Complementing the Montreal Protocol

THE TRADEWATER – THAILAND CARBON PROJECT

PROJECT OVERVIEW

Project Developer: Tradewater

Tradewater collected 1,404 cylinders of CFC-12 gas, also known as Freon, from Thailand Customs warehouses around the country. Waste Management Siam, a service provider with a Montreal Protocol-compliant facility, destroyed the gas consistent with ACR's methodology for *Destruction of Ozone Depleting Substances (ODS) from International Sources*.

Without the project, the gas would eventually leak into the atmosphere because there is no regulatory requirement or public funding to destroy it.

Methodology: ACR Destruction of Ozone Depleting Substances from International Sources (Core Carbon Principle Approved from ICVCM)

ACR937 (Thailand 6); carbon credits issued =157,691 (vintage 2023)

COLLECTING GASES WITH NO REQUIREMENT TO DESTROY THEM

Like countries around the world, the government of Thailand has been working hard to enforce the Montreal Protocol. The landmark agreement protects the ozone layer by regulating production and consumption of ozone-depleting substances (ODS), including chlorofluorocarbons (CFCs). While the Montreal Protocol banned CFC-12 from production, its continued use was allowed for remaining stock in refrigeration and air conditioning equipment that was operational prior to the ban; there were no mandates put in place for end-of-life management.

As part of their work to enforce the Protocol, Thai Customs officials collected cylinders containing CFC-12 that were brought into the country without the permits required by the Thai government. This ozone-depleting substance is among the most potent greenhouse gases ever produced—with over 10,000 times the global warming potential of carbon dioxide.

Thai Customs had collected and stockpiled the cylinders for many years prior to 2007. While officials had inventoried and stored the cylinders diligently, they were not designed as permanent storage. Each year brought increased risk of venting and releasing the gases into the atmosphere. Project Drawdown – a nonprofit focused on science-based climate solutions – notes that, "90% of refrigerant emissions happen at end of life," elevating the importance of destroying the gases.

With no law, rule or regulation requiring the destruction of ODS, and without the financial resources to pay for destruction, the gas would have continued to sit in—and over time continued to leak from—these cylinders.

Instead, the carbon market enabled the financial backing to safely and responsibly destroy these gases while building knowledge and capacity for the Thai government to manage them in the future.

A CARBON MARKET OPPORTUNITY

According to "Drawdown," refrigerant management is one of the most impactful strategies globally to stave off climate change, given how potent these greenhouse gases are and the prevalence of their use for cooling. "Economic incentives for recovery, recycling, and destruction of refrigerants, such as the issuing of carbon credits," could help address the problem, the organization notes.

Enter Tradewater, a certified B-Corporation that finds and destroys the most potent greenhouse gases before they are released into the atmosphere. Tradewater and the Thai government collaborated to turn an environment challenge into an opportunity through ACR's methodology, which assures that all key elements of high-integrity carbon credits are part of the project:

The emission reductions are permanent: The refrigerants seized by Thai Customs and collected by Tradewater are destroyed—permanently and irreversibly.

The emission reductions are additional: There are no international or national requirements to destroy these refrigerants.

The results are verified: The climate benefits are rigorously audited by an independent third-party before credits are issued by ACR.

The project offers other benefits: Tradewater's project created economic benefits for people in Thailand through job creation and training, creating synergies with UN Sustainable Development Goals.

MANY PEOPLE WORKING TOGETHER

The project was immensely complicated, with thousands of individual cylinders spread across multiple locations, which required leveraging Tradewater's experience working with diverse organizations and governmental

bodies. Luckily, Tradewater had willing and committed partners in the Thai government and the local destruction facility, Waste Management Siam (WMS).

"We all shared the same goal of getting the gas destroyed, but it wasn't simple," said Tradewater's María José Gutiérrez Murray. "A lot of people had to put their heads together to make it happen. We commend the diligence of Thailand's government and local stakeholders, as well as their close collaboration, to have gotten this critical project off the ground."

That included enlisting the expertise and facilities of WMS, which had a specialized incinerator in the eastern suburbs of Bangkok. They were instrumental in facilitating the supply chain logistics for this project, as well as ensuring their incinerator facility met the process requirements of the Montreal Protocol.

The WMS incinerator could reach the necessary high temperatures required to destroy 99.99% of the CFC-12 gases to meet the Montreal Protocol requirements. However, it was their first carbon project, so they had to adjust their processes and reporting to fulfill not only the Montreal Protocol standards, but also to meet ACR's requirements. That included sampling the gases with third-party verification, continuous monitoring with regular intervals of reporting, and following all regulatory and environmental rules.

"This was the first carbon project that we did," said Sutthida Fakkum, Senior Compliance and EHS Manager at WMS. Charged with meeting Thai environmental laws and regulations, she was used to tracking the details of waste destruction at the incinerator. But a carbon project meeting ACR requirements was different. "We made sure that every process met the project protocols."

PERMANENTLY DESTROYING POTENT GREENHOUSE GASES

Today, gas from 1,404 cylinders from this project has been destroyed, permanently removing its threat to the ozone layer and the climate—while also generating 157,691 carbon credits from avoided emissions that will never enter the atmosphere or contribute to climate change.

"Destroying these potent greenhouse gases is the only way to permanently remove the threat of future emissions," said Mary Jane Coombs, ACR's Director of Industrial Programs. "Until destruction is required by law, carbon markets can provide the incentive necessary to keep these refrigerants from escaping to the atmosphere. This reduces future climate impacts and helps protect the ozone layer."

Importantly, this project has built a continuing partnership between the Thai government, Waste Management Siam and Tradewater. It has created a proven process for destroying CFC-12 gases in Thailand, which is important because more cylinders of CFC-12 have been found, and the work is ongoing.

> **"ACR is a strong supporter of projects focused on destroying non-CO2 gases, like refrigerants, and has the staff experience and expertise needed to support project developers like us who focus on these important mitigation activities."**
> - Gabe Plotkin, COO, Tradewater

This case study was developed by ACR, the world's first private greenhouse gas crediting program when it was founded in 1996.

For more information about the Tradewater – Thailand Carbon Project, visit Tradewater or ACR.