

ANALYZING CARBON EMISSIONS DATA AT SCALE FOR A GREENER CHINA



In compliance with the China VI emission standard, CRAES worked with Cloudera to store, manage and analyze petabytes of heavy-duty vehicle emissions data to support policymaking on carbon reduction.

In the future, CRAES plans to analyze emissions data from new classes of machinery to further aid policy-making and create a more sustainable China.

- Solution(s)**
[Cloudera Data Platform](#)
- Data Architecture**
Data Fabric
- Industry**
Public Sector
- Country**
China
- Customer Website**
www.craes.cn

The Chinese Research Academy of Environmental Sciences (CRAES) is responsible for vehicle environmental management in the People’s Republic of China (China), including emission monitoring technology and policy support. Through departments like the Vehicle Emissions Control Center, CRAES develops, operates, and maintains national vehicle environmental management information platforms and provides technical support in formulating national policies, regulations and standards for the prevention and control of pollution from vehicles, ships, and non-road mobile machinery.

Evolving Standards to Push the Boundaries of Sustainability

In 2018, the Ministry of Ecology and Environment (MEE) of the People’s Republic of China finalized the [China VI emission standard](#) for new heavy-duty vehicles (HDVs), which required particulate filters and remote emission monitoring on-board terminals (remote OBD) on all new diesel HDVs by 2021. The China VI standard combines best practices from both European and U.S. regulatory requirements, and more stringent testing requirements, monitoring and remote on-board diagnostics data reporting to enhance emissions compliance.

The standard represented a critical step in improving air quality in China. HDVs emitted about [half](#) of the greenhouse gas (GHG) emissions across all vehicle types and approximately [3%](#) of total GHG emissions from all industries.

It also presented a significant challenge for CRAES’s Vehicle Emissions Control Centre (VECC), which was responsible for developing, testing, and implementing monitoring technology focused on pollution control. As part of nationwide implementation in 2021, CRAES needed to upload all HDV vehicle emission monitoring data to their system in real-time. This led to a sharp increase in the volume of data being added - from terabytes to petabytes — and resulted in higher costs and operational inefficiencies.

In Need of a Better Data Platform

CRAES was using a legacy data platform to handle its emissions data previously. While it required no upfront costs, the platform could not scale to accommodate the additional volumes of data that had to be uploaded. In addition, CRAES’ IT teams had to maintain the platform themselves, which meant higher labor costs for the organization.

In 2022, CRAES turned to Cloudera for a more efficient way to upload and store HDV emissions data and turn it into meaningful, measurable, and actionable information to aid government policy on carbon reduction.

“Our goal was to find a better way to collect and analyze large volumes of data. We selected Cloudera Data Platform (CDP) because of its ability to improve data management and cost efficiency.”

Mr. Bai Tao, Senior Manager, Information Data Department at the Vehicle Emission Control Center, CRAES

About Cloudera

At Cloudera, we believe that data can make what is impossible today, possible tomorrow. We empower people to transform complex data into clear and actionable insights. Cloudera delivers an enterprise data cloud for any data, anywhere, from the Edge to AI. Powered by the relentless innovation of the open source community, Cloudera advances digital transformation for the world's largest enterprises.

Learn more at cloudera.com

Data Analytics to Reduce Carbon Emissions

Since moving to CDP, CRAES storage capabilities have improved significantly. The organization can now upload, store, analyze and share petabytes of data through its remote emissions monitoring system — ultimately leading to more informed carbon reduction policy recommendations.

CRAES IT team also receives ongoing operations and maintenance support for CDP, which has helped lower labor costs internally.

“I am delighted to be working with Cloudera. Cloudera Data Platform’s flexibility and stability has been excellent, and has improved our daily data operations and management capabilities. I look forward to exploring a deeper level of cooperation with Cloudera to accelerate CRAES’s digital transformation further,” said Bai Tao, Director, Information Department at the Vehicle Emission Monitoring Center, CRAES.

In the future, CRAES plans to extend CDP’s data and analytics capabilities to additional classes of machinery.

Links to three customer stories

[West Midlands Police](#)

[Rush University Medical Centre](#)

[CSC](#)