Applied AI for Sustainability:
Opportunities for Integration

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Introduction

Artificial Intelligence (AI) has demonstrated transformative potential across numerous sectors, and sustainability is no exception. Since the launch of ChatGPT propelled large language models (LLMs) into the public consciousness, a vital debate has emerged around the energy, water, and material impacts of running these AI systems. This debate and measurement tools linked to it continue to expand, with emerging signs of greater data transparency from the technology companies building these large, resource-intensive LLMs[1].

The topic of this paper - **applied AI for sustainability** - is slightly different. Unlike general purpose LLMs, applied AI refers to smaller, more targeted applications designed to solve real-world problems and business challenges, often with more limited resource requirements. Extended to the realm of sustainability, applied AI refers to those applications that address tangible sustainability challenges, such as emission reductions, energy efficiency, and waste management.

This research was motivated by a question shared by many sustainable AI practitioners: **what are the sustainability benefits of AI systems that over time could outweigh their clearly documented negative environmental impacts?** This exploration will cover three critical areas. First, the paper will examine AI applications tailored to address Scope 1, 2, and 3 emissions[2] (and the reporting associated with them), demonstrating how AI might contribute to significant reductions in direct and indirect carbon footprints. Second, it will highlight the integration of AI into core business functions such as product development and waste management for improved resource circularity. Finally, the paper will examine forward-looking applications, including AI's role in protecting nature and stimulating green research and development (R&D) initiatives. These eight areas of inquiry were selected because they have relevance to a wide range of business sectors, however the list is certainly not exhaustive and can be expanded in the future. Below are the preliminary takeaways:

- Despite the clear environmental strains associated with LLMs, sustainability teams would be remiss to overlook a variety of emerging applied AI solutions, as many of them have the potential to generate positive returns on investment, particularly linked to energy use, carbon reporting, and waste management;
- A significant gap still exists in 2025 between the widespread conversation and experimentation with LLMs and the actual enterprise integration of these more targeted applied AI solutions, and few in-depth case studies have been done in 2025 to demonstrate measurable sustainability benefits associated with applied AI;

[1] At a side event to the February 2025 AI Action Summit in Paris, France the author participated in a forum hosted by the OECD & IEEE "The Hidden Costs of AI: Unpacking its Energy and Water Footprint" where these issues were fully explored. Access the video here

[2] Scope 1 (direct emissions), Scope 2 (indirect emissions), and Scope 3 (all other indirect emissions from a company's value chain) will be defined in more detail in the paper.

- AI applications based on audio processing and/or computer vision hold potential in reducing enterprise Scope 1 and 2 emissions by identifying poorly performing equipment and efficiently converting information from paper-based utility reporting;
- AI applications based on natural language processing (NLP) may help to bridge the gap between enterprise ambitions to track and report Scope 3 emissions and the logistical challenges that currently impede them;
- Circularity could be enhanced through applied AI tools that make materials and their transport more resource-efficient, while some of the most innovative new AI-enhanced platforms relate to using computer vision to optimize waste management;
- Linking AI with satellite data observing Earth's natural systems will create new datasets and potentially accelerate learning across numerous sustainability touchpoints, such as land use, forest management, oceans, and biodiversity;
- As innovation becomes more expensive, applied AI systems can provide more speed and diversity to the process, which can enrich sustainability R&D initiatives that may not otherwise be pursued for being too costly or time-consuming;
- Humans will remain the primary entry point to designing and optimizing these new applied AI sustainability solutions. The human understanding of sustainability strategies, legacy systems and their integration challenges with AI, and the underlying data (be it numeric, text-based, or visual) will determine the success or failure of applied AI as it is adopted by enterprises and organizations.

The paper is primarily intended for sustainability practitioners within enterprises and organizations, as well as researchers and institutions focusing on sustainable AI. The goal is to contribute an understanding of how AI can be effectively integrated into their work to advance sustainable practices. By providing insights into current applications, market realities, and future possibilities, this paper seeks to empower practitioners to identify, implement, and scale AI-driven solutions that contribute meaningfully to their organization's environmental goals and broader sustainability objectives. Contact report author Jeremy Tamanini jeremy@dualcitizeninc.com to learn more.

Applied AI for Reducing and Reporting Scope 1, 2 and 3 Emissions

The foundation of enterprise carbon accounting - Scopes 1, 2 and 3 emissions - is a good starting point to explore applied AI use cases. Every sustainability professional today will confirm that there is nothing straightforward about emissions tracking and reporting: there have been numerous standards and reporting frameworks published since the Paris Climate Agreement in 2015; data must be gathered from a wide range of internal and external sources; and collected data are not always complete and formatted consistently. Embedding greater efficiency to these processes is critical so that the resulting data and insight can inform more innovation and growth, as opposed to being viewed as a drag on business performance and competitiveness.

Scope 1

Scope 1 emissions, often referred to as direct emissions, are greenhouse gas (GHG) emissions that originate from sources owned or controlled by a company. This includes emissions from company-owned vehicles, on-site fuel combustion for heating or electricity generation, and fugitive emissions from industrial processes or refrigerants. The primary challenge in tracking and reporting Scope 1 emissions lies in accurately measuring and attributing these diverse sources, especially across multiple facilities or a large fleet. Data can be fragmented, difficult to collect in real-time, and prone to manual errors, leading to inaccuracies in reporting and hindering effective reduction strategies.

Applied AI solutions offer significant advancements in managing Scope 1 emissions. AI-powered monitoring systems, often integrated with Internet of Things (IoT) sensors, can provide real-time data on fuel consumption, energy usage from on-site combustion, and even detect leaks from industrial equipment. Machine learning algorithms can analyze this vast stream of data to identify patterns, predict future emissions trends, and pinpoint inefficiencies in operations. This "AI overlay" to existing energy management dashboards can enable real-time decision support around energy forecasting. For instance, AI can optimize combustion processes in industrial boilers or engines to reduce fuel consumption and associated emissions, or alert operators to unusual energy spikes that indicate equipment malfunction. In addition to reducing equipment failures, predictive maintenance, enabled by AI, can also ensure that machinery operates at optimal efficiency, preventing increased emissions due to wear and tear[3].

[3] In conducting this research, Verdantix offered some of the most valuable webinars related to AI and energy management systems. Learn more here

Scope 2

Scope 2 emissions are indirect GHG emissions from the generation of purchased or acquired electricity, steam, heating, and cooling consumed by the reporting company. While not directly produced by the company, these emissions are a significant part of an organization's carbon footprint. The main issues in tracking and reporting Scope 2 emissions often revolve around obtaining accurate and timely data from energy providers, understanding the emissions intensity of different grids (especially across various geographical locations), and effectively accounting for renewable energy purchases or credits. The complexity arises from the need to differentiate between location-based (average grid emissions) and market-based (emissions from specific energy contracts) accounting methods.

AI solutions can substantially enhance the management of Scope 2 emissions by improving data acquisition, analysis, and optimization. AI can integrate with smart meters and building management systems to collect granular, real-time data on energy consumption across facilities. Machine learning models can then analyze these data to identify energy waste, optimize HVAC systems, lighting, and other energy-intensive operations, leading to significant reductions in electricity consumption. Furthermore, AI can help companies make more informed decisions about renewable energy procurement by analyzing grid emissions factors, predicting energy market trends, and even optimizing the use of on-site renewable energy generation. This enables more accurate market-based reporting and helps companies strategically reduce their reliance on carbon-intensive energy sources.

Scope 3

Scope 3 emissions encompass all other indirect emissions that occur in a company's value chain, both upstream and downstream, that are not included in Scope 1 or Scope 2. This broad category includes emissions from purchased goods and services, business travel, employee commuting, waste generated in operations, transportation and distribution, use of sold products, and end-of-life treatment of sold products. The sheer complexity, vastness, and lack of direct control over these sources make Scope 3 emissions the most challenging to track and report. Data are often fragmented, reside with third-party suppliers or customers, and rely heavily on estimations and industry averages, leading to significant data gaps, accuracy concerns, and difficulty in identifying actionable reduction opportunities. Scope 3 reporting requirements have also lessened in 2025, as a result of revised guidance to companies from the Securities and Exchange Commission (SEC - United States) and the Corporate Sustainability Reporting Directive (CSRD - European Union)[4].

[4] Expanding Scope 3 reporting requirements is critical to the issue of AI system integration as for most enterprises (with the obvious exception of big technology companies offering cloud computing services), these AI-linked emissions are considered Scope 3. For an “anti-regulation” perspective supporting these loosened reporting requirements, click here.

Applied AI solutions are uniquely positioned to address the formidable challenges of Scope 3 emissions reporting. AI-powered platforms can automate the collection and integration of data from diverse sources across the supply chain, including supplier invoices, logistics data, and product lifecycle information. Machine learning algorithms can then process this massive dataset to identify emission hotspots, predict the carbon footprint of different products or processes, and even fill data gaps using predictive modeling. AI can optimize supply chain logistics (e.g., route optimization, warehouse efficiency), reduce waste generation through predictive analytics, and enable more sustainable product design by conducting rapid lifecycle assessments. Furthermore, AI-driven tools can facilitate engagement with suppliers, helping companies to collaborate on emissions reduction initiatives and improve the quality of primary data collection across their extended value chain.

Of course, AI applications can't add this value without relevant, complete, and reliable underlying datasets from which to generate insights and efficiency. These datasets can come from a variety of sources including audio, visual, textual and structured and unstructured inputs. As an enterprise or organization exploring integrating these AI applications, the quality and availability of underlying data are important. Because without trust in these underlying sources, there is no way to trust the output they produce. That being said, there are a variety of AI applications emerging that can help reduce Scopes 1, 2, and 3 emissions, as indicated in Table 1 below:

Application	**Description**	**Relevance**	**Providers**
Audio Processing	Analyzing and generating audio data that aren't necessarily human speech	AI audio sensors can be applied to reduce Scope 1 emissions by placing them near industrial equipment, pipes, or gas lines. The AI is trained to recognize the baseline "healthy" sound of the machinery or system. It can then detect subtle deviations, such as the hissing sound of a gas leak or the abnormal rattling of a failing pump.	Multisensor AI, Acoem
Computer Vision	Enables computers to "see" and interpret visual data, including images and videos	AI can be applied to reduce Scope 2 emissions by using computer vision to capture data from printed utility bills and converting them into emissions measurements	Brainbox AI, CO2 AI, Osperity
Natural Language Processing	Focuses on understanding, interpreting and generating human language	AI can be applied to reduce Scope 3 emissions by analyzing large volumes of unstructured data associated with supplier emissions	IBM Envizi

Structured Data Analysis	Processes and finds patterns in structured, quantitative data	AI can be applied to reduce Scope 1,2, and 3 by aggregating large amounts of data from across multiple departments and sources into one summary reporting	Clarity AI

Table 1: This table introduces the four main types of AI applications, their relevance to Scope 1, 2, and 3 reporting, and examples of providers in the marketplace today. These providers should not be viewed as recommendations but rather as companies to explore as enterprises and organizations learn more about the topic.

Carbon Reporting

Carbon reporting is the process of measuring, calculating, and disclosing an organization's GHG emissions across its operations and value chain. It involves carbon accounting, which quantifies emissions from direct activities (Scope 1), purchased energy (Scope 2), and indirect value chain activities (Scope 3) as described in the previous sections. The main issues in carbon reporting include the sheer complexity of data collection, especially for Scope 3 emissions, which often reside with external parties; data fragmentation across various internal and external systems; a lack of standardized methodologies and reporting frameworks; and challenges in ensuring data accuracy, consistency, and auditability. These issues can lead to incomplete inventories, greenwashing risks, and hinder effective emissions reduction strategies.

Applied AI solutions significantly enhance carbon reporting by automating and streamlining data management. AI-powered platforms can integrate disparate data sources (e.g., utility bills, fleet telematics, supplier invoices) to create a unified view of emissions data, reducing manual effort and human error. Machine learning algorithms can process vast datasets to identify emission hotspots, calculate carbon footprints with greater precision using dynamic emission factors, and even fill data gaps through predictive modeling. Furthermore, AI can validate data accuracy against industry standards, flag anomalies, and automate the generation of compliance reports, ensuring consistency and audit-readiness in alignment with standards defined by the SEC and CSRD. On the ever-challenging task of collecting accurate data from suppliers, AI can auto-generate communication to Scope 3 “hot spot” vendors.

As detailed in Table 2, leading carbon management platforms like Persefoni, Greenly and CO2 AI show how AI can be utilized differently, depending upon the target market and user reporting priorities:

Provider	Target Market	Goal	AI Feature
Persefoni	Large enterprises and financial institutions with strict regulatory and audit needs.	Enterprise-grade, audit-ready financial reporting.	Persefoni's Climate Management & Accounting Platform automates data ingestion, anomaly detection, and emissions factor matching.
Greenly	SMEs and enterprises seeking an intuitive, all-in-one platform with personalized reduction plans.	Accessible, action-oriented for SMEs and enterprises.	AI-driven recommendations for reduction strategies and an "ESG Copilot" for broader insights.
CO2 AI	Enterprises with complex, data-heavy supply chains and a focus on Scope 3 emissions.	High-speed, granular automation for complex supply chains.	Instantaneous matching of millions of data points to emission factors, specializing in Scope 3.

Table 2: This table summarizes the unique ways AI is integrated by three leading carbon management platforms to serve diverse target customer priorities.

Applied AI for Product Development and Waste Management

The applied AI solutions for managing Scope 1, 2, and 3 emissions and their reporting are a springboard into a deeper exploration of other areas where applied AI can promote sustainable practices. There are myriad business functions to explore in this regard, and admittedly it is beyond the scope of this paper to look at every one[5]. For simplicity, this section will focus on two interrelated areas: product development and waste management. Product development across diverse sectors offers a wide range of linkages to AI applications, united by the shared goal of realizing cost savings and material efficiencies. At the other end of the product lifecycle, waste management is an area of operations that almost all companies and organizations agree should be made more efficient, and some of the most compelling AI applications uncovered through this research relate to it.

Product Development

Sustainable product development is the process of designing, creating, and delivering products with minimal negative environmental and social impacts throughout their entire lifecycle, from raw material extraction to end-of-life disposal. This involves considering factors such as material sourcing, energy consumption during manufacturing and use, waste generation, and recyclability. What this means across sectors is compelling and diverse: fashion designers creating product lines sourced from sustainable fabrics; architects making building decisions based upon optimizing energy consumption and adjacent air quality; and builders selecting materials with limited embodied carbon.

Applied AI solutions are transforming sustainable product development by enabling more informed and efficient design decisions. AI can automate and accelerate lifecycle analysis by rapidly factoring material properties, manufacturing processes, and supply chain data to estimate environmental footprints. It can assist designers by proposing novel product prototypes that optimize for material efficiency, recyclability, or reduced energy consumption, based on predefined sustainability criteria. Machine learning models can predict the environmental performance of different material choices or manufacturing techniques, allowing developers to iterate on designs virtually, reducing the need for physical prototypes and associated waste. Furthermore, AI can help identify sustainable alternative materials and optimize product formulations to minimize resource use and enhance circularity. Figure 1 illustrates an example of how a commercial AI platform can be integrated into product development.

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[5] Visit the Dual Citizen Library for additional case studies on applied AI for sustainability here.

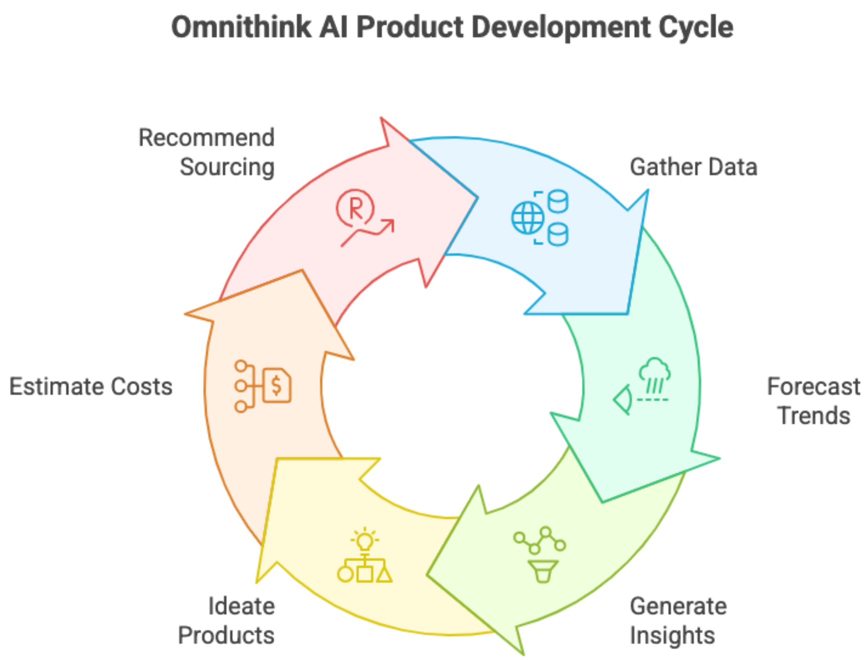

Figure 1: In addition to leveraging AI to trend forecast from social media, sales history and other open source or internal data, the Omnithink AI platform can integrate sustainability criteria linked to materials and resource efficiency to product development teams. Learn more here.

Waste Management

Sustainable waste management aims to minimize the amount of waste sent to landfills or incineration by maximizing material recovery, reuse, and recycling, thereby promoting a circular economy. It involves tracking waste generation, diversion rates (the amount of total waste diverted from landfills for more sustainable uses like recycling), and the composition of waste streams. The main challenges in waste management tracking and reporting include the highly variable nature of waste streams, particularly in complex industrial or commercial settings; lack of standardized metrics for quantifying waste performance beyond simple diversion rates; contamination of recycling streams which reduces material value; and difficulties in obtaining granular data on waste generation at the source. Manual tracking is often labor-intensive, prone to inaccuracies, and provides limited insights for optimization.

AI solutions are revolutionizing waste management by enabling more efficient and sustainable practices. AI-powered computer vision systems, often integrated with robotics, can accurately identify and sort waste materials at high speeds, significantly improving recycling rates and reducing contamination. Smart bins equipped with IoT sensors and AI can monitor fill levels and waste composition, optimizing collection routes and schedules to reduce fuel consumption and operational costs. Machine learning algorithms can analyze waste generation patterns to predict future waste volumes, identify inefficiencies in production processes that lead to waste, and recommend strategies for source reduction. Generative AI can even assist in designing products that are inherently more reusable and recyclable, closing material loops and fostering a more circular economy. An example of an AI application to waste management is given in Figure 2.

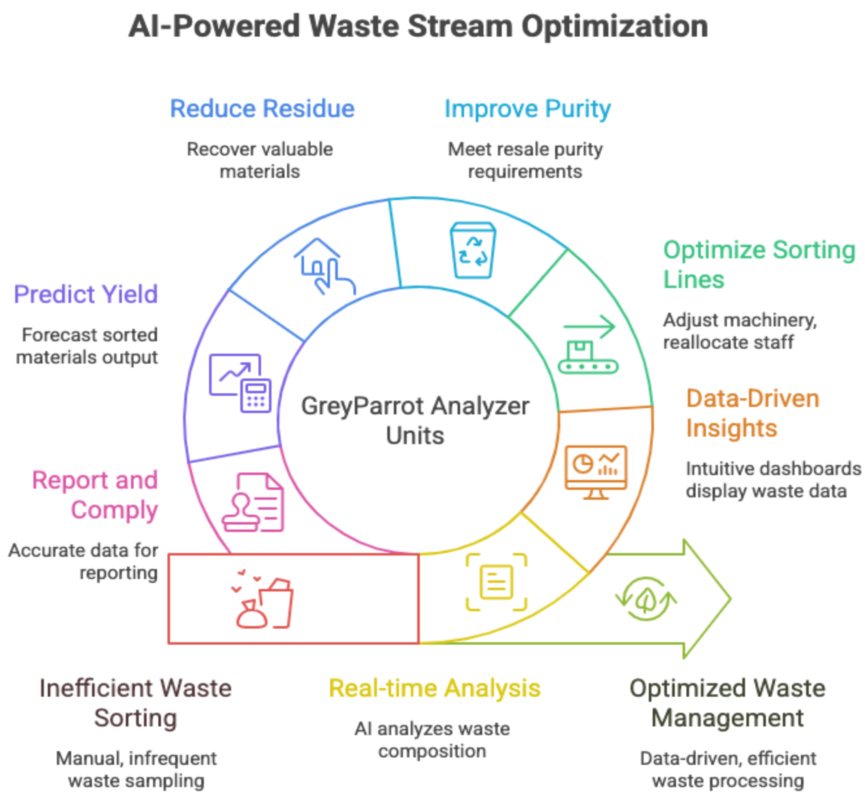

Figure 2: The value provided by AI through waste management platforms like GreyParrot is significant: their "Analyzer Units" optimize waste management by predicting yields, reducing residue, improving purity and optimizing sorting lines. Learn more here.

Applied AI for Nature and Innovation

The previous sections have deliberately focused on tangible AI applications related to reducing Scopes 1, 2, and 3 emissions or improving efficiency and resource circularity around common AI "touchpoints" within enterprises and organizations. However, the potential use cases for applied AI are not limited to these more formalized realms of sustainability reporting or product development. Some of the most compelling applied AI solutions relate to nature, as all four types of AI applications (audio, video, NLP, and structured data) offer new ways to understand how human economic activity intersects with nature. Similarly, the process of research and development which is so central to enterprise growth holds potential to be enriched by AI tools and applications.

Nature

Nature monitoring involves systematically observing, measuring, and analyzing the Earth, including forests, oceans, ecosystems, species, and biodiversity. This is crucial for understanding environmental health, identifying threats from human activity, and informing conservation goals and targets. Historically, these observations have been constrained by the sheer scale and complexity of Earth's systems and the amount of (mostly human) resources required to conduct manual surveying. Sovereignty over land and territory has further complicated matters, with researchers often restricted from accessing places due to (sometimes reasonable) political, social or cultural barriers.

Applied AI solutions are changing our ability to monitor the Earth. Computer vision and associated algorithms can analyze vast amounts of imagery (from satellites, drones, or camera traps), identifying patterns and insights for observers. Similarly, AI systems can process acoustic data to automatically identify and count species, detect habitat changes, and monitor illegal activities like deforestation or poaching. Greater reliance on satellite imagery, drone photography and the like also avoids the need for physically accessing the landscape. It also can reduce the impact on wildlife by circumventing tagging or other more invasive methods to track animals. These same mostly visual observations can also enhance our ability to track industrial emissions, the impact of climate change on diverse landscapes including forests, ice cover, coastal ecosystems and even cities. See the schematic in Figure 3 as an example.

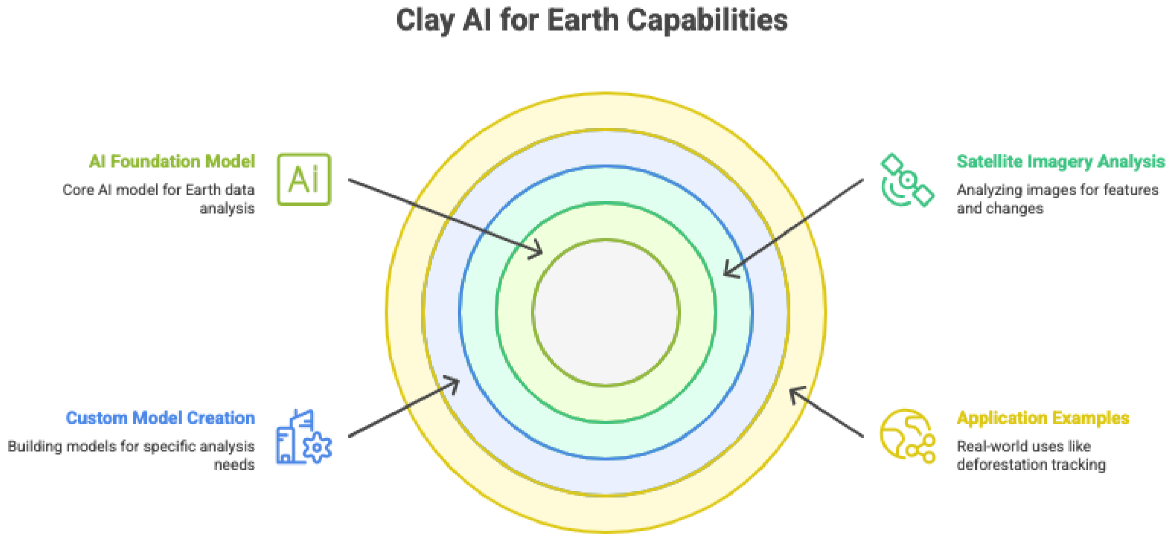

Figure 3: Clay's core innovation is the development of a large, open-source AI "foundation model" specifically for Earth observation. Just as large language models like GPT are trained on a massive corpus of text, the Clay model is trained on tens of millions of satellite images and other geospatial data from around the globe. Learn more here.

Innovation

Sustainable research & development (R&D) focuses on innovative new processes, technologies, and products that contribute to environmental protection, resource efficiency, and social well-being. This includes developing renewable energy technologies, sustainable materials, carbon capture solutions, and eco-friendly manufacturing methods. The main issues in tracking and reporting sustainable R&D progress involve the long lead times and high costs associated with traditional experimental approaches; the challenge of identifying the most promising avenues for research that will yield significant sustainability benefits; and the difficulty in quantifying the potential environmental impact of nascent technologies before they are fully scaled.

Applied AI solutions are accelerating sustainable R&D by streamlining discovery, optimization, and impact assessment. AI can analyze vast scientific databases and research papers to identify emerging trends, potential synergies between different technologies, and gaps in existing knowledge, guiding researchers towards more impactful areas. Machine learning models can simulate complex chemical reactions, material properties, or energy systems, significantly reducing the need for costly and time-consuming physical experiments. This allows for rapid prototyping and optimization of sustainable materials or processes. Furthermore, AI can predict the environmental performance and scalability of new technologies, helping researchers prioritize projects with the highest potential for positive sustainability outcomes. This predictive capability, an example of which is given in Figure 4, enables more efficient resource allocation in R&D and accelerates the development of breakthrough sustainability solutions.

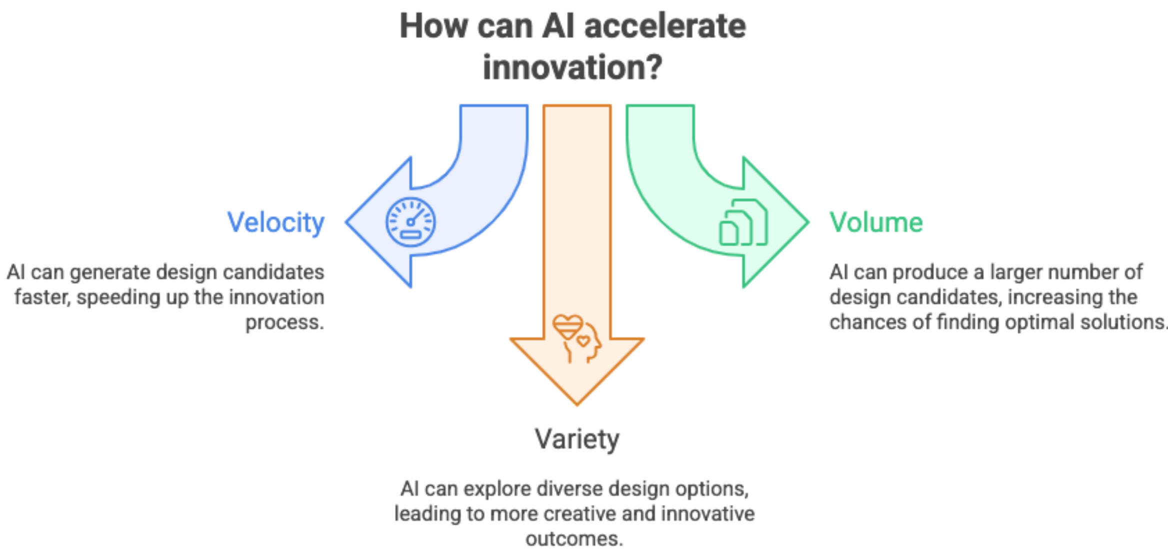

Figure 4: A June 2025 study by McKinsey & Co. "The Next Innovation Revolution - powered by AI" offers a concrete framework for envisioning how AI can accelerate innovation. Read more here.

What Next?

If anything about this paper is perceived as implying that these applied AI sustainability solutions are magically integrating into enterprises and organizations, rest assured that this is **not** the reality in 2025. This research has revealed that there is a growing comfort and understanding of LLMs in the marketplace, but that applied AI integration is proceeding slowly, particularly as the regulatory framework around sustainability has been so turbulent of late.

Beyond the specifics related to the eight areas covered in this paper, this research has revealed that all strategic conversations about applied AI integration begin at the same place: humans. Only people understand the broader strategic context for sustainability, historic and existing initiatives, the shape and nuances of internal processes and datasets, and future aspirations around applied AI integration. To begin this journey, sustainability leaders should consider:

- What is the broader sustainability strategy of my enterprise or organization? Is this clearly articulated in a way that has stakeholder buy-in and clearly defined targets? Are there aspects of this strategy that need to be fine-tuned or adapted to 2025 realities?
- What have been the historic initiatives pursued to realize these targets? What were the successes and challenges? Do any areas emerge where applied AI could improve them?
- How has the structure of internal teams and processes aligned with (or hindered) these goals? What about existing data management systems? What are some of the changes required internally to be ready for applied AI integration?
- How do these emerging applied AI solutions present new opportunities for sustainability in the future?

It is understandable to be hesitant or even overwhelmed by the prospect of AI integration with (or in) the work of your company or organization. Besides the environmental impact of LLMs, AI systems can contain harmful biases, displace workers, and add uncertainty and implementation challenges to the structures and processes of how teams work.

All of these concerns are fully justified. Yet recent history shows that failure to adapt to technological change (or embracing it too late) can erode competitive advantage and inhibit innovation. Think of companies or organizations that were slow to embrace a digital transformation in the 2000s and 2010s. Was this caution rewarded with a smarter long-term digital strategy? Or did it slow growth and limit resilience relative to more intrepid peers?

The key to implementing AI is the same as any other new technology: step back, learn about what is available, map out possible “touchpoints” in collaboration with team leaders, and develop a blueprint for action. I look forward to hearing from you as you begin this journey: Contact Jeremy Tamanini / jeremy@dualcitizeninc.com

Appendix 1: Methods

As is becoming commonplace in research, AI has been utilized to a limited extent in the authoring of this paper. In particular, Google's Gemini LLM was prompted to provide a general definition of the eight research areas and how they could be enhanced by applied AI systems. The resulting text was then edited significantly by the author. All other text in the paper is original, and footnotes indicate where a given source was referenced or can provide additional insight to the topic. The infographics in the paper were generated through Napkin AI, a tool for translating text-based descriptions into customizable infographics.

While this paper is fundamentally a framework for thinking about applied AI integration for sustainability, it is not intended as a product recommendation guide. Specific mentions of existing AI products and platforms have been used to illustrate the practical application of the concepts discussed and to ground the theoretical frameworks in real-world examples. Such references are included to provide a clearer understanding of the current landscape of applied AI solutions for sustainability, without endorsing any particular commercial offering.

The primary method for information collection for this paper involved extensive desk research. This entailed a systematic review of reports, white papers, academic articles, industry analyses, and other relevant documents available in the public domain. The research focused on reputable sources from academic institutions, governmental bodies, non-governmental organizations, and established industry research firms.

A secondary component of the research involved conducting informal interviews with both sustainability practitioners and AI product developers. These conversations provided invaluable first-hand perspectives on the practical challenges and opportunities associated with integrating AI into sustainability initiatives. Concurrently, discussions with AI product developers shed light on the design philosophies, functionalities, and future roadmaps of emerging AI solutions. Please contact the author for more details about these interviews.

To gather broader quantitative insights, an online survey was conducted over the past year through Dual Citizen LLC, leveraging its global database of sustainability professionals. This comprehensive survey was designed to poll a diverse range of practitioners across various industries and geographies, capturing their perspectives on the current state of applied AI in sustainability, perceived benefits, implementation hurdles, and future outlook. The survey data provided a valuable snapshot of widespread sentiment and trends, complementing the in-depth qualitative data obtained from interviews. The results of this survey can be found in the next appendix.

Finally, the methodology incorporated the innovative approach of monitoring and synthesizing publicly available LinkedIn posts throughout 2025 related to applied AI for sustainability. The research analyzed discussions, insights, and case sharing from global professionals actively engaged in this field. This real-time data collection method allowed us to track emerging discourse, identify practical applications being discussed, and gauge the evolving sentiment within the professional community, providing a dynamic layer of insight to the report.

Appendix 2: Survey Results

1. How would you describe the sector within which you are employed?

Private Sector	19%
Non-Profit/NGO	33%
Academia	22%
International Organization	15%
Government	7%
Other	4%

2. Which phrase best captures how you think about AI applications and sustainability within your organization today?

No integration, we do not see much relevance of AI to our sustainability work	7%
Limited integration, we are beginning to think about how AI can support sustainability work	52%
Some integration, we are starting to learn which AI applications add the most value	37%
Advanced integration, we are fine-tuning what we have already deployed	4%

3. Looking forward to the 2020s, which aspects of sustainability management do you anticipate will become most integrated with AI systems?

Energy and resource use, using AI systems to reduce consumption	13%
Sustainability reporting, using AI systems to streamline required reporting	13%
External communications, using AI systems to automate stakeholder communications	21%
Operational efficiency, using AI systems to simplify operations	16%
Data capture and analysis, using AI to improve data collection and synthesis	37%

4. Reflecting on your answers to the previous two questions, where do you anticipate the greatest need for consulting/advisory services in the next 5 years?

General advisory on where AI systems could add value to my organization	34%
Advisory on how AI systems can streamline sustainability reporting	12%
Technical support integrating AI applications to my organization	34%
Technical expertise to help minimize the environmental footprint of new AI systems	20%

5. What kind of information or tools do you feel are currently missing to help you evaluate how to best integrate AI systems to your organization?

Custom built AI systems for my particular industry sector or organization	23%
Guidance on how to quantify the environmental footprint of AI systems	20%
Knowledge sharing within my industry or organizational peers	31%
Standards on how to integrate AI to sustainability reporting	26%

Appendix 3: Additional Resources

The OECD AI Policy Observatory
The Global Partnership on Artificial Intelligence (GPAI) is an international initiative currently consisting of 44 member countries that promotes the responsible development and use of artificial intelligence (AI). Informed by a multistakeholder expert community that brings together governments, industry, academia, and civil society, it seeks to advance human-centric and trustworthy AI.

IEEE (P7100)
This standard defines a measurement framework for reporting on environmental indicators for training models and deriving inference on Artificial Intelligence (AI) systems. This includes harmonized measurements of compute intensity (e.g. energy use) with associated environmental impacts (e.g. carbon dioxide (CO_2) emissions, or water consumption). This standard describes methodologies to separate the measurement of AI-specific compute (i.e. data centers used for AI training or inference) from general purpose compute (e.g. data centres used for other purposes like cloud services).

Coalition for Sustainable AI
The Coalition for Sustainable AI is an initiative spearheaded by France, in collaboration with the UN Environment Program and the International Telecommunication Union, with the support of several international organizations. Launched at the Paris AI Action Summit, it aims at building a global community of stakeholders willing to contribute to initiatives for aligning AI development with global sustainability goals and fostering responsible AI that supports the environmental policies.

Green Software Foundation
The Green Software Foundation is building a trusted ecosystem of people, standards, tooling and best practices for green software.

AI & Environment Resource Hub
This hub is a curated collection of knowledge, tools, and insights at the intersection of AI and sustainability. Whether you're a researcher, policymaker, developer, or just curious, this hub connects you to key resources,exploring how AI can drive environmental solutions.

Green IO for Responsible Technologists
Hosting podcasts and global conferences exploring ways to build a greener digital future.

Electricity Maps
Providing real-time, global access to electricity mix, carbon intensity, and prices.