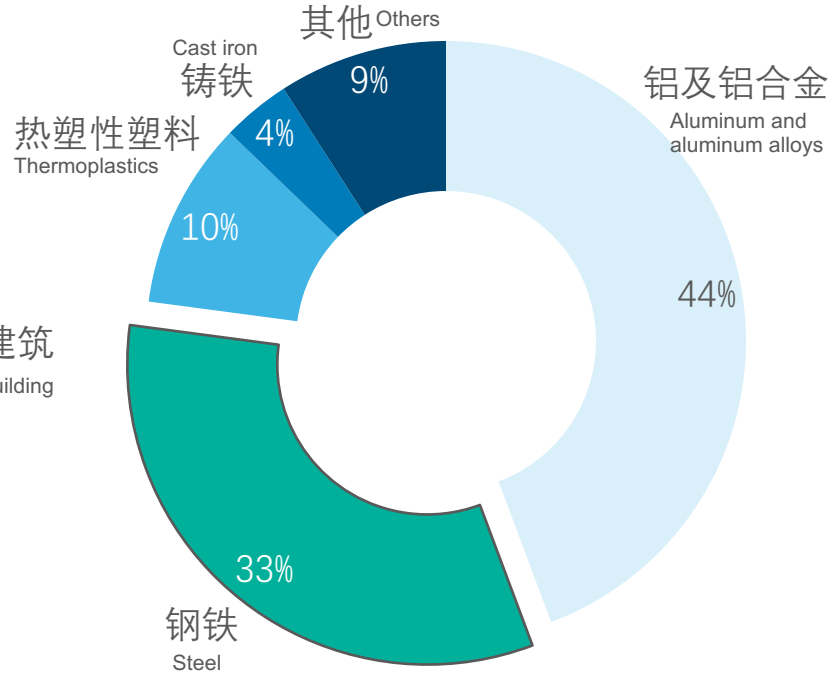
- **钢铁：**零碳转型成本高，通过向汽车等高附加值行业输出产品，能分摊低碳转型成本、获得低碳产品早期市场支持

  Steel: with high transition cost, could share green premium and gain market support for low-carbon products

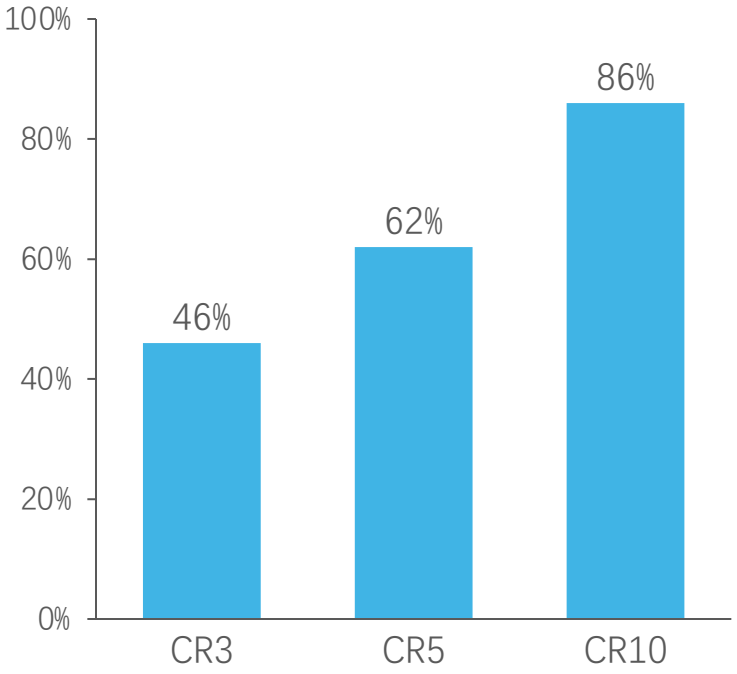
中国主要用钢行业钢材消费占比 (%, 2020)
Steel consumption share of China's major demand (%, 2020)



整车材料生产阶段碳排放 (%)
Carbon emissions from vehicle material production (%)



中国品牌汽车市场集中度 (%, 2021)
Market concentration of branded automotives in China (%, 2021)



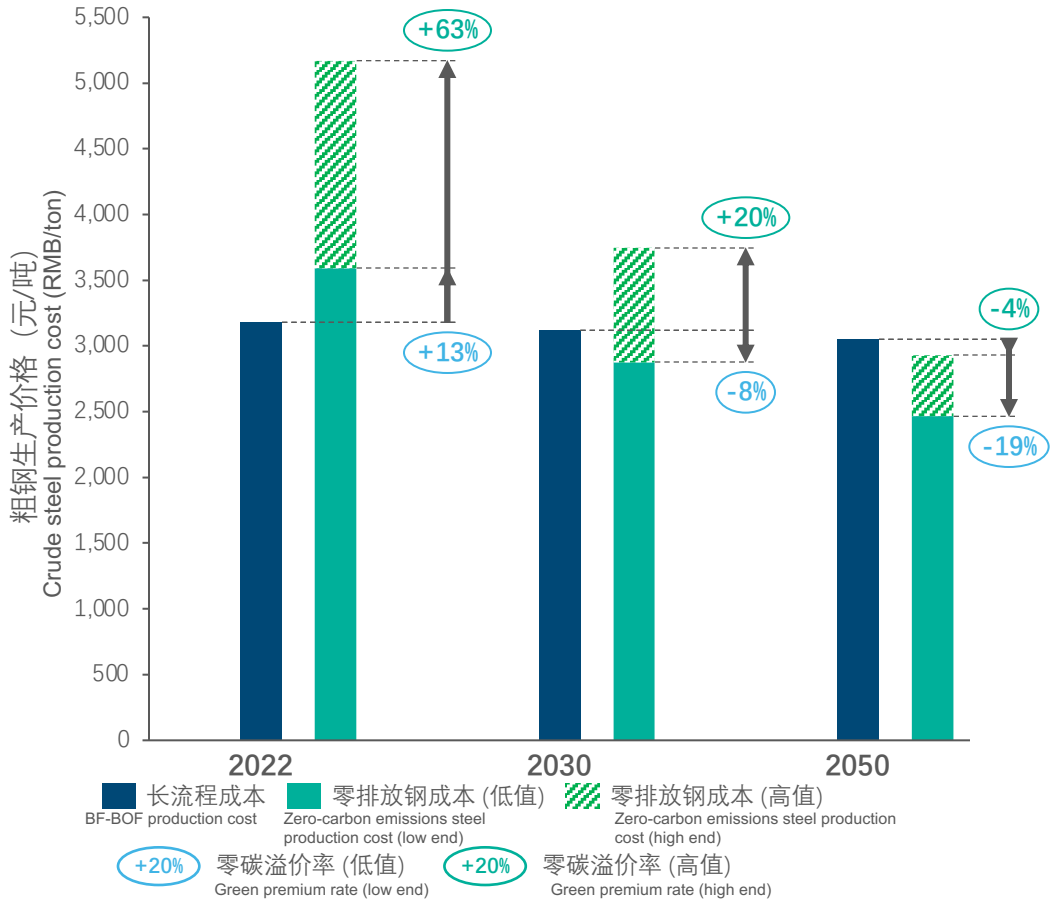
数据来源：中汽中心，中国汽车工业协会，RMI

近期绿钢溢价传递到汽车产品端能有效分摊减排成本，2030年后使用绿钢的经济效益逐渐明显

A shared premium along the steel-to-automotive value chain can effectively spread the cost of decarbonization, while also providing potential savings from using green steel after 2030.

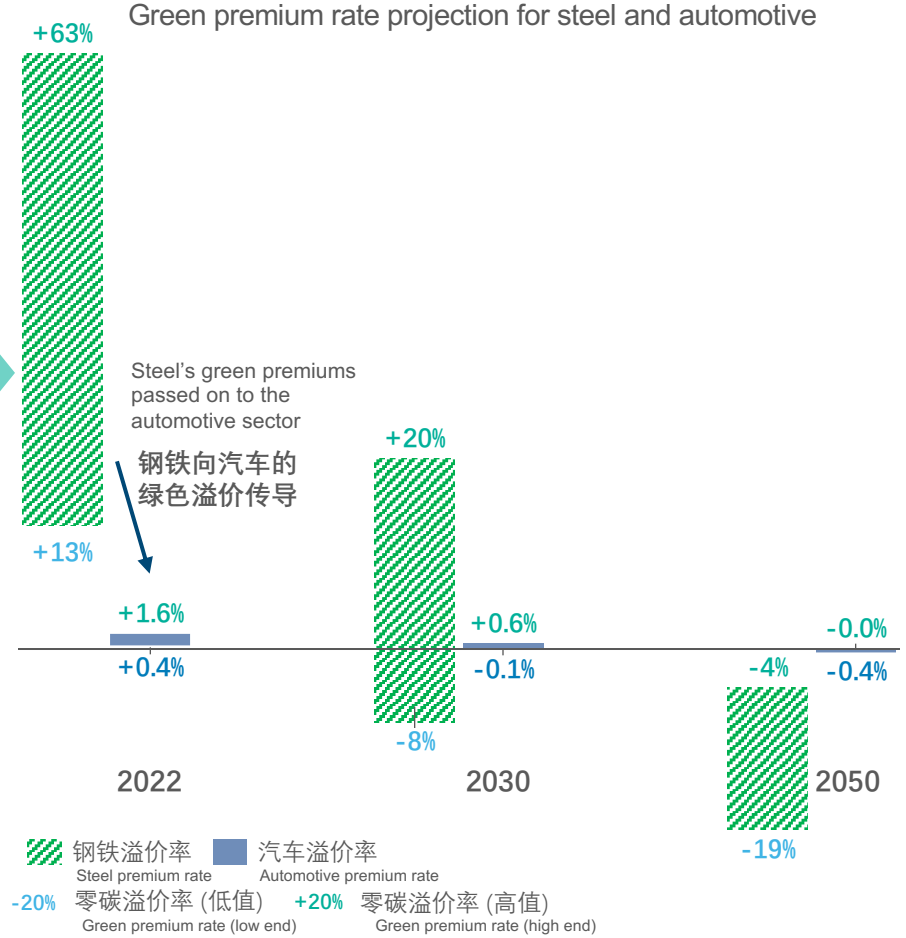
零碳排放钢铁生产成本预测

Zero-carbon emissions steel production cost projection



钢铁和汽车的绿色溢价率预测

Green premium rate projection for steel and automotive



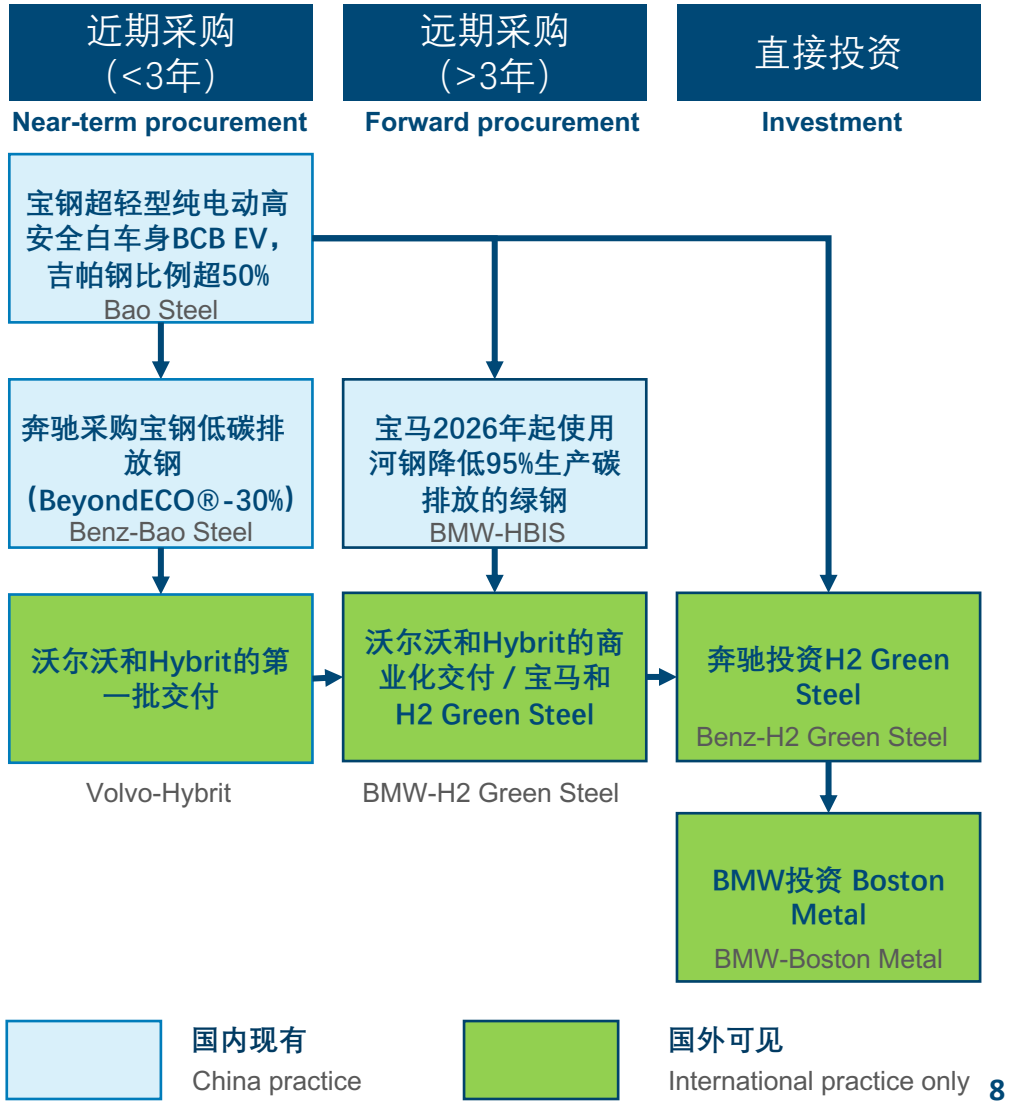
注：溢价计算的钢铁部分假设零碳生产路线为绿氢直接还原铁+绿电电炉，汽车部分假设车辆总价值为15万人民币。

Note: The steel part of the premium assumes a zero-carbon production route of green hydrogen DRI + green power EAF, and the car part assumes a total vehicle value of RMB 150,000.

随着减碳压力增加、绿钢技术成熟，汽车企业将深度参与和影响钢铁减排

As the need for carbon reduction increases and green steel technology matures, automotive companies will play a significant role in driving the steel industry's transition to net-zero emissions.

产品类型 Product type	产品描述 Description	对钢铁行业的降碳潜力 Carbon reduction potential	技术成熟度 Technology maturity
高强度轻质钢材 Lightweight steel	降低燃料周期碳排放，如AHSS	较低 low → 较高 high	较高 high → 较低 low
低碳排放再生钢材/初级钢材 Low-carbon emissions steel	可大幅降低碳排放，且技术成熟，如电炉再生钢		
零碳排放初级钢材 Zero-carbon emissions primary steel	碳排放近乎为零，技术成熟度中等，如清洁氢冶金		
前沿初级钢材 Zero-carbon emissions primary steel (frontier technology)	技术成熟度较低，如电解铁矿石		



钢铁-汽车产业链协同降碳的四大基础行动和若干进阶行动

Four fundamental actions and several advanced actions are identified to reduce carbon emissions in the steel and automotive industries.

四大基础行动 Four fundamental actions

钢铁企业 Steel companies
- **跨行业共认产品碳核算方法；**
- **钢铁碳排放数据共享和透明化。**

Carbon accounting methodology and data

汽车企业 Auto companies
- **跨行业共认产品碳核算方法；** Carbon footprint reports
- 要求原材料碳足迹报告，低碳指标纳入采购要求。

政府机构 Government
- 企业绿色采购规范中纳入对原材料的考虑；
- 企业绿色采购低碳材料的激励措施。Green procurement

投资者 Investors
- 投资者要求企业披露碳目标（含范围三）
- 投资者要求企业披露供应链减排措施 Carbon disclosure

若干进阶行动 Advanced actions

钢铁企业 Steel companies
- 低碳产品标识、技术标签

上游企业 Raw materials
- 提供铁矿石、焦炭等排放数据

汽车企业 Auto companies
- 承诺产业链减碳
- 制定低碳排放钢采购目标

行业机构 Industry associations
- 制定统一的产品碳排放标准
- 定义低碳排放钢

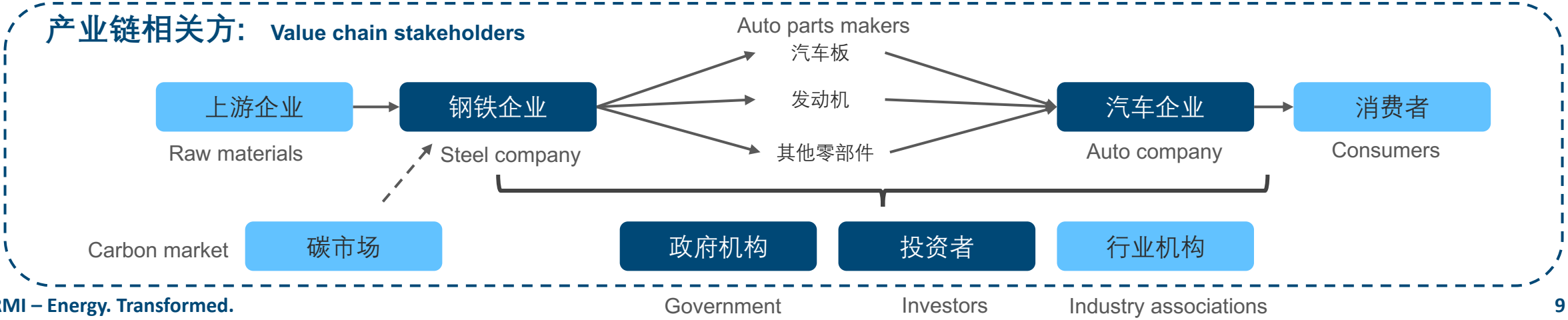
政府机构 Government
- 绿色产品中明确原材料碳排放

碳市场 Carbon market
- 适时将钢铁企业纳入碳市场

投资者 Investors
- 为低碳项目提供金融支持

消费者 Consumers
- 培养对低碳排放钢汽车的消费意愿

产业链相关方: Value chain stakeholders



RMI与中汽中心联合编写中文版《钢铁产品碳足迹核算及报告指南》

RMI and CATARC jointly developed the Chinese version of the “Product-level Steel GHG Emissions Reporting Guidance”.

RMI联合中汽中心

- 共同编写中文版《钢铁产品碳足迹核算及报告指南》
- 深度联合汽车企业与钢铁企业，组织钢铁-汽车合作生态圈
- 开展钢铁-汽车产业链联合脱碳研讨会与专家咨询
- 成立钢铁深度脱碳工作组
- 广泛建立国内外组织机构合作关系

聚合钢铁-汽车产业链，破解产业链降碳难点

- “钢铁产品碳足迹核算方法学研讨会”在北京顺利召开
- 40名专家共同讨论需求侧碳核算方法学
- 首度联合钢铁上下游企业探讨绿色采购的机遇与挑战

RMI and CATARC

- Co-produce "Steel Emissions Reporting Guidance”
- Connect steel-automotive value chain
- Carry out seminars and expert consultations
- Set up a working group
- Establish cooperation with domestic and international organizations

May 26 Workshop on Carbon Accounting Method

- The Carbon Footprint Methodology Workshop was successfully held in Beijing on May 26th
- 40 experts discussed the demand-side carbon accounting methodology and the green procurement with value chain companies

《指南》目标

The Goals of the Guidance

1

在现有工作的基础上建立统一的产品碳足迹计算方法。

- 与责任钢铁、世界钢铁协会、ISO标准等在方法上寻求互认

Build upon and **align with the existing work** from the Reponsible Steel, World Steel, ISO standards and other standards, to establish **a harmonized methodology** which reduce the GHG footprint reporting burden.

2

从需求侧出发，通过采购决策激励钢铁行业的脱碳转型。

- 为企业和政府采购方提供足够的碳足迹信息，帮助企业和政府能够更好地理解钢铁产品的隐含碳，从而推动绿色采购

From the demand-side perspective, ensuring sufficient and transparent information is provided to allow both private and public buyers to **support decarbonisation of the sector** through procurement decisions. Help companies and government better understand the product-level scope-3 emissions tied to steel sector. **Incentivize steel sector decarbonization** besides emission calculation and reporting.

《指南》的编制基于全球钢铁行业减碳的3项重点举措

The Emissions Reporting Guidance were developed based on three key actions needed to decarbonize steelmaking.

建立低碳排放产品市场对落实三项重点举措推动钢铁行业减排具有重要作用。

《指南》的编制为建立该市场提供基本要素。

The Guidance was developed as the foundational element to **establish a market** which could help support the delivery of these three actions **to decarbonize the steel sector**

对钢铁行业减碳的贡献（%）

Contribution to global sector emissions reductions

1. 使用绿氢还原铁矿石（或碳捕集与封存）

Switch to **near-zero emissions steelmaking** technologies (e.g., green hydrogen, CCS, etc.)

75%

2. 尽最大可能利用废钢

Increase the **amount of recycled scrap** used in steelmaking

20%

3. 使用清洁能源炼钢

Use **renewable electricity** for the already electrified portions of steelmaking

5%

《指南》主要亮点

Key Principles of the Guidance

信息可比

Comparability

通过**可比较**的产品碳足迹信息为采购决策赋能

To enable **informed purchasing decisions,** the guidance is designed to create comparability between products on an emissions basis.

排放透明

Transparency

为采购者对绿色产品议价提供**透明的产品碳排放及其他抵扣信息**

To develop the **confidence** needed for **preferential pricing & treatment** of green products, transparency is needed on emissions and abatement.

跨行业减排

Industry-wide Impacts

确保钢铁企业的减排行动**直接减少全球、全行业碳排放**

The goal for buyers and producers is **reduce global emissions** meaning that reporting should ensure the desired impacts are delivered inclusive of any that occur outside the steel sector.

数据质量

Data quality

碳足迹**数据的质量**是一切采购决策的基础

As the **fundamental basis** for all decisions flowing from the information reported under the guidance it is critical to also disclose the **quality of the data** sources used to calculate the emissions.

《指南》亮点1: 固定的排放边界确保不同业务范围和产品结构的钢铁企业之间的可比性

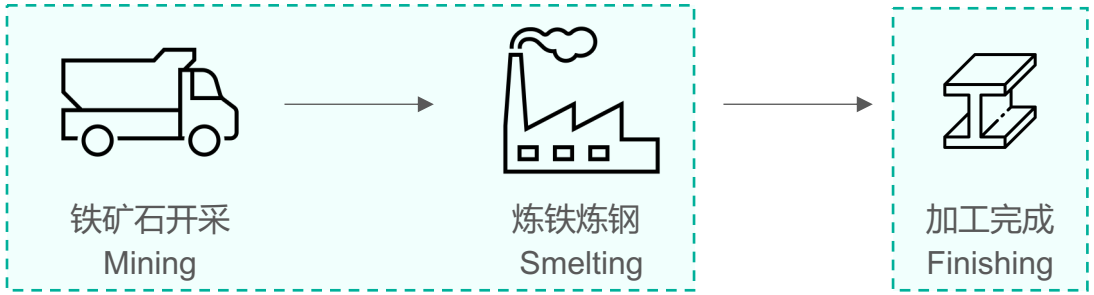
Principle 1: Comparability is created by consistent boundaries for GHG emissions reporting

垂直整合的钢企的组织边界

Integrated Producer Corporate Boundary

非整合的钢企的组织边界

Non-integrated Producer Corporate Boundary



- 钢铁企业的组织边界根据其业务范围和产品结构的差异通常相差较大
- 只有通过**固定边界**的方法，设置固定的系统边界和一致的比较边界，才能实现产品的可比性

- The organizational boundaries of steel companies often vary significantly based on differences in their business scope and product structure.
- Only through the use **of fixed boundaries**, setting consistent system boundaries and comparable boundaries, can product comparability be achieved.

《指南》亮点2: 使用多个碳绩效指标提高企业碳排放的透明度

Principle 2: Transparency is established using additional metrics to provide further understanding

多个绩效指标能够帮助采购方深入**理解绿色产品的减排途径**，从而全面评估相应的绿色溢价并判断是否该优先购买该产品。

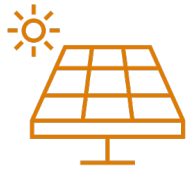
Additional metrics assist buyers to **understand the emissions footprint** of the product and evaluate if it should be preferred or priced at a premium.

其他碳绩效指标

Additional metrics related to carbon reduction

废钢使用情况：
用于生产报告钢铁产品的**废钢使用比例**和**废钢来源**（消费前、消费后）

Recycled **scrap fraction** used in the steel product and the **source** (pre- or post-consumer)



减排路径：
用于实现减排目标的减排技术标签（如绿氢、可再生能源等）

Types of **abatement technology** (e.g., green hydrogen, renewable energy, etc.) used to achieve emissions reductions

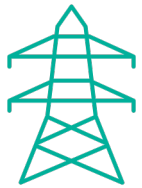
《指南》亮点3: 披露共生产品的抵扣信息避免跨行业碳泄漏

Principle 3: Impact is ensured by disclosing on emissions transferred to other sectors

钢铁企业生产过程中的共生产品通常在其他行业广泛使用：
Steelmakers also provide products to other sectors

炉渣可用于代替混凝土制品中的水泥

Slag can be used to **replace cement** in concrete products



副产煤气可用于发电，输出给其他行业

Off-gas is used to **produce electricity** which can be exported to the grid

如果不同行业间，对于这些共生产品的碳足迹计算方法不一致，将导致跨行业碳泄漏。

… however, if the calculation on the emissions footprints for these products are inconsistent, it can lead to **carbon leakage**

通过在外售共生产品时披露抵扣信息，钢企可以**最小化碳泄漏**的风险，从而也帮助采购者确保其绿色采购在全行业的尺度上也实现了减排。

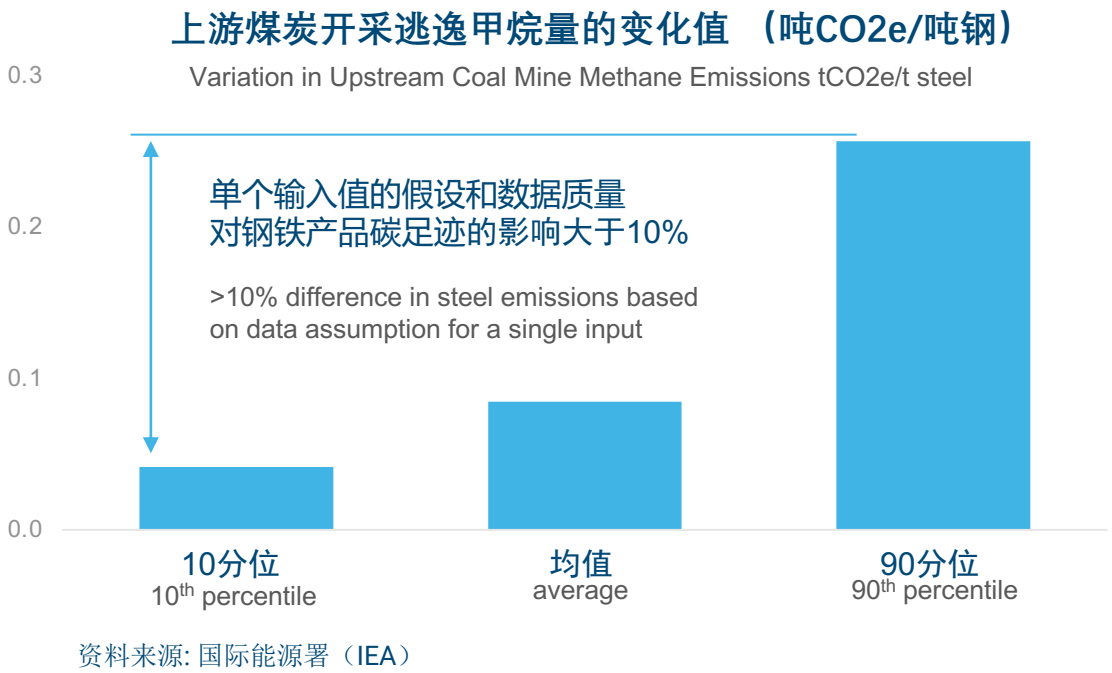
By providing emissions footprint disclosures to other sectors, steelmakers can **minimize** the **risk** of **carbon leakage,** helping to assure buyers that their purchase is having the desired global impact.

《指南》亮点4: 披露用于计算碳足迹的一手数据比例，了解数据质量

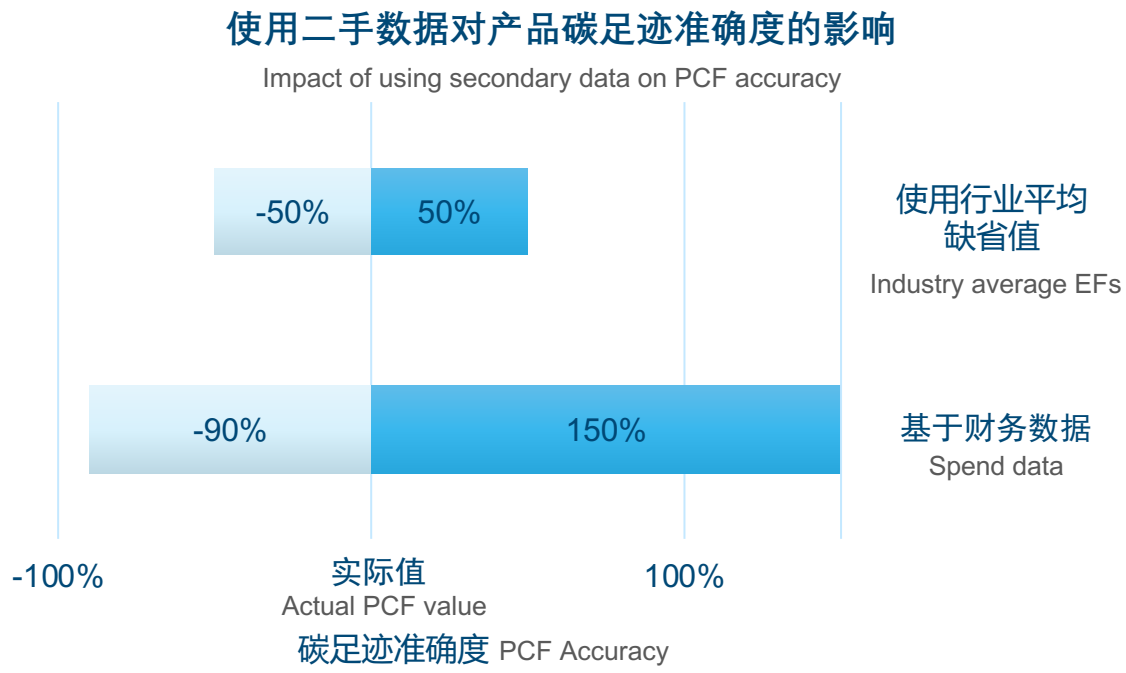
Principle 4: Disclosing the share of first-hand data sources used to calculate emissions can help better understand the data quality

披露碳足迹计算过程中使用的**数据质量**，能够帮助采购方和其他利益相关者在采购决策中**更好地利用碳足迹信息**。

Reporting the data quality used in the emissions calculations enables buyers and other stakeholders to better understand how the footprint can be used in decision-making.



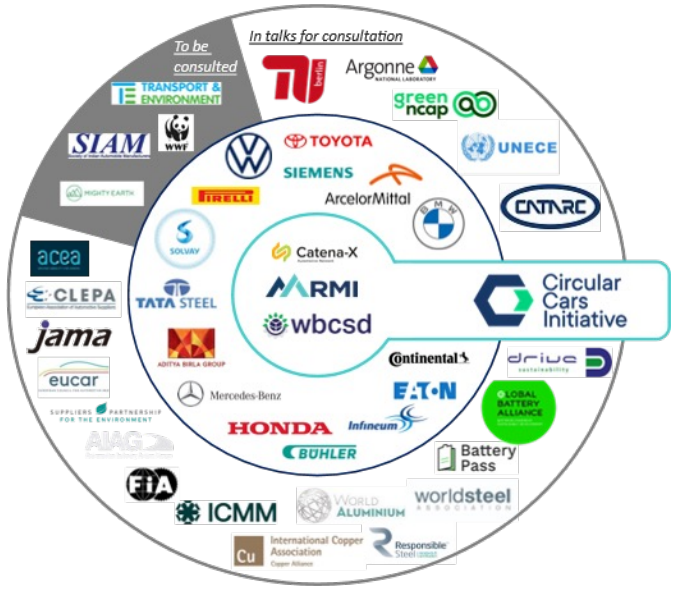
资料来源: 国际能源署（IEA）



《指南》国际层面主要利益相关方

Steel Emission Reporting Guidance Key Stakeholders

覆盖全球的工作组讨论
International Working Group



英文版公众咨询
Public consultation on the English Version

钢铁产业链上的22家较具有代表性的组织提供了意见

22 organizations across the steel value chain provided comments.

国内外试点
Pilot testing in China and abroad

- 在国内外与合作伙伴测试行业指南的**可行性**

  Testing the feasibility of sectoral guidance in China and abroad

- 识别获取所需数据的障碍和挑战

  Identifying barriers and challenges to accessing necessary data

- 探索如何应用该指南更好地**推动低碳采购决策**

  Exploring the best practices of using the guidance to incentivize green procurement decision-making

本项目资料来源 **RMI**

公众咨询
Public consultation in China

6月21日 – 7月28日
JUNE 21 – JULY 28

向中国的钢铁行业利益相关者收集意见可以确保指南在激励钢铁行业减碳方面的有效性

Gathering **feedbacks** from a wide range of steel **industry stakeholders** in China is critical to ensure the guidance is **effective** in incentivizing the steel industry decarbonization

1. **《钢铁产品碳足迹核算及报告指南》中文版**
   PRODUCT-LEVEL STEEL GHG EMISSIONS REPORTING GUIDANCE (Chinese)
2. **国内外钢铁行业工作组**
   STEEL WORKING GROUP
3. **公众咨询**
   PUBLIC CONSULTATION

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指南

问卷

我们期待您的意见！
We look forward to your feedback!

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Thank you!
谢谢！

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