

White Paper: Sustainability strategy

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Purpose: Provide guidance on Viridien (ex CGG) corporate sustainability strategy

Scope: External communication

Among rising concerns regarding the role of corporations in the climate change, we, as a Company, take our responsibility in our societal, economic and environmental actions very seriously.

Given the issues around climate change and its consequences, corporate sustainability is the right thing to do for Viridien, and we believe that it is also an element of differentiation.

The sustainability strategy of the Company is based on a Materiality analysis performed every 3 years since 2013. In this analysis, we examine non-financial aspects, which might affect our strategy, business model and performance, or which could significantly impact our stakeholders and their perception of the Company.

Each year, the materiality analysis follows an ESG approach covering the dimensions of Environment, Social responsibility, and Governance. Furthermore, the materiality analysis highlights the direct contribution to the Sustainable Development Goals (SDGs) of the United Nations.

Our ESG framework

The HSE and Sustainable Development Committee of the Board of Directors directly influences our ESG strategy and priorities.

Our commitment and engagement are demonstrated in short statements under the three pillars of ESG: Environment, Social responsibility, and Governance. In our various public reports (regulatory and voluntary), we already cover most of the items included under this ESG umbrella.

REDUCE OUR OVERALL CARBON FOOTPRINT	BE AN EXEMPLARY COMPANY	STRIVE TO THE HIGHEST STANDARDS OF GOVERNANCE
E1: Reduce our Carbon footprint at all levels of our value chain CO2 Emissions Energy usage	S1: Promote and ensure the Health & Safety of our employees	G1: Maintain a top tier company governance (Board, Reporting)
E2: Encourage internal initiatives supporting our 2030-2050 carbon neutrality ambitions	S2: Promote an environment and a culture of Diversity and Inclusion	G2: Ensure the highest levels of ethics in all our activities
E3: Work with our Supply Chain to improve their ESG performance	S3: Promote a work environment that ensures engagement and development of our employees and attraction of the best talents	G3: Maintain and Promote an Effective Compliance Program
E4: Develop an offer of products & services enabling environmentally sustainable activities	S4: Act as a positive influence towards our employees, suppliers and communities	G4: Manage company's risks holistically, including cyber risk

We are a technology company, and we care about environment. Our continued AA rating from MSCI ESG Research, one of the largest providers of ESG research and ratings, is a clear and strong recognition for our continued focus on social responsibility, strong corporate governance and environmental footprint reduction.



Viridien also discloses annually its climate change impact through [CDP](#), a global non-profit organization that runs the world’s leading environmental disclosure platform. CDP drives companies and governments to reduce their greenhouse gas emissions, safeguard water resources and protect forests. In 2023 Viridien also disclosed its first Water Security disclosure.



In 2023 we completed a thorough evaluation of our operational sustainability practices with EcoVadis, a global standard for rating operational sustainability commitments, practices, and performance. The EcoVadis assessment includes 21 sustainability criteria across four core themes: Environment, Labor & Human Rights, Ethics and Sustainable Procurement. The Silver Medal, places us in the top 79th percentile in our market and in the top 25% of companies assessed by EcoVadis.



This rating validates and demonstrates our commitment to sustainability and supports our company goals. It is not a static assessment as the results also show us where we can improve for the next assessment in 2024.

The next section of this paper will essentially focus on the environmental aspects of our sustainability strategy. For further details on our engagement in the Social and Governance dimensions please refer to the relevant sections of our [Universal Registration Document 2023](#).

Reducing our overall carbon footprint

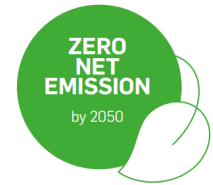
We are committed to mitigating our impact on the environment. To this effect, we developed our internal policy – signed by our Chief Executive Officer in January 2020 – to best protect the environment, the climate and the communities where we operate.

The policy identifies the five key elements on which we wish to act in our activities:

1. to always act responsibly and abide by all applicable environmental laws.
2. to continue to advance our data collection capabilities to best measure, monitor and continuously reduce our impact.
3. to commit to improving our power-usage efficiency, increasing the low-carbon content of our energy supply, and reducing our greenhouse gas (GHG) emissions.
4. to continue to advance our technology and services to enable our clients to best reduce the impact of their activities.
5. to encourage and support our businesses, all employees and locations globally to find and take specific actions that support the health of the environment, climate and the communities where we operate.

Our Pledge to reach Net Zero (Scope 1 & 2) by 2050

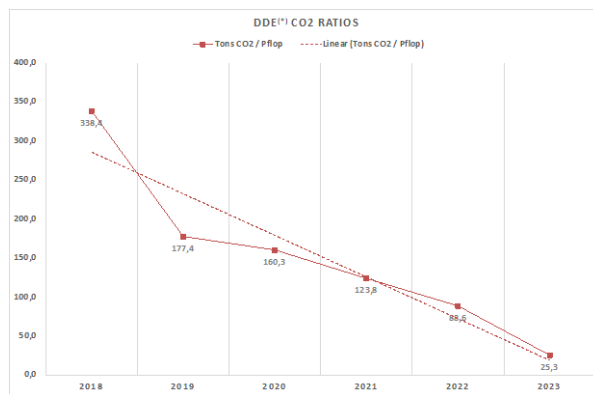
Aligned with the Company's longstanding commitment to act responsibly and minimize the impact of its activities on the environment, in every sector of its business, Viridien has announced its pledge to reach net zero emissions by 2050 in scopes 1 & 2 of the Greenhouse Gas (GHG) Protocol.



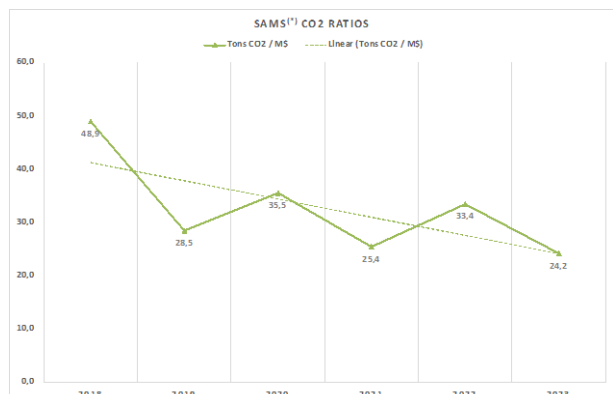
Company-wide efforts are focused on continuing to improve the power usage efficiency of its data centers, offices and factories, along with increasing the share of sustainable energy in its energy supply mix, mainly through the energy purchased from utility providers.

To reach the long-term target, Viridien has also set itself an intermediary milestone to reduce by half its 2019 levels of scope 1 & 2 GHG emissions by 2030.

- ✓ In 2023 our carbon intensity per petaflop fell by 86% from 177.4 tCO₂eq/pflop in 2019 down to 25,3 tCO₂eq/pflop. The face value of the corresponding emissions fell by 71% to 13 ktCO₂eq. while our computing capacity doubled since 2019.
- ✓ In 2023 our carbon intensity per million\$ of sales for our Sensing & Monitoring Division has dropped by 15% from 28.5 tCO₂eq/m\$ in 2019 to 24.2 tCO₂eq/m\$. Directly linked to sales volume this ratio remains extremely volatile from one year to the next.



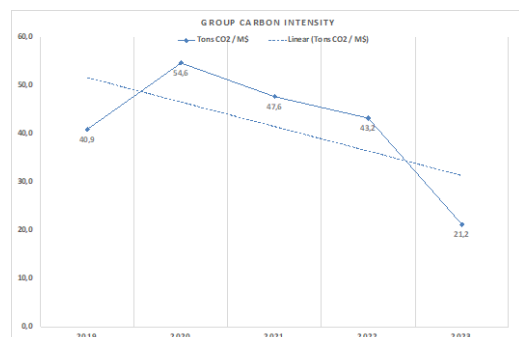
(*) DDE (Data, Digital & Energy Transition) including Group Support Functions



(*) SAMS (Sensor, Acquisition & Monitoring Solutions)

After exiting the geophysical data acquisition services business in 2020 and becoming an asset-light people, data and technology company, Viridien has already considerably reduced its scope 1 carbon footprint. Our pledge to become net zero by 2050 also aligns well with our commercial strategy of continuously advancing our technologies to best support our clients in achieving both their business and transition goals.

In 2023, our carbon intensity on scopes 1&2 per million \$ of consolidated Group sales has fallen by 48% from 40.9 tCO₂eq/m\$ in 2019 to 21.2 tCO₂eq/m\$. The face value of the corresponding emissions fell by 58% to 24ktCO₂eq, while our sales fell by 20% compared to 2019.



Advanced High-Performance Computing (HPC)

As a HPC company, we require a very large data processing capacity and own our own internal servers and facilities.

Our dedicated infrastructures are spread over three major sites: Houston (United States), Redhill (United Kingdom) and Singapore. Each site acts as a regional hub, and while we have several other computer rooms throughout the world, they represent a small share in computing power and energy consumption. At the end of 2023 we took delivery of a new site in the UK, which will gradually replace Redhill and Singapore, which will be decommissioned in 2024.

To monitor our three hubs' energy consumption and efficiency, Viridien analyses its energy bills and follows their power usage effectiveness (PUE). Most calculation volumes are generated at our US and UK sites, which account for around 60% of the Group's annual electricity consumption (including SMO) and are therefore a priority for actions to reduce energy consumption – where applicable and economically sound.

Reflecting the growth of our business in providing a cutting-edge high-performance computing (HPC) service to our customers, both in the energy sector and in other industries, a transition to a new purpose-built UK site began in 2021 and will be finalized in late 2023. This larger site will incorporate improved energy efficiency through new cooling technologies, building on our decade of innovation in immersion technology, and will also accommodate future expansion opportunities.

Viridien, an early adopter of renewable energy sources for its UK business nine years ago, in 2021 reinforced its commitment to green energy by ensuring that 100% of renewable energy is used to power all its UK operating sites. Viridien assessed suppliers' energy portfolios, supply stability and transparency, carbon emissions and reinvestment practices, and examined legitimacy beyond published REGO statements. The 100% renewable energy contract also covers the new UK site which will provide to the region high performance computing (HPC) resources for Viridien's business and for a number of its key customers.

At the same time, in Texas, a third-party organization manages the energy mix and publishes the share of electricity from renewable sources every month. In France, all sites are backed by electricity contracts with guarantees of origin. The Sercel site in Nantes is studying the installation of photovoltaic panels, which would allow the Group to strengthen its energy mix.

Our energy efficiency targets

- ✓ The **Power Usage Efficiency** (PUE) our ambition is to continue improving the energy efficiency of our main advanced high-performance computing centers, reaching a PUE of 1.3 in 2030 and aiming for 1 by 2050..
- ✓ The **carbon neutral energy mix** in our total scope 1 & 2 consumption will reach 50% by 2030 and 90% in 2050. 2023, the share of low-carbon electricity in our consumption had reached 65%;
- ✓ Our fleet of **Company cars** will be 100% electric by 2050.

GHG emissions calculation

Viridien has been measuring, calculating and publishing its greenhouse gas emissions for over ten years, with 2019 being used as a reference for its objective of reaching net zero emissions by 2050 for its scopes 1 and 2.

The scopes used for the calculations have been expanded to include more data as it has become measurable, this has included:

- In 2023, we added the impact of refrigerant gases used in our business to our scope 1, with the corresponding emissions amounting to 1 ktCO₂eq for the year. This year also saw the first inclusion in our scope 2 of the impact of purchased heating from the Xu Shui municipality in China for our geophysical equipment manufacturing subsidiary, these corresponding emissions came to 2.4 ktCO₂eq for the year.

- Prior to 2022, apart from scopes 1 and 2, the carbon footprint only covered upstream scope 3 emissions and downstream freight. Since then, the scope 3 measurement has been extended to include the downstream carbon footprint of the Sensing & Monitoring division's main products, namely vibrator trucks, 508XT telemetry, land and marine nodes, streamer sections and downhole tools.

The downstream carbon footprint of products and services sold by the Geoscience, Earth Data and HPC & Cloud Solutions divisions is still marginal but is likely to increase slightly in the medium term with the development of "Outcome as a Service" solutions.

Performance Indicators	2023	2022	2021	2020	2019
VIRIDIEN Power Usage Effectiveness	1.35	1.42	1.35	1.32	1.33
Carbon Footprint Scope 1 (ktCO2eq)	3	2	2	2	3
Carbon Footprint Scope 2 (ktCO2eq)	21	39	43	51	55
Carbon neutral energy mix (% of Scope 1 & 2)	65%	51%	36%	30%	n.a
Green Company cars (hybrid/electric) (%)	67%	56%	38%	11%	n.a

Advancing our Technology & Services

In a global context unfavorable to the exploration and exploitation of fossil fuels, Viridien initiated a diversification strategy in 2018, with the ambition to ensure the resilience of the business model over the long term, as Viridien cannot be solely dependent on the Oil & Gas sector. For this, the diversification strategy is based on 3 main components:

- the disposal of acquisition activities which was completed in 2019;
- a refocusing on the main activities, which bring high added value;
- a focus on opportunities to deploy our technologies in other areas, particularly energy transition, the fight against climate change and digital technologies.

To implement this strategy, light governance has been put in place at group level, with the ambition being to transfer a sense of ownership to each of the operational entities. In 2019, a detailed analysis of the markets made it possible to identify growth drivers for the activities. Each Business Line then took up the subject and developed its own roadmap and organization. Thus, the Sensing & Monitoring division made two complementary acquisitions in terms of new markets and R&D to accelerate its transition. Our HPC & Cloud Solutions activity, for its part, has chosen to recruit external people, specialists in its new markets.

With the rapid and continuous advance of technology and digital solutions, companies increasingly consider their geoscience data as one of their major assets. In this context, Viridien is focusing its historic leadership in digital technologies applied to geosciences, to provide unique digital solutions to its customers. Beyond these traditional activities, we have capitalized on our technologies and know-how to develop in the fast-growing markets of Digital Sciences and Energy Transition. Viridien's long-standing and new customers are increasingly focused on energy transition, reducing their environmental footprint and decarbonization. Our business brings added ESG value to our clients, with our geoscience expertise and data integration capabilities enabling our customers to be more effective, efficient and responsible in their new energy projects.

- **Carbon Capture, Utilization and Energy Storage (CCUS):** As one of the solutions chosen by the international community to contribute to the effort to decarbonize human activities and achieve the objectives of the Paris Agreements. In this domain, the commercial potential for Viridien is significant as Viridien's core competencies in underground reservoir expertise, including geological and petrochemical imaging, modeling and analysis, fit well within the framework of CO₂ storage planning, optimization and continuous monitoring of storage sites. Many of our existing and new customers are planning large CCUS projects and are beginning to incorporate the application of

CCUS technologies into their activities Low-carbon energy from blue hydrogen will also require long-term CO₂ storage and monitoring.

Building on more than a decade of CCUS experience, Viridien continued to expand its CCUS business throughout 2023. During 2023 Viridien performed large-scale CCUS screening studies in areas of the North Sea and the US Gulf of Mexico and a variety of imagery projects focused on CCUS storage assessment, and Earth Data sales to support CCUS projects around the world.

In 2024, the focus will continue to be on cost efficient storage assessment and future monitoring, while developing further our organization. We will also focus on flagship CCUS projects for key customers.

- **Infrastructure monitoring (SHM & Geotechnical):** In a general context of aging infrastructure in the United States and Europe the diagnosis, inspection and repair of structures is in high demand. Estimated close to \$4 billion by 2030, the infrastructure monitoring market known as Structural Health Monitoring (SHM) is a market for the future.

Viridien, through its Sensing & Monitoring equipment division (SMO), has established itself in this promising market by developing two distinct solutions: S-Lynks and S-morpho for structural diagnosis (bridges, buildings, offshore structures) and S-Scan for geotechnical diagnosis of structures (rail, dykes). These three solutions, initiated in 2018, are based on Sercel's technologies and know-how in electronics (sensors), development of on-board software and physical and geophysical analyses.

Geocomp, SMO's 2022 acquisition in SHM, is performing to plan and helping us identify growth targets in the U.S. SMO also reinforced its position on this market in March 2023 by acquiring Morphosense, a French company that pioneered the SHM business with a static and dynamic monitoring solution (S-morpho).

- **Geothermal energy:** Traditionally harnessed in tectonically active areas, Viridien has always played a role in this market through its multi-physics imaging team and occasionally through its seismic imaging team.

To date, Viridien has undertaken more than 130 targeted projects, developing an enormous level of expertise and associated software. Today, the exploitation of geothermal energy also applies to sedimentary basins and offers new opportunities to Viridien. Underground geoscience expertise, including seismic imaging, reservoir modeling and geological analysis, are highly sought-after skills in this emerging energy sector.

Growing our group through 2022 to incorporate these broader disciplines, VIRIDIEN began to create large-scale studies such as the Global Geothermal Resources Study which was carried out by leveraging our expertise in Earth Science as well as our expertise in streamlining, using and organizing thousands of different data sources. In 2023, we continued licensing these surveys to clients.

Viridien's expertise has also helped assess the broader geothermal value chain, for example by creating a global lithium screening product to implement highlights for the potential of lithium brines.

- **Environmental Science:** In 2021, Viridien established a team to investigate how the company's deep technical and scientific knowledge could be repurposed to meet the growing environmental and climate challenges facing the world. Through this survey, the environmental science activity within Viridien identified two main areas of focus: environmental monitoring and environmental data analysis. Both of these areas are supported by Viridien's data science and high-performance computing (HPC) capabilities.

Viridien's HPC enables the group to explore the use of complex, multi-layered data to provide customers with insights into a range of environmental applications and solutions that will enable them to meet current environmental and climate regulations as well as the risk management.

VIRIDIEN's environmental science activities go beyond our traditional customer base and engage with the financial sector, renewable energy companies, utilities, and government departments and agencies. Our access to optimized HPC allows us to couple our environmental data bank with our own climate modeling capability to support our clients further.

- **Satellite Enabled Solutions:** Viridien has a long history of processing and interpreting satellite data, particularly difficult-to-manage Synthetic Aperture Radar (SAR) data. As more and more SAR satellites are launched into orbit, the ability to realistically monitor a wide range of surface facilities in real time is now within reach. This, combined with the growing ability of satellites to measure environmental data, makes it a rich area in which Viridien can find substantial business.

In 2022, Viridien obtained commercial projects for this solution and continued in 2023. Our customers see the value of ongoing, proactive monitoring of their sites, to monitor the impact on the surroundings or prevent incidents.

This is also the case for environmental monitoring of mine sites, for example with tailings failures causing catastrophic impacts, often evidenced by retrospective reviews of satellite data.

- **Strategic Minerals & Mining exploration:** Critical minerals such as copper, lithium, nickel, cobalt and rare earth elements are essential to the development of clean energy technologies– from wind turbines and electric grids, to electric vehicles and batteries. The demand for these minerals growing rapidly as the energy transition accelerates, and heightened geopolitical tensions leading countries to step up efforts to reduce dependencies and secure their own sources of these critical minerals. The requirement to search for these minerals and extract them safely, with the minimum possible impact on the surrounding environment and in a responsible manner managing associated risks, presents significant business opportunities for Viridien.

The development of activity continued in 2023 with a broader presence in this market. Viridien is well positioned to take advantage of the increased activity in the minerals and mining industry with our offering combining data to give valuable insight to our clients. For exploration, these range from large-scale regional scouting studies considering individual minerals and associated mineral systems, to more targeted projects on specific areas. In addition to core geoscience expertise, these projects also leveraged our expertise in data and machine learning. On the monitoring side, we continued to expand our satellite monitoring offering while developing our TailingsPulse solution, allowing us to offer complete and integrated mine site monitoring solutions from space, air and floor. We are moving towards solutions combining both equipment (leveraging on Sercel's Geotechnical monitoring solutions) and associated information for our customers.

In 2023, we made significant progress on our first large-scale Earth Data acquisition project in the United States, which integrates new and existing data for more comprehensive view of mining opportunities in Arizona. We also launched a satellite imaging product "Bare-Earth" generating great interest

- **Earth & ocean monitoring:** The design, manufacture and marketing of instruments for measuring seismic activity on land and at sea is a historical activity of the Sensing & Monitoring (SMO) equipment division of Viridien. Mainly intended for research institutes and universities, Sercel seismometers are instruments recognized in the industry for their precision and reliability. It is a market with constant demand, mainly for the replacement of worn equipment. Through its underwater acoustics activity based in Brest, SMO has launched the MicroOBS, which is a seabed seismometer that can measure seismic activity up to 6,000 meters deep: enough to open up new perspectives on this Niche Market.

- **Autonomous robots:** With the acquisition of a stake in the AMBPR start-up in July 2020, Viridien, through its equipment subsidiary Sercel, entered the ship maintenance market, in particular that of the treatment of coatings on hulls (washing, stripping, painting). With its autonomous articulated robot, AMBPR wants to revolutionize the cleaning of ship hulls by offering an innovative solution that is 100% robotic, fast, less expensive and respectful of the health of workers (workers on sites exposed to musculoskeletal disorders and discharges of paints and coatings hazardous chemicals). Relying on the know-how and industrial resources of SMO in Saint-Gaudens, AMBPR offers a unique patented solution with the ambition to become the market leader working with ports and ship owners worldwide. In 2023, AMBPR has proved the value of its solution in dry docks in production environments, drawing the interest of many shipyards around the world. This ship maintenance market is supported by a strong global trend of increasing marine commercial and energy activities worldwide.
- **Offshore simultaneous operations monitoring (Marlin):** With the proliferation of renewable energy projects at sea around the world, which require the use of many boats with different profiles, and the global trend of increasing maritime transport activity, the management of maritime fleet operations becomes a critical activity for the world of today and tomorrow. Sensing & Monitoring, through the acquisition of Concept in September 2022, has decided to establish itself in this promising market by developing and marketing the Marlin solution: centralized software solution for the management, piloting and monitoring of multi-ship offshore operations for ports and ship owners and operators.

We will launch a new materiality analysis in 2025 and will adjust our strategy for the next 3 years according to the evolution of the risks and opportunities mapping.