



# 2024 WALL STREET GREEN SUMMIT™

Digital  
Tech  
to Track  
Emissions



Cornell Club, New York, March 13, 2024

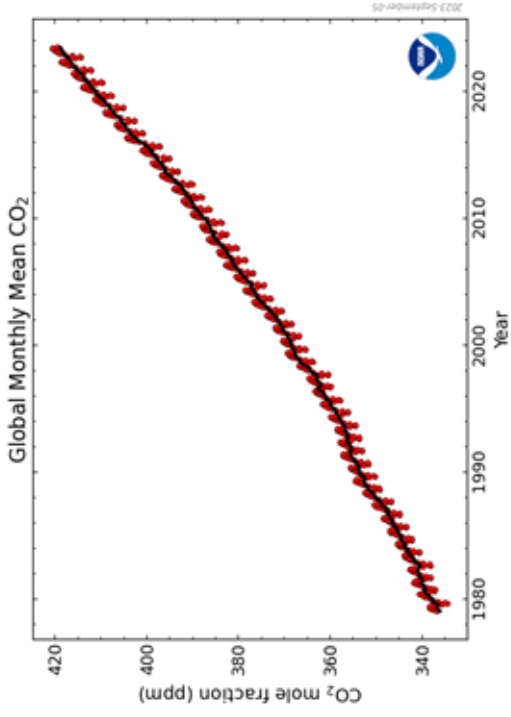


The information contained in this document is confidential, privileged and only for the use of the intended recipient and may not be used, published or redistributed without the prior written consent of Kayrros SAS.

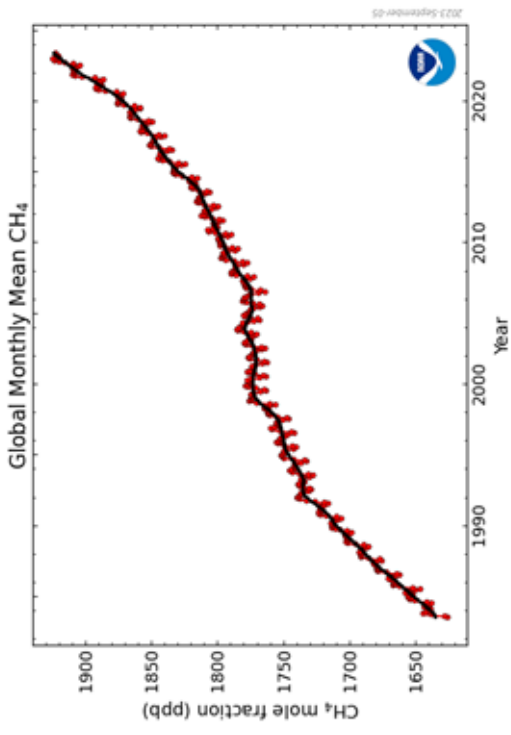
# The problem: Data gaps lead to ineffective policies & climate action



Concentration of CO<sub>2</sub> in the atmosphere

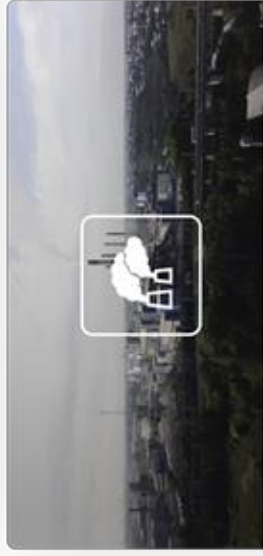


Concentration of CH<sub>4</sub> in the atmosphere



Source: NOAA Global Monitoring Laboratory

# The solution: AI & satellite to create actionable intelligence



## Attribute greenhouse gas emissions

**Gov:** policies and enforcement  
**HF & AM:** investment decisions  
**Banks:** Risk management



## Model nature and physical risks

**Gov:** policies and emergency  
**HF & AM:** investment decisions  
**Banks & Insurers:** risk modelling



## Track the energy transition

**Gov:** policies  
**Traders, HF & AM:** investment decisions  
**Banks:** trend analysis



# Tools to track emissions

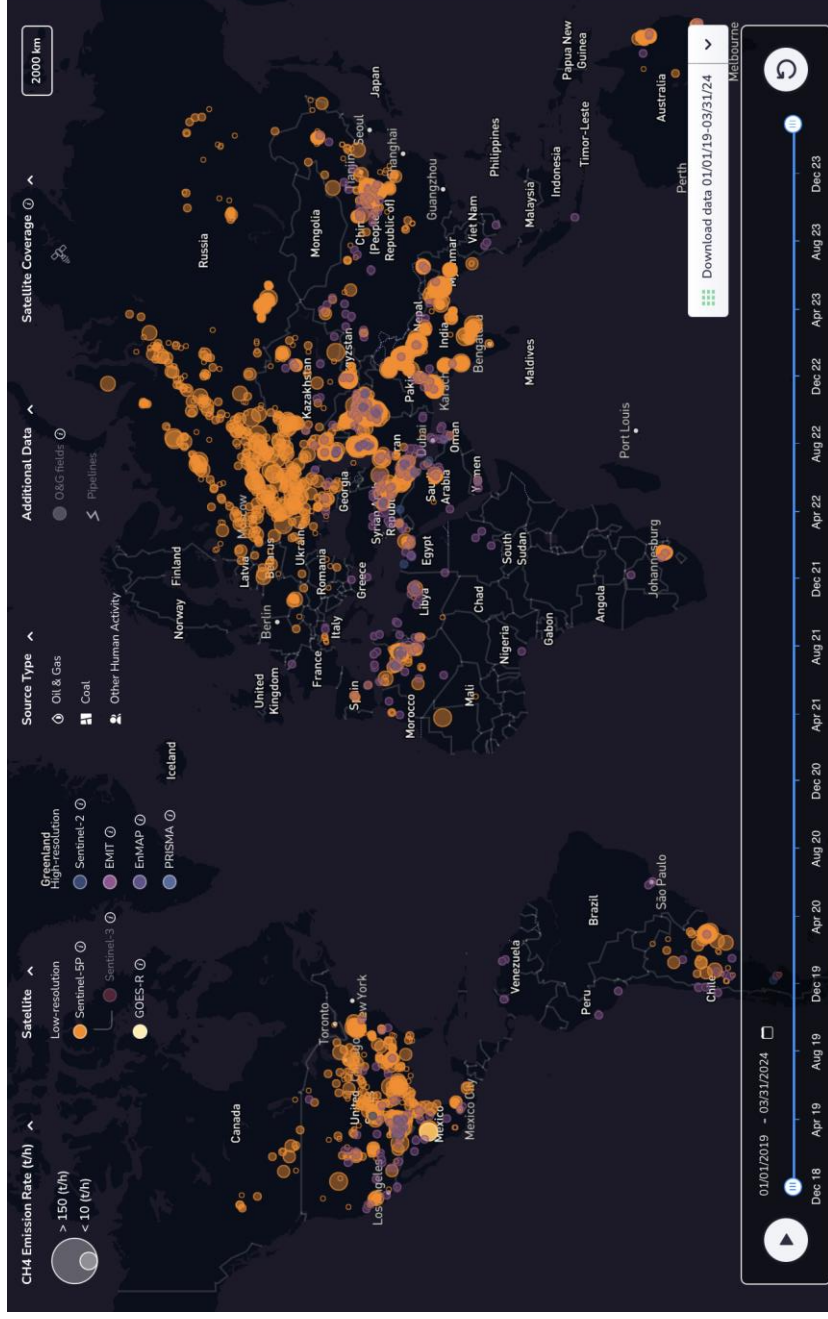


- Methane Watch
  - Carbon Watch
  - Forest Carbon Monitor
  - US Power Monitor
-

# Methane Watch



**Making the  
invisible  
visible**



# Leveraging AI to harvest satellite imagery



## High-resolution

<b>Sentinel-2 (ESA) / Landsat 8-9 (NASA)</b>	<ul style="list-style-type: none"> <li>- Multispectral</li> <li>- SSO</li> <li>- GSD 20m</li> <li>- 1 ton / hour</li> <li>- 2-3 days revisit</li> </ul>	<b>Worldview-3</b>	<ul style="list-style-type: none"> <li>- Multispectral</li> <li>- SSO</li> <li>- GSD 3.7m</li> <li>- 100 kg / hour</li> <li>- Tasking</li> </ul>	<b>PRISMA (ASI) / EnMAP (DLR)</b>	<ul style="list-style-type: none"> <li>- Hyperspectral</li> <li>- SSO</li> <li>- GSD 30m</li> <li>- 500 kg / hour</li> <li>- Tasking</li> </ul>	<b>EMIT (NASA-JPL)</b>	<ul style="list-style-type: none"> <li>- Hyperspectral</li> <li>- Onboard ISS</li> <li>- GSD 60m</li> <li>- 500 kg / hour</li> <li>- Tasking</li> </ul>
--	---	--------------------	--	-----------------------------------	---	------------------------	---

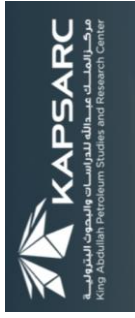
## Mid-resolution + daily revisit → Used in tandem

<b>Sentinel-5P (ESA)</b>	<ul style="list-style-type: none"> <li>- Hyperspectral</li> <li>- SSO</li> <li>- GSD 5.5 x 7 km</li> <li>- 10 tons / hour</li> <li>- Daily revisit</li> </ul>	<b>Sentinel-3 (ESA)</b>	<ul style="list-style-type: none"> <li>- Multispectral</li> <li>- SSO</li> <li>- GSD 500m</li> <li>- 10 tons / hour</li> <li>- Daily revisit</li> </ul>
--------------------------	---	-------------------------	---

Kayrros is looking forward upcoming satellite constellations



# Methane impact



**BNP PARIBAS**



**Revealed: 1,000 super-emitting methane leaks risk triggering climate tipping points**

**'Mind-boggling' methane emissions from Turkmenistan revealed**

**Revealed: the 1,200 big methane leaks from waste dumps trashing the planet**



BNP PARIBAS. The bank for a changing world

THE GROUP OUR COMMITMENTS NEWS & MEDIA ROOM CAREERS You are EN

HOME PRESS RELEASES MEDIA LIBRARY SPOKESPEOPLE CONTACTS

SUSTAINABLE FINANCE PRESS RELEASE

**Kayros and BNP Paribas join hands to accelerate methane abatement**

Published on 06.03.2024



# Carbon Watch



**Making carbon markets  
more efficient through  
realtime transparency  
on demands for  
allowances**

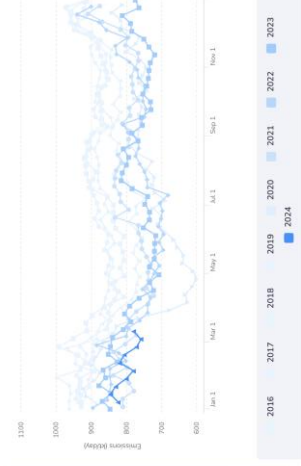
## CO<sub>2</sub> Emissions

**WCI California Emissions**  
Last update: Mar 10, 2024

Daily	Weekly	Monthly
0.76 Mtday	0.78 Mtday	0.77 Mtday

**Emissions changes**

+2.76 % WoW	-2.81 % MoM
----------------	----------------



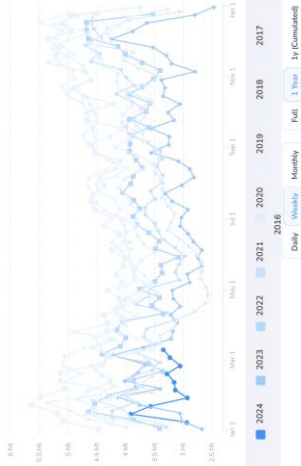
## CO<sub>2</sub> Emissions

**ETS Europe Emissions**  
Last update: Mar 10, 2024

Daily	Weekly	Monthly
2.59 Mtday	3.34 Mtday	3.21 Mtday

**Emissions changes**

+3.73 % WoW	+1.40 % MoM	-34.23 % YoY
----------------	----------------	-----------------



## CO<sub>2</sub> Emissions

**Total China Emissions**  
Last update: Mar 10, 2024

Daily	Weekly	Monthly
22.67 Mtday	22.22 Mtday	22.10 Mtday

**Emissions changes**

+0.80 % WoW	-2.82 % MoM	-9.47 % YoY
----------------	----------------	----------------

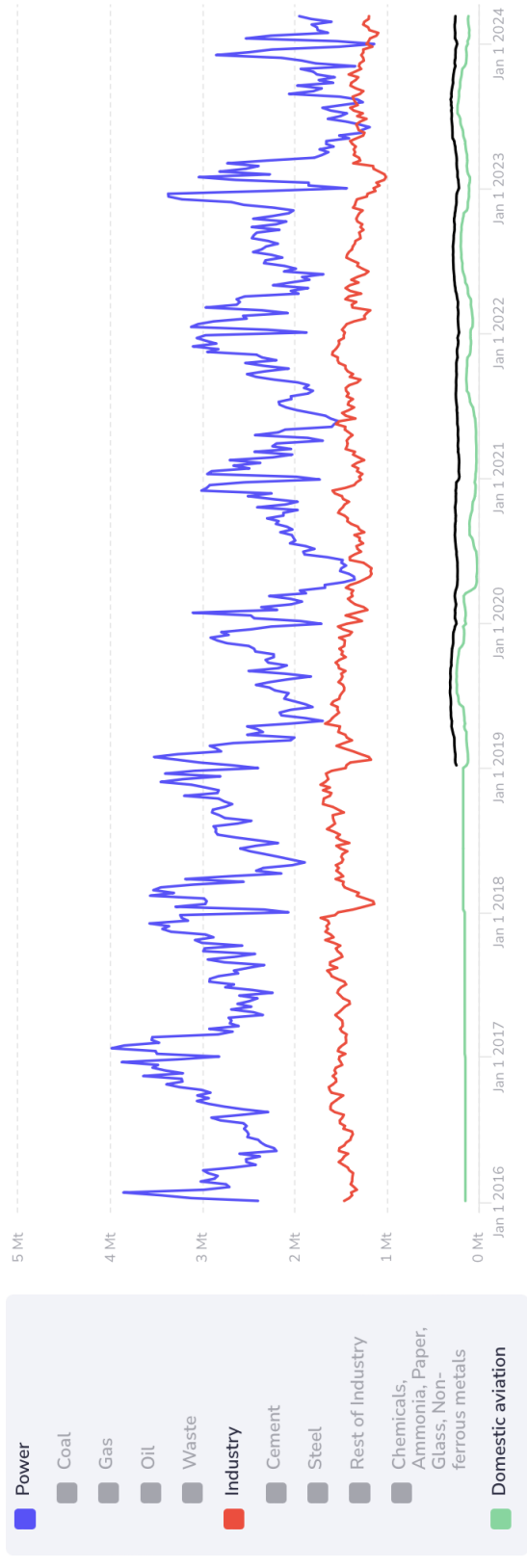




# Tracking CO2 emissions daily, sector by sector



Emission breakdown in Europe



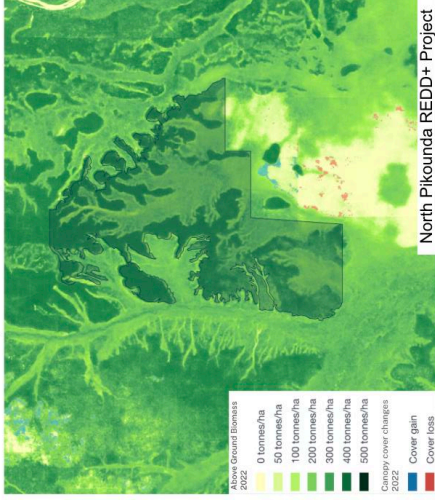
# Forest carbon monitor



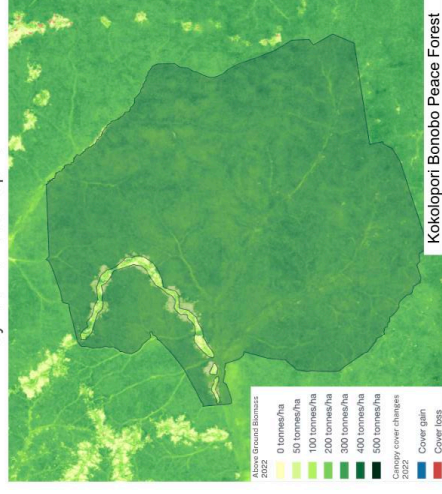
## Rebuilding trust in Voluntary Carbon Markets

- 10-meter resolution
- Land-use change
- Afforestation
- Deforestation
- Forest degradation and rehabilitation
- Height, density, carbon content
- Biodiversity
- Cost-efficient and non-intrusive

Kayros Biomass Map 2022



Kayros Biomass Map 2022



# US Power Monitor



Tracking growth in clean power generation capacity and large load demand



## Solar

Forecast when the first electron will hit the grid



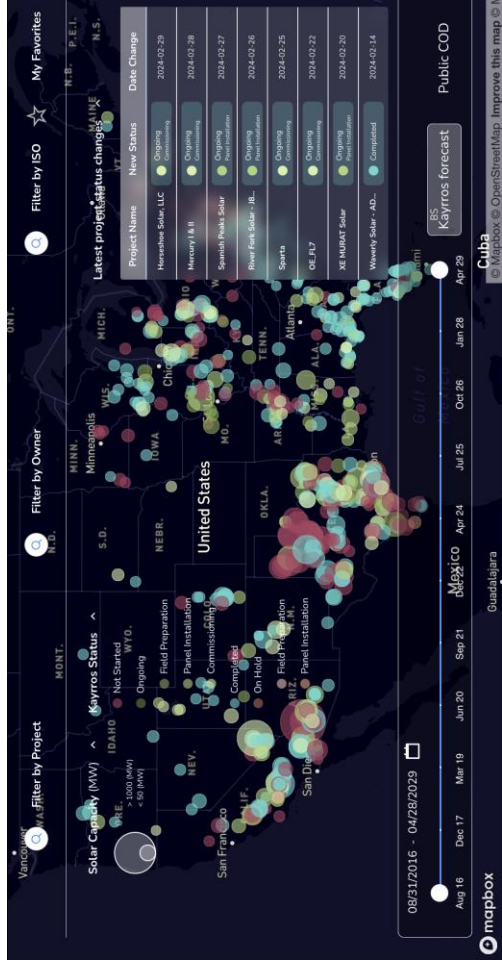
## Battery

The only comprehensive view of upcoming battery capacity addition



## Crypto & Other Large Load

The largest unknown on the grid



## Filtered Projects

Total Capacity  
Last Update: Mar 06, 2024

Kayros Status  
**112.0 GW**  
684 projects



Delay Status  
 ● No delay  
 ● 3-6 months delay  
 ● +6 months delay



# US Power Monitor methodology



## Satellite Images

Radar, optical & infrared  
High & low resolution  
From public & private operators



- Detect preparatory works
- Monitor panel installation over time
- Estimate installation rates

## Public Data

Layouts are based on public filings



- Cross-check with public data to identify delays and inconsistencies



11 November 2023

20 January 2024

**Key Consideration – Panel installation resumes**

## Frye Solar

**Status:** Panel Installation

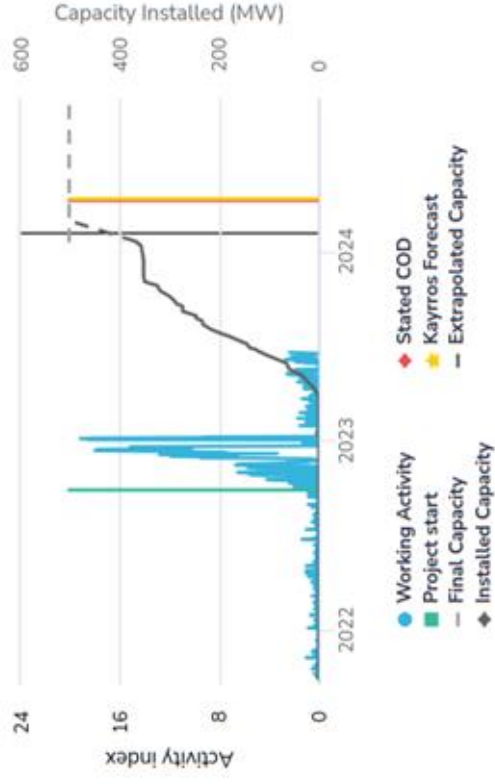
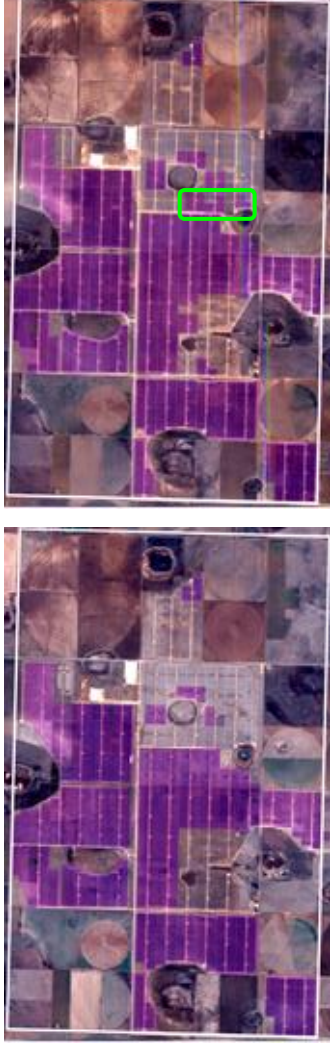
**Capacity:** 502 MW

**Installed:** 393 MW

**ERCOT COD:** 2024-04-08

**Kayros forecast:** 2024-04-12

After a 2-month break, new panels have been installed. The project should be completed in line with its current COD, in April 2024.





# Disclaimer



This report is provided by Kayros SAS ("Kayros") pursuant to the following terms and conditions:

- Reports published by Kayros ("Kayros Reports") and made available to paid subscribers and/or other recipients (collectively "Recipients") are intended exclusively for the use of their bona fide recipients. The information therein is proprietary to Kayros and protected by copyright. Any copying, distribution or reproduction without the prior permission of Kayros is strictly prohibited.
- Kayros Reports are for informational, educational or evaluation purposes only. Kayros Reports are provided without any representation or warranty of any kind. Neither Kayros nor its directors, officers, employees, agents or representatives shall have any responsibility to any third party for the accuracy or completeness of any information provided in any Kayros Report.
- Kayros Reports do not constitute any type of advice (including in particular investment or financial advice). In this respect and in particular, Kayros is not an investment adviser within the meaning of Section 202(a)(11) of the U.S. Investment Advisers Act of 1940, as amended, and is not a commodity trading adviser within the meaning of Section 1(a)(12) of the U.S. Commodity Exchange Act or any similar regulation in other jurisdictions. Kayros does not provide investment advisory, portfolio management or financial planning services. The analyses, forecasts, metrics, samples, estimated figures, trends, figures, tables, graphs, projections and other forms of data that may be contained in Kayros Reports do not represent or contain any recommendations to buy or sell any security or any financial products and should not be relied upon as the basis for any transactions in securities.
- Kayros and its owners, affiliates and representatives are not (1) investment advisers, commodity trading advisers, broker-dealers, financial analysts, financial planners, or banks, or the like (2) compensated for providing investment advice, (3) registered or licensed with any regulatory body in any jurisdiction as investment advisers, commodity trading advisers, financial planners, broker-dealers, or in any other capacity (including, without limitation, the U.S. Securities & Exchange Commission (the "SEC"), the U.S. Commodity Futures Trading Commission (the "CFTC"), the U.S. Financial Regulatory Authority ("FINRA"), or their equivalents in other jurisdictions), and do not trade in or recommend the sale or purchase of securities or commodity interests, or (4) licensed or able to provide investment advice or respond to individual requests for recommendations to purchase or sell any securities or commodity interests. No regulatory body in any jurisdiction (including the SEC, CFTC, FINRA, or a similar regulatory body of any state or any other jurisdiction) has endorsed Kayros or the contents of Kayros Reports or the accuracy, adequacy, safety, reliability, usefulness, quality or legitimacy of any information provided to subscribers in Kayros Reports.

- Kayros Reports are creative works of the mind based primarily upon algorithmic analysis of publicly available data and do not use or rely upon any material non-public information ("MNPI"). The insights included in Kayros Reports do not constitute MNPI or inside information and Kayros is not an insider. Kayros Reports (1) may contain opinions based on third party sources that are not independently verified for accuracy or completeness, (2) may contain forward-looking statements, which are identified by words such as "expects," "anticipates," "believes," or "estimates," and similar expressions, and (3) are current as of the date of publication but may contain information or statements that are subject to change without notice. Kayros has no obligation to, and will not, update any information contained in Kayros Reports. Actual outcomes could differ materially from those anticipated in Kayros Reports. As a result, the use of Kayros Reports is made pursuant to Recipients' own decision & responsibility.

- Kayros Reports are confidential and nothing therein may be disclosed, reproduced, transmitted, distributed, sold, licensed, or altered, in whole or in part, without Kayros's prior written consent. Kayros reserves the right to release to the public at any time the data and reports provided to Recipients. No rights in Kayros Reports or any of the information contained therein are transferred to Recipients. Any misappropriation or misuse of the information in Kayros Reports may cause serious damage to Kayros and money damages may not constitute sufficient compensation to Kayros; consequently, Recipients agree that in the event of any misappropriation or misuse, Kayros shall have the right to obtain injunctive relief in addition to any other legal or financial remedies to which Kayros may be entitled.

**Copyright © 2024, Kayros SAS. All rights reserved.**



THE LEADING ENVIRONMENTAL  
INTELLIGENCE COMPANY

- Singapore**  
Level 2, 15 Beach Road  
Singapore 189677
- New York**  
12 East 49th Street  
NY 10017
- Paris**  
20 bis rue La Fayette  
FR 75009
- London**  
3 Waterhouse Square,  
138 - 142 Holborn, London EC1N 2SW
- Houston**  
708 Main Street Houston  
TX 77002
- Bangalore**  
100 Feet Road Second  
Block, KA 560034