

AI for sustainability: A practical primer for business leaders

A '3+3' guide can be used to enhance the process and make the impact more effective. **By Lawrence Loh**

THE advent of generative AI has put businesses at the cusp of a new revolution. This AI can create new content using data that it has been trained on and is creating a big stir everywhere. All aspects of businesses, not least sustainability, will have to squarely face and leverage on the new possibilities brought forth by this AI.

For business leaders, using AI goes beyond knowing how to "prompt" or ask questions on generative AI chatbots like ChatGPT and DeepSeek. These chatbots have changed workplaces as they can tap on large language models (LLMs) or sophisticated AI technology that produces human-like text by being machine-trained on massive datasets.

For sustainability, leaders will need a broader appreciation, perhaps a quick road map to rapidly and inevitably leverage on AI for their businesses through and beyond the environmental, social and governance (ESG) aspects.

Guiding framework

I recommend a "3+3" guide as a starting point to examine how AI can make the sustainability process more efficient and the sustainability impact more effective.

The three process domains are:

(1) Reporting and data management: Sustainability reporting is information-intensive and AI undoubtedly excels in gathering and consolidating these information for generating the reports. AI is more than pure automation – it can rapidly extract, analyse and structure ESG data for disclosures, even conforming to standards and regulations. Real-time data collection and monitoring are also feasible. Natural language generation tools can indeed cross the final hurdle by crafting narratives for the sustainability reports.

(2) Carbon management: Carbon emissions have become a specific and probably a most critical aspect of sustainability disclosures. AI is ideal for assisting in the process of measuring, reducing and even offsetting the emissions together with verification. AI-powered carbon accounting capabilities can also work continually to enable businesses to act on identified emission hotspots. Historical data can be assessed to predict future emissions trends that help inform the making of effective decarbonisation plans.

(3) Value chain management: Sustainability goes beyond the organisation to include suppliers and customers in the full value chain. Through data access and analysis, AI provides critical tools to enhance transparency and traceability across the parts of the chain. Specific advantages include logistical optimisation such as producing delivery routes with lower carbon footprints. Further, circular economy models like resource reuse, reverse logistics and waste reduction can be incorporated.

Actual examples of AI platforms and business use cases are available. An established



reporting platform is Project Greenprint launched by the Monetary Authority of Singapore. This caters for various user categories such as large corporates, small and medium enterprises and financial institutions. The platform is comprehensive with sustainability reporting and carbon management capabilities, including features pertaining to the organisation's value chain and the broader ecosystem.

Similarly, other major providers include IBM Envizi which is an AI-driven data collection and consolidation toolkit for ESG metrics. Another example is HashMicro, an end-to-end cloud-based software that automates business tasks, streamlines operations and enhances decision-making for sustainability.

And there are many more platforms available. There are also entities that provide technical platform and other value-added assistance.

Next, the three impact areas of the "3+3" guide comprise:

(1) Resource optimisation: At a substantive level, AI can enhance resource usage for the business to be more sustainable. This involves all the key inputs for the value creation and delivery process to generate the outputs. A foremost application area is energy utilisation where AI can analyse usage patterns, predict demand and adjust operations as part of smart energy management.

Resource impact for carbon emissions is also present in water consumption and waste minimisation.

(2) Products and services: This is probably a most basic aspect of sustainable business. Sustainable products and services cut at the core of the business.

AI can help to design these offerings such as eco-friendly products in terms of ingredients, production processes and packaging.

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PHOTO: REUTERS

Many household items such as tableware can have alternatives to plastic such as single-use plant-based materials. Digital services can also be made energy-efficient and environmentally-conscious.

(3) Strategic integration: AI can be tapped to embed sustainability in the strategic planning process as well as the crafting of substantive strategies. Strategy will benefit from the inclusion of ESG risks and opportunities that have financial implications. AI can evaluate multimodal data like numerical, textual and image holistically for strategy formulation and implementation. This data collection can be real-time and integrated into operations and decision-making.

Examples of AI-driven impact on sustainability are multifarious and industry-specific. From solar panels on rooftops to floating farms, from customised systems to innovative designs, companies should go back to the drawing board to identify the key impact areas and then examine how AI systems can make them even more sustainable. More notably, changing and new regulations will be crucial impetuses for businesses to use technology for rule conformance and, more importantly, business performance.

Next AI revolutions

The call for using AI in all business domains, including sustainability, is urgent. While generative AI has now emerged, even newer developments like agentic AI are appearing on the scene. Agentic AI makes decisions and takes action autonomously without human intervention. The techniques are related to generative AI and include machine learning and natural language processing. Agentic AI will be useful in task-based sustainability arenas such as energy and supply chain management.

And upcoming on the horizon is AGI (artificial general intelligence), which will have the ability to understand or learn any intellectual task like a human being. The current AI, including generative AI, is narrow AI that is capable of only specific tasks. AGI will be broad and is able to generalise knowledge, transfer skills and solve novel problems without task-specific reprogramming.

Agentic AI and the future AGI can do everything that generative AI does and more and better. Moreover, they can do so on their own. Agentic AI is touted to arrive big within months, even as early as this year. Estimates of the advent of AGI have ranged from a few years to a few decades.

As the old, evergreen song by Elvis Presley goes, *It's Now or Never*. Businesses can be old but they can be evergreen. If they are not on the new AI now, it's better late than never.

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