

Progress of 2021-2024: NDC-Transport Initiative for Asia (NDC-TIA) Project

ABOUT NDC TRANSPORT INITIATIVE FOR ASIA

Globally, climate change is progressing and increasingly impacting the ecosystems and the livelihood of people. The transport sector has become a major source of air pollution around the world, especially in Asian countries. To reach the goals of the Paris Agreement, ambitious measures are needed to mitigate emissions.

The "Nationally Determined Contribution - Transport Initiative for Asia (NDC-TIA)" project, funded by the International Climate Initiative (ICI), is a joint project of seven organisations and engage in China, India, and Vietnam. It aims at promoting a comprehensive approach on decarbonizing transport. The key project goal for the China component is to support the Chinese partners on national and sub-national level on the essential technical research and capacity building needed for elaboration of medium- and long-term emission reduction strategies and major emission reduction policies for GHGs and air pollutants in the transport sector as well as providing capacity building, policy exchange and personnel training to

Chinese policy makers and partners. With the strategic guidance from the **Ministry of Ecology and Environment of the People's Republic of China (MEE)**, the China component was jointly implemented by the **World Resources Institute (WRI)**, the **International Council on Clean Transportation (ICCT)**, **Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH**, and with the support from **Agora Verkehrswende** in Germany. The China component is in close collaboration with the **Department of Ecology and Environment of Guangdong Province**, and Chinese domestic research agencies including the **Vehicle Emission Control Center (VECC)** and the **National Center for Climate Change Strategy and International Cooperation (NCSC)** of MEE.

PROJECT OUTCOME

Since the start of the project, the China component of the NDC-TIA project has conducted in-depth collaboration with our local partners and has achieved fruitful results aligned with the development of China's mid- and long-term GHG and air pollutant emission reduction strategies and major emission reduction policies, and the demands of the MEE with regards to the project implementation and orientation of technical research and capacity building on both national and provincial level.

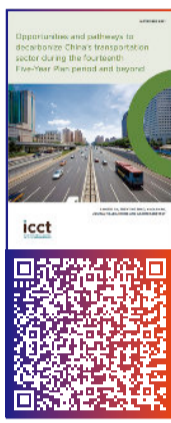
Research

Support was provided to Chinese partners on the technical research needed for future elaboration of major policies on air pollutants reduction and GHG emission mitigation in the transport sector. Key deliverables as listed below:

Opportunities and Pathway to Decarbonize China's Transportation Sector during the Fourteenth Five-Year Plan Period and Beyond

Implementing organization: **ICCT**

The study quantifies the GHG emission reduction potentials of a suite of clean transportation strategies to meet China's near- and long-term carbon peaking and neutrality targets for the transportation sector. The multi-strategy analysis encompasses vehicle efficiency, emissions regulations, electrification, modal shift policies, fuel standards and more, so that each agency will benefit from this analysis to determine targets within their authority areas.



[Download the PDF file of this paper >>>](#)

Trends of New Passenger Cars in China: Air Pollutant and CO2 Emissions and Technologies, 2012-2021

Implementing organization: **ICCT**

This report supports future policies in China by analyzing vehicle air pollutant emissions, CO2 emissions, and key technologies driving reductions in emissions in passenger cars from 2012 to 2021. The authors collaborated with the Vehicle Emissions Control Center (VECC) in collecting, compiling, cleaning, and validating some of the data used, and the report also assesses how previous policies impacted emissions trends.

The 2022-2023 update, as a separate report, will be published by the end of the initiative.



[Download the PDF file of this paper >>>](#)

The Evolution of Heavy-duty Vehicles in China: A Retrospective Evaluation of CO2 and Pollutant Emissions from 2012 to 2021

Implementing organization: **ICCT**

The study evaluates historical CO2 emissions trends for commercial vehicles in China at fleet, market segment and OEM levels. It shows that historical CO2 emission reduction has been limited and a future technology-forcing regulation will be vital to the decarbonization of commercial vehicles.

The 2022-2023 update, as a separate report, will be published by the end of the initiative.



[Download the PDF file of this paper >>>](#)

Decarbonizing China's Road Transport Sector: Strategies Toward Carbon Neutrality

Implementing organization: **WRI**

This study examines how the transport sector might be decarbonized to inform the following:

- The road transport sector's target setting to help achieve China's carbon peaking and neutrality goals
- Identification of cost-effective measures that deliver on the sectoral emission reduction targets, facilitate low-carbon investments, and drive technological innovation
- Identification of decarbonization measures with air pollution reduction co-benefits



[Download the PDF file of this paper >>>](#)

The Evolution of Commercial Vehicles in China: A Retrospective Evaluation of Fuel Consumption Standards and Recommendations for the Future

Implementing organization: **ICCT**

China's fuel consumption standards for heavy-duty vehicles (HDVs) have progressed since Stage 1 was first introduced in 2012, and Stage 4 standards are currently in development. However, to date there has been no independent retrospective assessment of the impact of Stage 1 and Stage 2 standards, including whether they spurred any reduction in the fuel consumption of HDVs. This study fills that knowledge gap by analyzing data from 10.5 million trucks and buses in the period 2012 to 2017.



[Download this paper or watch the video >>>](#)

Measures for reducing greenhouse gas emissions from motor air conditioning in China

Implementing organization: **ICCT**

This report summarizes the measures to reduce GHG emissions from MAC, including the means to improve the MAC energy efficiency. It also analyzes the development status and challenges of advanced MAC technologies and refrigerants in China through a literature review and market research. Based on international experience and best practices, focusing on the regulatory systems and policies for reducing GHG emissions from MAC in the United States and Europe, the study summarizes the existing measures and policy gaps in regulating GHG emissions from MAC in China and provides policy recommendations for future regulation of GHG emissions from MAC in China.



[Download this paper or watch the video >>>](#)

Evaluation of real-world fuel consumption of light-duty vehicles in China: A 2021 update

Implementing organization: **ICCT**

The gap between real-world fuel consumption and emissions of carbon dioxide from light-duty vehicles (LDV), and their laboratory values, is increasingly apparent around the world, including in China. The paper makes the following policy recommendations: 1) create stringent test procedures to reflect real-world driving patterns; 2) add real-world fuel consumption/GHG test requirement; 3) monitor real-world fuel consumption; 4) coordinate co-management of fuel consumption, greenhouse gases (GHGs) and atmospheric pollutants; 5) provide consumer information that is close to real-world experience.



[Download the PDF file of this paper >>>](#)

Zero-Emission Logistic Vehicles Promotion Challenges and Experiences: Beijing Case Study

Implementing organization: **WRI**

The study uses Beijing—a city that leads China's urban logistic vehicle electrification—as an example, and surveyed logistic service providers, to identify challenges for the purchase, operation, and maintenance of electric logistic vehicles and provide recommendations for promoting zero-emission logistic vehicles.



[Download the PDF file of this paper >>>](#)

Toward Credible Transport Carbon Dioxide Emissions Accounting in China

Implementing organization: **WRI**

This paper examines existing accounting methods and statistical data used by China's national and subnational governments. By comparing transport emissions estimates using different accounting methods, this study reveals that current top-down and bottom-up accounting methods are uncertain and do not correctly align responsibility for producing emissions with responsibility to mitigate them, especially when used to quantify subnational transport emissions.

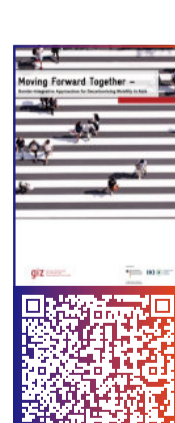


[Download the PDF file of this paper >>>](#)

Moving Forward Together – Gender-Integrative Approaches for Decarbonising Mobility in Asia

Implementing organization: **GIZ**

The paper examines the key drivers behind transport preferences and behaviour based on gender and cultural influences. A special focus is placed on passenger transport in urban areas in China, Vietnam, and India, as these three countries face similar challenges in the process of greening their transport systems.



[Download the PDF file of this paper >>>](#)



The Path to Zero: A Vision for Decarbonised Transport in Asia

Implementing organization: GIZ

This study sets out a vision for transport in Asia in 2050: one where all citizens' transport needs are met through zero-carbon options, and integrated in a seamless, efficient and convenient way. It also points out opportunities and challenges for Asia to achieve net-zero transport emissions by 2050, and propose relevant development suggestions.



[Download the PDF file of this paper >>>](#)

Towards Zero Emissions: China's Climate Pathway and its Implications for the Transport Sector

Implementing organization: GIZ

This paper provides an overview of China's climate protection pathway with regards to the role of the transport sector in achieving carbon dioxide emissions peaking by 2030 and carbon neutrality by 2060. The paper further aims at fostering debates on the policies, technologies, measures, and partnerships needed to achieve those targets. The paper does not claim to be exhaustive and only lists a few selected approaches and measures that can contribute to achieving the set climate goals.



[Download the PDF file of this paper >>>](#)

National Comprehensive Three-dimensional Transportation Network Planning Outline

Implementing organization: GIZ

This planning outline is developed to accelerate the construction of a strong transportation country, build a modern and high-quality national comprehensive three-dimensional transportation network, support the construction of a modern economic system and a modern socialist power. The planning period is from 2021 to 2035, with a vision to the middle of this century.



[Download the PDF file of this paper >>>](#)

Visioning to Implementation: Transport Decarbonization Policies that Match National Climate Targets in China, India, and Vietnam

Implementing organization: WRI, GIZ

Through an extensive review of literature and policy documents, and stakeholder expert interviews in each of these countries, the report finds that climate ambitions in the transport sector are somewhat consistent with national pledges, strategies and goals, but that coordination across policy areas and levels of governance could be improved. It identifies opportunities and recommends strategies to accelerate transport decarbonization in the next round of NDCs.



[Download the PDF file of this paper >>>](#)

Pathways to Decarbonize the Road Transport Sector in Guangdong, China

Implementing organization: WRI

Based on the status quo analysis and the review of Guangdong transport related to the 14th Five-Year Plan, this study developed three scenarios for the province's four regions to stimulate the decarbonization potentials of different mitigation measures, including the promotion of zero-emission vehicles, a mode shift from high-emitting modes (such as trucks) to low-emitting modes (such as railways), improved vehicle fuel efficiency, avoided travel, and decarbonizing upstream power/hydrogen generation up to 2060. Based on the scenario analysis, policy implications were drawn.



[Download the PDF file of this paper >>>](#)

Toward Credible Transport Carbon Dioxide Emissions Accounting in China

Implementing organization: WRI

To help unify the transport emissions accounting methodologies for China's national and subnational governments and improve statistical data collection for credible transport emissions reporting, this study reviews the accounting methods and statistical data used globally and in China through a literature review and stakeholder interviews.



[Download the PDF file of this paper >>>](#)

Deciphering China's Provincial Transport Carbon Emissions: Status Quo and Growth Trends

Implementing organization: WRI

This study uses the top-down emissions accounting method to quantify direct transport CO2 emissions for 30 Chinese provinces during 2012 and 2019. The estimated provincial emissions, emissions intensity in terms of gross domestic product (GDP), emissions per capita, sources of emissions, and driving forces of emissions growth are used to inform the development of tailored local transport decarbonization plans and to provide recommendations to improve the certainty of subnational transport emissions estimations.



[Download the PDF file of this paper >>>](#)

Real-World Use Case for Zero-Emission Trucks: Market Review and Policy Suggestions for Guangdong Province

Implementing organization: ICCT

To understand the current opportunities and challenges for promoting ZETs in Guangdong province, this study reviews the local incentive policies and analyzes province- and city-level ZET sales and market penetration according to different technical perspectives. We then analyze the 5-year total cost of ownership (TCO) of dump trucks used to transport construction materials and waste, as this is the major use case for dump trucks in Guangdong. Lastly, we propose an incentive policy scheme to accelerate TCO parity for ZETs and promote ZET market development in Guangzhou and Foshan, two key cities in Guangdong province.



[Download the PDF file of this paper >>>](#)

Optimizing Container Ports' Transportation and Distribution Systems Toward a Low-Carbon Future: A Shenzhen Port Case Study

Implementing organization: WRI

To tackle the socio-environmental challenges associated with container ports' transportation and distribution systems, this study uses Shenzhen Port as an example. We analyzed the root causes for the heavy reliance on roadways for port transportation and explored the potential for optimizing the transport and distribution system through measures such as roadways to railways, roadways to waterways, and the adoption of zero-emission HDTs.



[Download the PDF file of this paper >>>](#)

Feasibility of zero emission freight zones: scenario analysis and risk assessment

Implementing organization: WRI

To further incentivize the adoption of zero-emission trucks (ZETs), Chinese cities would need more proactive policies like zero-emission freight zones (ZEFZs). Considering goods and freight transportation is central to a city's economy and social life, the design and implementation of ZEFZs must avoid disruption of the city's goods supply and the increase of logistic costs, and to ensure inclusive transition of small carriers and financial sustainability for city governments.



[Download the PDF file of this paper >>>](#)

EVENTS

A multi-dimensional communication and exchange platform and cooperation mechanism--including the National Advisory Council and Provincial Advisory Council--was established. Regular meetings and workshops with all the stakeholders and the advisory councils were organized to support the Chinese partners with capacity building and to facilitate policy dialogue in communication of project progress and achievements, as well as the conduction of personnel training. Key deliverables as listed below:

2021 NDC-TIA-China Kick-Off Meeting

On April 13th, 2021, representatives from the Ministry of Ecology and Environment of China, German Federal Ministry for Environment, Nature Conservation and Nuclear Safety, the Department of Ecology and Environment of Guangdong Province, as well as various international and domestic technical implementation agencies jointly kicked off the China component of the project "Nationally Determined Contributions - Transport Initiative for Asia (NDC-TIA)".



[See more of the event](#)

To better contribute international knowledge and best practice to the development of climate policies aiming to lower emissions in China's transport sector, NDC-TIA project organized various workshops as part of the "National Determined Contributions Transport Initiative for Asia 2021-2023 Event Series."

The event series include the following:

EVENT RECAP: 2021 NDC-TIA "Decarbonizing Transport" Workshop Series in China

- 1) Workshop on "Electric Mobility and Climate Goals in China," May 2021
- 2) "European Green Deal and the Fit for 55 Package from a Transport Perspective," October 20, Beijing
- 3) Workshop on "Climate Targets and Impacts in the Transport Sector in the European Union and China", October 29, Beijing
- 4) 2021 NDC-TIA Annual Workshop: "Planning and Major Policies for Peaking Carbon Dioxide Emissions from Transportation and Carbon Neutrality", November 23, Beijing
- 5) "Provincial Transport Related GHG Decarbonization Experience Exchanges", November 24, Beijing
- 6) NDC-TIA 1st China Advisory Group Meeting, 10 December 2021

EVENT RECAP: 2022 NDC-TIA Workshop Series in China

- 1) Guangdong Province Mid-term Workshop on the Research Project of "Guangdong Road Transport GHG Emission and Air Pollution Reduction Co-control Strategies", 1 April 2022
- 2) Workshop on "Decarbonizing Guangdong's road transport sector," May 2022
- 3) NDC-TIA 2nd China Advisory Group Meeting, 8 August 2021
- 4) Capacity Building Workshop on "Developing Road Transport Carbon Emission Models for Chinese Cities", 15 August 2022
- 5) Workshop on "Freight Mode Shift in Shenzhen Port's Container Collection and Distribution System", 8 December 2022
- 6) 2022 NDC-TIA Annual Workshop: "Policies, Technologies and Pathways for Carbon and Pollutant Co-Control in Transportation", 14 Dec 2022

EVENT RECAP: 2023 NDC-TIA Workshop Series in China

- 1) Joint workshop on "Decarbonizing the supply chain of the automotive industry", 21 February 2023
- 2) Workshop on "Opportunities for a Low-tech Transition of Guangdong Transport Sector", 11 April 2023
- 3) Workshop on "She ACTs - Accelerating Carbon-neutral Transportation with a Gender Perspective", 1 August 2023
- 4) Workshop on "Opportunities with Low-carbon Transport Transition on Subnational Levels", 2 August 2023
- 5) Workshop on "Co-control: The Potential for Shenzhen Port's Freight Modal Shift", 29 November 2023
- 6) NDC-TIA 3rd China Advisory Group Meeting, 19 December 2023

ABOUT NDC-TIA

The NDC Transport Initiative for Asia aims to facilitate a paradigm shift to zero-emission transport across Asia. The program will achieve this shift by supporting China, India, and Vietnam to develop comprehensive decarbonization strategies and solutions to implement them. Beyond the three countries, on the regional and global level, the program will maximize impact by reaching out to additional countries in Southeast Asia, sharing lessons learned, increasing discourse on decarbonizing transport and promoting efficient, multi-stakeholder approaches coordinated between government ministries, civil society, and the private sector. The details of the previous events and research products are published through the NDC Transport Initiative for Asia website, <https://www.ndctransportinitiativeforasia.org>.