

# Market Guide for Gas Emissions Management Solutions

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Initiatives: [Energy and Utilities Technology Optimization and Modernization](#)

Energy companies face intensifying mandates to reduce gas emissions, which is driving investment in gas emissions management solutions. Energy CIOs responsible for developing capabilities for managing emissions can use this research to inform technology decisions.

## Overview

### Key Findings

- Energy companies are facing existential risks due to intensifying requirements for tracking, reducing and reporting their own Scopes 1 and 2 greenhouse gas emissions. The consequences for faulty reporting may include missed environmental targets, punitive fines, loss of reputation and criminal indictments.
- Modern energy companies are also concerned about the emissions content of the products they provide. However, the current regulatory and business context for Scope 3 emissions remains unclear to make market assessments.
- Energy CIOs are facing demand from multiple business leaders to provide more trustworthy and auditable gas emissions management capabilities. Legacy emissions solutions, such as utility particulate emissions tracking, are narrow in scope, or worse still, use spreadsheets to generalize or infer data, which cannot support current and future requirements.
- Vendor offerings for a gas emissions management solutions (GEMS) are nascent, narrowly defined and fragmented, with unintegrated functional coverage and disjointed technical capabilities. No comprehensive market leaders currently exist, but high demand is driving rapid market evolution.

### Recommendations

Energy CIOs seeking to build stronger gas emissions management capabilities should:

- Enable success by designing an enterprise measurement, and data management strategy and architecture that is flexible and robust enough to provide reliable emissions visibility despite differing regulatory and business reporting standards.
- Establish a mindset among all enterprise leaders that their gas emissions data, analysis and decisions will be closely scrutinized by external sources. It must be as accurate, trustworthy and timely as financial data to avoid exposure of potentially catastrophic risks.
- Focus immediate attention on establishing a minimum viable solution for the enterprise that meets the most urgent business and regulatory requirements. Keep costs low by leveraging existing operating, maintenance, engineering and business digital investments.
- Accelerate progress by partnering with several GEMS vendors, but require all participants to use composable IT architecture. Given the fluidity of this market, it is essential to maintain flexibility for future adaptations.

## Strategic Planning Assumptions

By 2023, over 70% of oil, gas and energy service companies will have established minimum viable GEMS platforms to support emissions management across the enterprise.

By 2024, 20% of high-emitting commercial and industrial (C&I) companies outside energy sectors will have deployed basic GEMS.

By 2025, 50% of power utilities will have augmented their existing emissions management platforms with GEMS capabilities.

By 2026, two vendors will emerge as GEMS market leaders by capturing dominant market shares within energy sectors.

## Market Definition

Gartner defines GEMS as a solution layer that consolidates, integrates and coordinates management of greenhouse gas and other emissions across the entire business footprint. GEMS augments a multitude of other systems and provides the unique capabilities required to monitor, account, analyze, plan, optimize, report and commercialize emissions. The market includes operational surveillance, data management, modeling and forecasting, quality assurance, standard compliance, and scheduling technologies, but does not include asset-based hardware, plant control systems or trading platforms (see Notes 1 and 2).

The market for GEMS solutions is currently immature, and vendors provide only partial solutions. For the next several years, energy companies must develop their own composite GEMS platforms.

## Market Description

Trustworthy reporting for effective management of Scope 1 and 2 greenhouse gas emissions is becoming a critical priority for all energy companies. These include traditional oil and gas companies, energy service companies, renewable energy companies and traditional power utilities.

The disruptive forces of decarbonization and energy transition will continue to reshape energy markets for the next decade. Some companies are broadening their portfolios to include new forms of energy (such as hydrogen), environmental services (such as carbon capture and storage) and energy services (such as energy optimization). These take the form of diversification investments by oil and gas operators, new unregulated business units by utility companies and new offerings from energy service providers serving commercial, industrial and governmental customers.

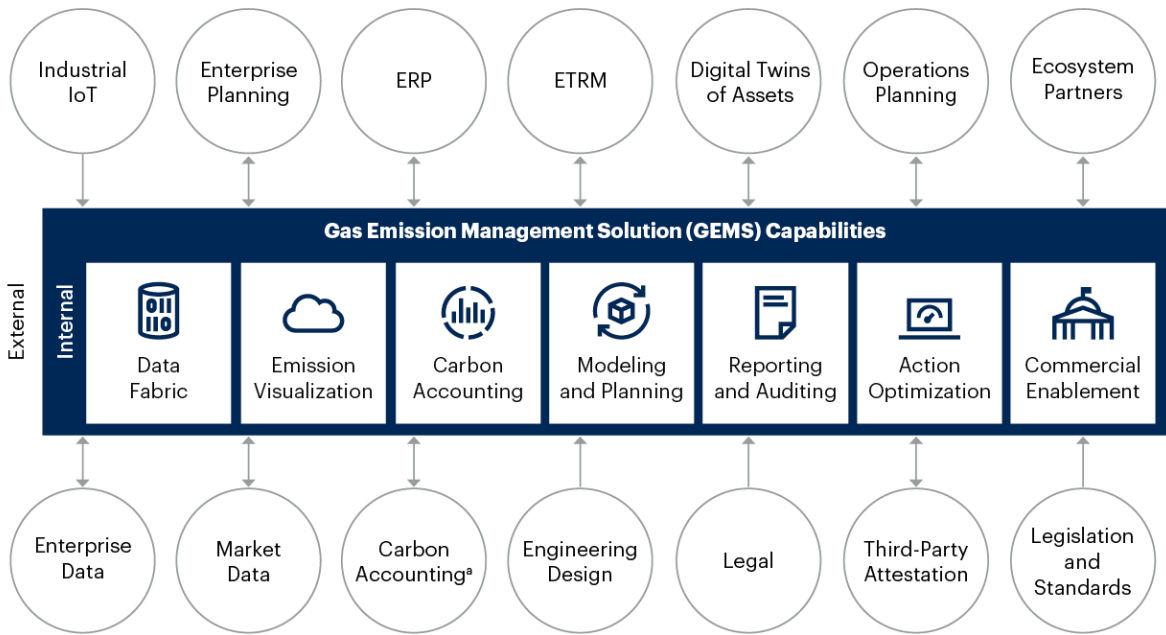
All of these companies are beginning to invest in GEMS's capabilities to more comprehensively manage their emissions. The universe of GEMS provides seven basic functions:

- **Data fabric.** Hierarchy for accessing, ingesting, repairing, transforming and curating information from the numerous sources of internal and external systems that interact with GEMS.

- **Emissions visualization.** Leveraging existing digital operational capabilities (such as supervisory control and data acquisition [SCADA], operational technology [OT], Internet of Things [IoT]) to gather, organize and provide emissions data from current and historical operations. Operators can benchmark the emissions performance of different sites across the world and monitor the emissions impact when optimizing operations.
- **Carbon accounting.** Carbon accounting is a concept that spans four different but interconnected areas: carbon inventory, carbon expenditure, climate impact and climate risk. Besides the core accounting activity, the concept also covers reporting and disclosure of the produced information. <sup>1</sup> As Figure 1 illustrates, some companies will have existing solutions that GEMS must integrate with. Many will not, or will want to enhance their current capabilities, and that GEMS must provide.
- **Modeling and planning.** Combining emissions data with other data sources to produce decision-relevant metrics of risk and value. Visualizing environmental data for semantic insights. Developing predictive models of future environmental performance to support planning with “what-if” analysis. Also, planning and modeling investments and actions to reduce emission.
- **Reporting and auditing.** Supporting a wide variety of internal and external reports of historic, current and future emissions levels. Scope 1 and 2 reporting will be consumed internally and be provided to regulators. Scope 3 reports, where applicable, will be provided to customers (see Note 3). Internal and external reporting must be verifiable and auditing capabilities provided.
- **Action optimization.** Deconstructing optimized plans into actionable directives that can be integrated into the action plans of multiple organizational units, such as operations, trading, asset management and R&D.
- **Commercial enablement.** Enabling optimal procurement of emissions offsets and/or sale of offset surpluses (also permits, tariffs and other related terms). For some companies, GEMS will also support new revenue streams from emission-related products and services.

Figure 1: Gas Emissions Management Solutions

Gas Emissions Management Solutions









Source: Gartner  
\* May be included in GEMS or separate  
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Many companies currently manage GEMS’s capabilities as independent functions. While that has been sufficient for historical requirements, a more integrated approach is required. Figure 2 lists the most common environmental strategies being pursued by energy companies and illustrates why integrated GEMS capabilities are required, rather than isolated point solutions working independently across the enterprise.

Figure 2: Integrated GEMS Capabilities Are Required for Modern Energy Strategies

Integrated GEMS Capabilities Are Required for Modern Energy Strategies

	Gas Emissions Management Solution (GEMS) Capabilities					
	 Emission Visualization	 Carbon Accounting	 Modeling and Planning	 Reporting and Auditing	 Action Optimization	 Commercial Enablement
Energy Conservation	✓	✓	✓	✓	✓	✓
Energy Abatement	✓	✓	✓	✓	✓	✓
Carbon Capture	✓	✓	✓		✓	✓
Carbon Transport and Storage	✓	✓	✓		✓	✓
Carbon Trading and Offsets	✓	✓	✓	✓	✓	✓
Circular Economy Fuels	✓	✓	✓	✓	✓	✓
Low Carbon Products and Services	✓	✓	✓	✓	✓	✓
Renewable Energy Generation	✓		✓	✓	✓	✓
No-/Low-Carbon R&D	✓		✓			✓
Energy Investment Portfolio	✓	✓	✓			

Source: Gartner  
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The evolution of the GEMS market is being defined by increasing pressure for sustainable environmental practices from governments, international bodies, regulatory agencies, environmental advocacy organizations, as well as energy company customers and investors. The time frame for responding to these pressures is shrinking as global energy transition investments are accelerating. Note 4 illustrates representative examples of how near-term actions by energy companies are creating urgency for substantial changes to internal emissions management practices.

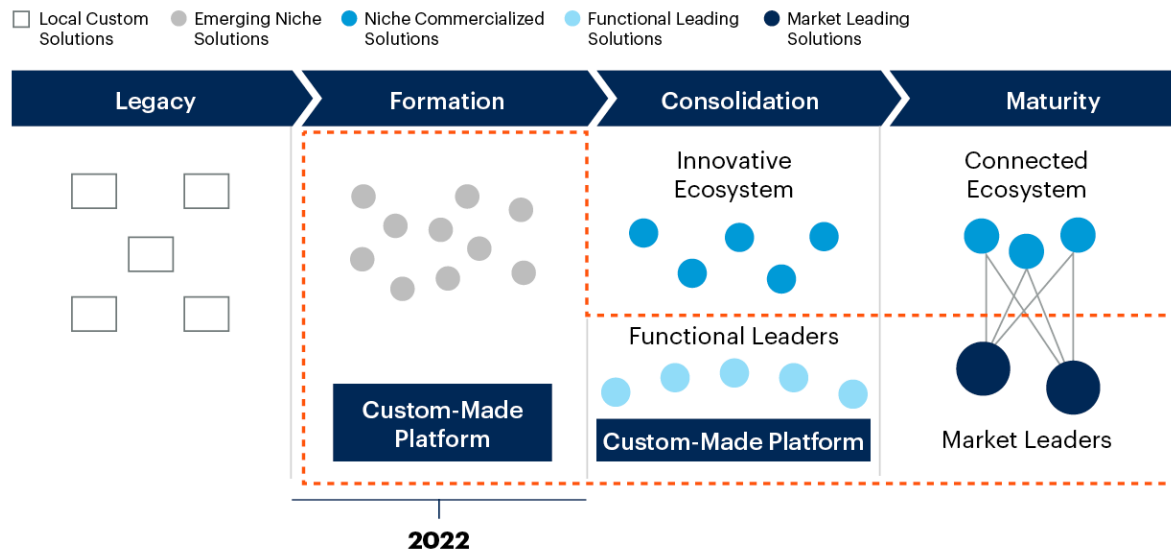
Market Direction

The energy transition is intensifying the need for comprehensive management of a business’s emissions footprint, with a high degree of accuracy and auditability (see Note 5). This is an urgent priority for fossil fuel companies to extend the economic life of their assets. And it is a foundational capability required for all new green energy companies. As the role of traditional power utilities evolves, these capabilities will also become critical for them.

The purpose of GEMS is to enable proactive, data-led decisions in near real time, enabling organizations to meet emissions targets, reduce the cost of environmental liabilities and optimize the commercial impact of emission-based opportunities. Existing solutions for GEMS functionally are either overly specialized (e.g., solutions for the ISO 14064-1 standard) or too narrow and disjointed (e.g., custom-made, spreadsheet-based solutions). As shown in Figure 3, the GEMS market will go through multiple stages of maturation:

- **Legacy.** Existing emissions management solutions were built decades ago for power utilities to support the regulatory requirements for sulfur oxides (SOx) and nitrogen oxides (NOx). The requirements of the European Union were most influential in shaping these solutions. Legacy solutions for other industries, such as oil and gas, were designed for less stringent and more diverse requirements. They typically consist of a custom-build solution or a portfolio of spreadsheets that do an adequate job of reporting static requirements with just enough accuracy. In response to growing buyer demand, vendors of diverse legacy systems (such as ERP and data and analytics [D&A] platforms) are rapidly positioning product extensions to their core offerings to address discrete portions of GEMS's functionality.
- **Formation.** Current activity is happening on multiple fronts. Legacy software vendors for energy companies are incrementally expanding the functionality of their core offerings to address portions of GEMS's functionality. Such expansions are often dependent upon existing use of the core vendor product and can be difficult to integrate with solutions of other vendors. New software vendors are developing SaaS solutions that can easily integrate and rapidly expand, but which are in their early stages of development. Energy companies cannot wait for the market to mature, hence, they are developing their own GEMS platform to integrate vendor solutions and fill in gaps.
- **Consolidation.** In future years, GEMS buyers can expect the market to become more defined and integrated through vendor acquisitions, stronger GEMS standards and adoption of composable solution architectures. This will enable energy companies to reduce the scale and functionality of their custom GEMS platform.
- **Maturation.** Gartner predicts that by 2026, two GEMS vendors will emerge as market leaders. They will be complemented by a large universe of connected SaaS, platform as a service (PaaS) and infrastructure as a service (IaaS) vendors that can easily connect and provide distinctive functionality.

Figure 3: GEMS's Market Direction

**GEMS Market Direction**

Source: Gartner  
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Gartner

The rapid onset of decarbonization and energy transition has put CIOs under pressure to rapidly organize digital functionality from a poorly formed vendor ecosystem. The direction of market maturation is difficult to predict, as it partly depends upon the near-term investments made by energy companies, which will ultimately determine the shape of GEMS solutions.

**Market Analysis**

Energy producers (such as power utilities, oil and gas, and renewable energy companies) and high-emitting industries (such as steel and cement) are increasingly seeking greater monitoring, accounting, optimizing and reporting of their enterprise gas emissions.

Consumers of GEMS functionality include one or more of the following business areas:

- Energy production
- Corporate sustainability and response
- Energy supply chain
- Energy trading and risk management
- Environmental, health and safety



- Finance
- Governance, risk and compliance
- Operational supply chain
- Plant design and engineering (full life cycle)

Anticipating significant levels of spend, a broad range of technology and service providers are currently shifting their marketing campaigns and are introducing new solutions that provide elements of GEMS's capabilities. The technology and service providers that are introducing limited GEMS solutions include:

- **Large-scale business software providers** that currently support energy and heavy industry organizations with industry-specific digital solutions (including commercial off-the-shelf [COTS], cloud, SaaS and IaaS solutions).
- **Hyperscalers** that are augmenting their well-established cloud, IoT, analytics, modeling and automation services.
- **Heavy-asset manufacturers, OT software companies and operations service providers** that are augmenting their operations software and engineering services.
- **Engineering design and construction companies** that are extending their services into operational analytics and system optimization solutions, including emissions management.
- **Environmental, health and safety (EH&S) vendors** that are modifying their solutions to accommodate the additional emissions management capabilities.
- **Analytics specialists** that are adding emissions monitoring, accounting, analysis and modeling platforms to their existing data and analytics (D&A) platforms.
- **Cross-industry environmental solution providers** that are modifying their solutions to accommodate the needs of energy companies.
- **Startup companies** that are filling in market white spaces with novel hardware, software and service offerings.

Deployed effectively (see Note 4 for energy company examples), a GEMS can help an energy company to:

- Comply with mandatory and voluntary reporting/disclosure programs.
- Demonstrate commitment and management of climate change issues to investors and in tenders for contracts.
- Meet requirements for transparency, security and access by third-party vendors for auditing.
- Understand supply chain risks.
- Identify cost savings across the supply chain.
- Prepare for future legislation.
- Save on energy costs by reducing energy wastage and managing energy consumption effectively.
- Provide an enterprise platform to facilitate adaptations as emerging rules and regulations change.

Emissions data comes from all parts of an organization, from facilities to procurement, finance and HR. Data can come in all forms of formats from spreadsheets, scanned documents, emails and databases. The challenge of collecting and integrating the data, performing analysis, performing necessary calculations, and reporting out the results internally and to external stakeholders, is at the least an annual event. For many organizations, that challenge is so cumbersome and time-consuming that there is no time to analyze the data and make impactful decisions that deliver effectively on sustainability objectives.

While the market is emerging, here are the essential requirements within a GEMS system:

- **System security.** It's paramount that a GEMS address cyber risks, both upfront and throughout the deployment, to effectively identify, manage and navigate cyberattack risks.
- **Auditability.** Significant legal, regulatory and reputational significance is inherently attached to emissions reporting and management. Near-term investments will form the foundation for future actions and claims that will face intense external scrutiny and challenge, even unfair challenges. The solution must be able to clearly document the validity of the data, analysis and decisions it supports.

- **Data and analytics.** Using real-time energy data and creating a digital twin of the asset provide CIOs with a complete understanding in terms of how operations integrate and work with each other. The GEMS also allows CIOs to model emissions conservation efforts, evaluating multiple scenarios to determine what would be the best fit for their sustainability strategy. Having rules and alerts in place enables the production of robust and consistent carbon footprint measurements, allowing operational teams to be more productive (see Note 6). Build base models and continue to use to update product information and to conduct further analysis and build scenarios, such as the use of new materials, or changes in transportation steps.
- **Automatic calculation of greenhouse gas (GHG) emissions.** Consolidation of emissions data from various sources across an organization to one central secure platform, to achieve robust, accurate calculations for various protocols and geographies for Scope 1, 2 (and possibly Scope 3) emissions. The solution must be able to calculate and report to multiple standards and frameworks from a common pool of data.
- **Selection of appropriate emissions factors.** The ability to use the right emissions factor, based on activity, emitted gas, geographic locations and date. These factors enhance data collection and enable accurate emissions calculations across the organization.
- **Organization of emissions inventory.** Use of granular and structured data collection to enhance records and checklists and help reduce overall GHG emissions by improving inventory systems and methods from an organizational and operational perspective.
- **Cloud-based emissions tracking.** Cloud-based platforms can be accessed anywhere at any time, providing businesses with a flexible but consistent platform for GHG monitoring and reporting. A cloud-based service enables businesses to easily centralize all recording processes for more efficient and effective monitoring and reporting, and data can be linked to system assist processor (SAP) or ERP systems, thus saving manual data entry. This enables the easy creation of targets and allows easy benchmarking and tracking of performance across multiple sites on an ongoing, regular basis in a single dashboard.

- **Provision of actionable insights.** Use of advanced analytics and visualization techniques to monitor performance, develop insights and enable evidence-based decision making for GHG management. Application of business intelligence (BI) tools to enable dissection of GHG data and extraction of key findings to enable understanding of the underlying causes for positive or negative performance.
- **Automated reporting.** Automated generation of tailored, investor-grade reporting and graphics, compatible with GHG and local regulatory requirements through AI-assisted data integrations. For commercial products, the automatically generated reports and graphics can be specifically tailored to include additional outputs based on client requirements.

## Representative Vendors

*The vendors listed in this Market Guide do not imply an exhaustive list. This section is intended to provide more understanding of the market and its offerings.*

### Market Introduction

Gas emissions management solutions' viability will depend on an ecosystem of partners, data, hardware and software that will be provided by multiple vendors and will include some amount of custom solutions. This gives energy company CIOs the opportunity to work with GEMS vendors to deploy a composable platform that aligns most closely with their environmental and sustainability strategies. A representative sample of aspirant GHG management providers that are active in the energy sector and have implemented a cloud platform is provided (see Note 1).

**Table 1: Representative Vendors in Gas Emissions Management Solutions**

(Enlarged table in Appendix)

Vendor ↓	Product, Service or Solution ↓
<a href="#">Amazon Web Services (AWS)</a>	Emissions Monitoring & Surveillance
<a href="#">American Bureau of Shipping (ABS)</a>	ABS Environmental Monitor
<a href="#">Arolytics</a>	AroViz
<a href="#">BakerHughesC3.ai</a>	BHC3 Sustainability
<a href="#">Carbon Analytics</a>	Carbon Analytics Platform
<a href="#">CarbonChain</a>	
<a href="#">Carbonzero</a>	
<a href="#">CleanConnect.ai</a>	Autonomous365 Suite
<a href="#">Cooler</a>	
<a href="#">Cority</a>	Environmental Cloud
<a href="#">Dakota Software</a>	ProActivity Suite
<a href="#">Diligent</a>	Accuvio
<a href="#">DNV</a>	Synergi Life
<a href="#">EcoVadis</a>	Carbon Action Module
<a href="#">EHS Insight</a>	Environmental Management System and Compliance Software
<a href="#">Element Markets</a>	Emission Credits
<a href="#">Emex</a>	ESG
<a href="#">Enel X</a>	
<a href="#">ENGIE Impact</a>	
<a href="#">ERA Environmental Management Solutions</a>	
<a href="#">GHG Sat</a>	DATA.SAT
<a href="#">IBM</a>	Envizi
<a href="#">IHS Markit</a>	Corporate Emissions Solution
<a href="#">KONGSBERG</a>	Kognitwin Energy
<a href="#">Locus Technologies</a>	ESG Software
<a href="#">Microsoft</a>	Microsoft Cloud for Sustainability
<a href="#">Persefoni</a>	
<a href="#">RightShip</a>	GHG Rating
<a href="#">Salesforce</a>	Net Zero Cloud
<a href="#">SAP</a>	Carbon Emissions Accounting System
<a href="#">Schlumberger</a>	Process Live
<a href="#">Siemens</a>	Carbon Footprint
<a href="#">SimaPro</a>	
<a href="#">Sphera</a>	Air/GHG Emissions Management Software
<a href="#">SupplyShift</a>	
<a href="#">VelocityEHS</a>	VelocityEHS Accelerate Platform
<a href="#">VERIDAPT</a>	AdaptFMS platform
<a href="#">Verifavia</a>	EU ETS, EU MRV
<a href="#">VIM Technologies</a>	CEMLink 6
<a href="#">Wolters Kluwer</a>	Enablon

Source: Gartner (March 2022)

## Market Recommendations

Energy CIOs seeking to build stronger gas emissions management capabilities should:

- Enable success by designing an enterprise data management strategy and architecture that is flexible and robust enough to provide reliable emissions visibility despite differing regulatory and business reporting standards.
- Establish a mindset among all enterprise leaders that their gas emissions data, analysis and decisions will be closely scrutinized by external sources. It must be as accurate, trustworthy and timely as financial data to avoid exposure of potentially catastrophic risks.

- Focus immediate attention on establishing a minimum viable solution for the enterprise that meets the most urgent business and regulatory requirements. Keep costs low by leveraging existing operating, maintenance, engineering and business digital investments.
- Accelerate progress by partnering with several GEMS, but require all participants to use composable IT architecture. Given the fluidity of this market, it is essential to maintain flexibility for future adaptations.

## Evidence

Gartner surveyed secondary research sources for information on market trends and vendor activity.

Gartner analysts acquired insights from energy companies upgrading or implementing a GHG management solution through the Gartner inquiry process and one-on-one meetings at events. These provided directional support for opinions derived from earlier data.

<sup>1</sup> [What Do I Need to Know About Carbon and Climate Accounting Standards?](#)

<sup>2</sup> [Carbon Capture, Utilization and Storage](#), Aramco.

<sup>3</sup> [ESG/Sustainability](#), Berkshire Hathaway Energy.

<sup>4</sup> [Shell Sees a Profitable Future for Carbon Capture and Storage as a Service](#), World Oil.

<sup>5</sup> [Carbon Capture and Storage](#), bp.

<sup>6</sup> [Disclaimer](#), Enel.

<sup>7</sup> [What We Do](#), Northern Lights.

<sup>8</sup> [The Promise of Carbon Capture and Storage, and a Texas-Sized Call to Action](#), ExxonMobil (Energy Factor).

<sup>9</sup> [CO2 Reduction Through Storage Beneath the North Sea](#), Porthos.

<sup>10</sup> [Carbon Sequestration](#), Schlumberger.

## Note 1

### Representative Vendor Selection

Gartner selected the 40 vendors named in this guide to represent the breadth of offerings in this market, covering different aspects of the GHG emissions impact on energy and utility businesses. It includes representative vendors entering the GEMS domain from different starting points. In addition, the list provides a good geographical spread of the vendors in this market.

## Note 2

### Gartner's Initial Market Coverage

This Market Guide provides Gartner's initial coverage of the market and focuses on the market definition, rationale for the market and market dynamics.

## Note 3: Scope 1, 2 and 3 GHG Emissions Defined

Scope 1, 2 and 3 is a way of categorizing the different kinds of carbon emissions a company creates in its own operations and in its wider value chain. The term first appeared in the GreenHouse Gas Protocol of 2001 ( [We Set the Standards to Measure and Manage Emissions](#)):

- Scope 1. GHG emissions that a company makes directly — for example, while running its boilers and vehicles.
- Scope 2. These are the emissions it makes indirectly — like when the electricity or energy it buys for heating and cooling buildings is being produced on its behalf.
- Scope 3. All the emissions associated, not with the company itself but that the company is indirectly responsible for, up and down its value chain. For example, from buying products from its suppliers, and from its products when customers use them. Emissions-wise, Scope 3 is nearly always the largest category.

## Note 4: Energy Company Actions Are Driving Demand for GEMS

**Table 2: Energy Company Actions Are Driving Demand for GEMS**

(Enlarged table in Appendix)

<i>Company</i> ↓	<i>Initiative</i> ↓
Aramco	Development of a mobile carbon capture and storage (CCS) technology that is currently capable of capturing 25% of the CO <sub>2</sub> emission from a vehicle. The CO <sub>2</sub> is stored onboard until unloaded at the refilling station. <sup>2</sup>
Berkshire Hathaway Energy	Plans for an approximately \$3 billion investment in the construction of wind-powered generating facilities, repowering certain existing wind-powered generating facilities and funding wind tax equity investments through 2022. <sup>3</sup>
bp and Santos	Plant to separate CO <sub>2</sub> from natural gas at the Moomba gas processing plant in Australia <sup>4</sup> and reinjecting it into the geological formations of the Cooper Basin. This will aim to capture 1.7 million tons of carbon dioxide each year. <sup>5</sup>
Enel	A triple-tranche €2.75 billion "sustainability-linked bond" in the Eurobond market linked to the achievement of Enel's sustainability objective relating to the reduction of direct greenhouse gas emissions. <sup>6</sup>
Equinor, Shell and Total	The Northern Lights project in the North Sea aimed at developing a business model for a CCS as a service industry. <sup>7</sup> The venture plans to liquefy industrial CO <sub>2</sub> emissions, transport them offshore and sequester them.
ExxonMobil	Committed to invest \$3 billion over the next five years in GHG capture and storage innovation zones in industrial areas. One zone of interest is the Houston, Texas, ship channel, which houses a large number of petrochemical, manufacturing and power generation facilities, and near-depleted oil fields capable of holding 500 billion metric tons of CO <sub>2</sub> . <sup>8</sup>
Occidental Petroleum	Oxy Low Carbon Ventures, a subsidiary of Occidental, is developing a carbon economy business that combines direct air capture (DAC) plant, zero-emission power generation and carbon-neutral production operations to produce carbon-neutral fuels.
Porthos	In the Netherlands, the Porthos project is pursuing similar objectives, but consists of a partnership of regulated entities, including Port of Rotterdam Authority, Gasunie and EBN. <sup>9</sup>
Schlumberger	A portfolio of software and services for a broad set of carbon-sequestration workflows, such as reservoir storage simulation, sourcing, transporting, compression, injection, permitting and monitoring. <sup>10</sup>

Source: Gartner (March 2022)

## Note 5: The Energy Transition Defined

The energy researcher Vaclav Smil has defined the energy transition as the structural change of energy provisioning systems. In this particular case, it refers to the shift from current energy production systems that rely primarily on nonrenewable energy sources (oil, natural gas and coal) to an energy mix based largely on renewable energy sources. The current energy transition is focused on decarbonizing the energy sector at a global level, reducing carbon emissions and ensuring climate stabilization by moving from fossil-based to zero-carbon fuel sources by the second half of this century. The shift will be enabled by a combination of policy frameworks, market instruments, innovation and technology.



## Note 6: Carbon Footprint Defined

A carbon footprint of a product or service is an assessment of the greenhouse gas emissions that are released as part of the product's life cycle. This life cycle consists of all the activities associated with that product, and typically includes:

- Raw materials input
  - Manufacturing
  - Packaging
  - Distribution and retail
  - Use and disposal
- 

## Recommended by the Authors

Some documents may not be available as part of your current Gartner subscription.

[Building Greenhouse Emission Management Proficiency](#)

[How Energy Executives Can Get Ahead of Environmental Risks With Strong Greenhouse Gas Commitments](#)

[Infographic: Race to Net-Zero Greenhouse Gas Emissions](#)

[Making Sense of the Carbon Accounting Conundrum](#)

[Bridge the Gap Between Climate Catastrophe Scenarios and Net Zero Emissions](#)

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Enel X	
ENGIE Impact	
ERA Environmental Management Solutions	
GHGSat	DATA.SAT
IBM	Envizi
IHS Markit	Corporate Emissions Solution
KONGSBERG	Kognitwin Energy
Locus Technologies	ESG Software
Microsoft	Microsoft Cloud for Sustainability
Persefoni	
RightShip	GHG Rating
Salesforce	Net Zero Cloud
SAP	Carbon Emissions Accounting System
Schlumberger	Process Live
Siemens	Carbon Footprint

Vendor ↓	Product, Service or Solution ↓
SimaPro	
Sphera	Air/GHG Emissions Management Software
SupplyShift	
VelocityEHS	VelocityEHS Accelerate Platform
VERIDAPT	AdaptFMS platform
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Equinor, Shell and Total	The Northern Lights project in the North Sea aimed at developing a business model for a CCS as a service industry. <sup>7</sup> The venture plans to liquefy industrial CO <sub>2</sub> emissions, transport them offshore and sequester them.

<i>Company</i> ↓	<i>Initiative</i> ↓
ExxonMobil	Committed to invest \$3 billion over the next five years in GHG capture and storage innovation zones in industrial areas. One zone of interest is the Houston, Texas, ship channel, which houses a large number of petrochemical, manufacturing and power generation facilities, and near-depleted oil fields capable of holding 500 billion metric tons of CO <sub>2</sub> . <sup>8</sup>
Occidental Petroleum	Oxy Low Carbon Ventures, a subsidiary of Occidental, is developing a carbon economy business that combines direct air capture (DAC) plant, zero-emission power generation and carbon-neutral production operations to produce carbon-neutral fuels.
Porthos	In the Netherlands, the Porthos project is pursuing similar objectives, but consists of a partnership of regulated entities, including Port of Rotterdam Authority, Gasunie and EBN. <sup>9</sup>
Schlumberger	A portfolio of software and services for a broad set of carbon-sequestration workflows, such as reservoir storage simulation, sourcing, transporting, compression, injection, permitting and monitoring. <sup>10</sup>

Source: Gartner (March 2022)