LTIMindtree

Whitepaper

Sustainability: Why Should the Manufacturing Industry Be Concerned?

Authored by:
Ashish Bhat
LTIMindtree

Executive summary

Compliance-enforcing authorities have always focused on the manufacturing industry, and sustainability is no different. But what is sustainability, why is it important for the manufacturing industry, and how is software as a sustainability enabler intertwined in this conversation?

Sustainability is fast becoming an integrated part of the core strategy, business models, and products of companies[1]. But why is sustainability so important? Imagine what happened to oil lamps on streets with the invention of the electric bulb, how computers transformed the typewriter industry, and how transportation changed with the advent of trains. These are examples of technological marvels that changed how we lived and did business. However, sustainability is a societal demand to think radically and change how we exploit resources to do business and create products for consumption.

In the fishing industry, for example, fishermen, when they are on the catch for fish, sometimes unintentionally attract and catch unwanted marine species such as dolphins, turtles, etc. Worldwide Fund for Nature refers to this phenomenon as a 'bycatch.' The fishermen have been recently using LED lights to repel these unwanted marine creatures. Using this simple technology to avoid a 'bycatch' could profoundly harm the ocean, its biodiversity, and marine life. Thus, the catch can be tagged with information such as specific geolocation and temperature to establish and promote sustainable processes. This would immensely help in reducing the bycatch of unwanted marine species.

As an IT company, we are enablers at the forefront of this revolution. Our responsibility is to help the world become more "sustainable" and transform businesses.

As part of the LTIMindtree team, I have studied SAP's sustainability model for the manufacturing industry. This whitepaper describes the industry's challenges and puts forth ways that we, as partners, can promote sustainability.

Sustainability in manufacturing companies

In today's modern world, contemporary businesses and their advanced product and service offerings are radically transforming our lifestyle and resource usage. All companies are trying to reform their businesses through digital transformation, be it manufacturing, energy, construction, education, or transportation. Information technology is fundamentally altering and improving every industry. This endeavor of digital transformation not only improves productivity but has the potential to create significant environmental benefits as well.

All stages of the value network are susceptible to economic, environmental, and social impacts. Therefore, manufacturing companies must balance their economic, environmental, and social goals to ensure sustainable manufacturing processes. The success of this strategy depends on a company's smart utilization of natural resources for manufacturing. It involves creating products and solutions that meet economic, environmental, and social objectives. This will help preserve the environment while improving the quality of human life[2].

H2GS, a steel manufacturer in Sweden, is using hydrogen to manufacture steel with near zero-carbon emissions[3]. ArcelorMittal is setting up a plant in Spain to manufacture zero-carbon steel[4]. The cost of green manufacturing technology is higher. However, green steel will become a commercially viable option as emission costs start impacting traditionally made steel and governments start insisting on reducing carbon emissions. Technologies will evolve, and more manufacturers in various industries will adopt greener options to make their products. However, adopting modern technology and adhering to compliance is a long journey for every manufacturing organization. Information technology can steer this journey by helping decide the best models, processes, and compliance.

Companies track their progress through key performance indicators (KPIs). They must structure their processes to achieve transparency about the KPIs and actions required to achieve them. Some of the KPIs for a manufacturing company can be low wastage, efficient use of labor, and low cost of production. The company's economic goals mainly influence these KPIs. Recognizing the importance of sustainability, manufacturers are adding some key KPIs for sustainable manufacturing to save resources used in the manufacturing supply chain. Sustainable manufacturing uses non-polluting processes, conserves energy and natural resources, and is economically sound and safe for employees, communities, and consumers.

Drivers in sustainable manufacturing

There is a trade-off between profitability and sustainability, to begin with. Companies focusing on high profitability may neglect the drivers of sustainability, or in their endeavor to focus on sustainability, they might have to compromise on profitability. Measures like the 'Carbon Border Adjustment Mechanism' (CBAM) are making it difficult for products with a higher carbon footprint to compete in the market[5]. There is a change in the demand for products developed sustainably and an increasing focus on compliance related to sustainability. This entails aligning to a sustainable manufacturing framework.

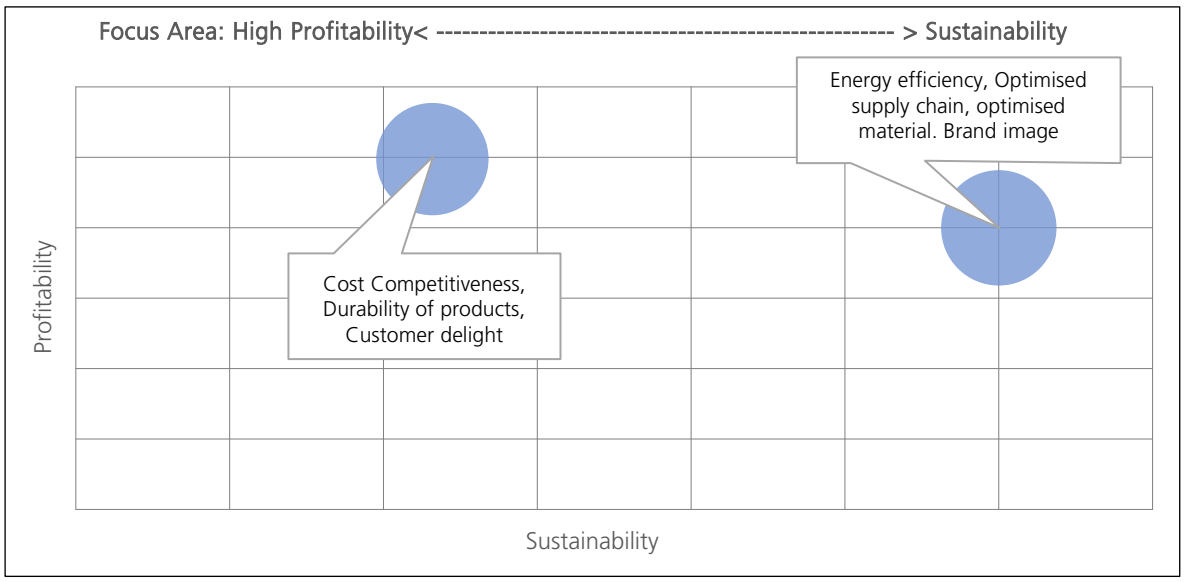

Figure 1: Sustainability V/S Profitability Plotting

Consumption of energy and other resources that manufacturing companies use often contributes to carbon emissions. Therefore, for manufacturing companies, it is especially important to understand drivers of sustainability, compliance associated with environmental reporting, challenges, opportunities, implications, etc. This, however, is incredibly challenging, as we are still focusing on certain indicators or trying to understand current and upcoming legislation. However, we must change our approach as sustainability could support decision-making and setting clear goals[6]. The objective is to have the right information available at the right time.

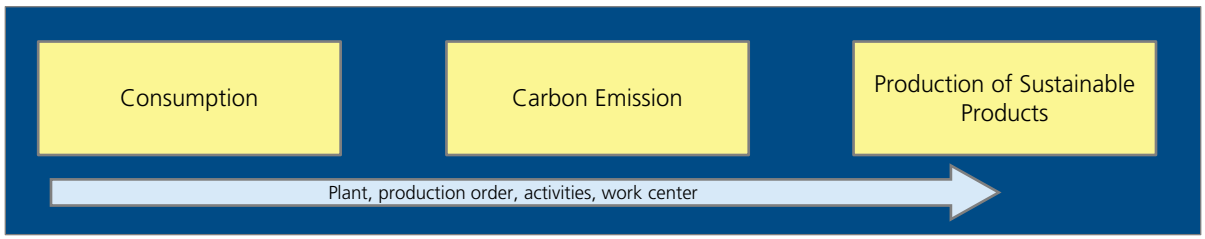

Figure 2: Moving away from consumption-heavy manufacturing to sustainable manufacturing

A typical system landscape for production quality and sustainability management requires detailed, granular financial and non-financial information, which must be combined into one sustainable production model.

The starting point is usually financial information about purchases, production, sales, and other operational topics. The execution starts with the calculation of quality KPIs. Carbon emissions are calculated across the product value chain using activity data from upstream, production, and downstream activities and emission factors. Emission factors are obtained from publicly available sources provided by governments and scientific institutions, as well as from suppliers and customers on request.

Each emission activity is assigned a Greenhouse Gas (GHG) emission scope and life cycle stage. Emissions from common activities are allocated to different products using physical allocation methods, which means they are based on the quantities of the manufactured products. The essence of having an appropriate model is tracking energy use, carbon emissions, and wastage.

Challenges

For tracking consumption, carbon emissions, and wastage, some of the key things that a manufacturing company must have are:

- The ability to integrate key data in the manufacturing process
- Data analysis
- Inventory control through the network optimization process
- Predictive analytics
- Integration of data produced by sensors with respective business processes
- Increased automation using Robotic Process Automation (RPA)

The table below shows factors connected with sustainability. We can categorize these factors into three main categories—environmental, societal, and economic. All these factors influence the manufacturing organization's journey to create sustainable products. The challenge is to integrate information about these factors into the reporting data.

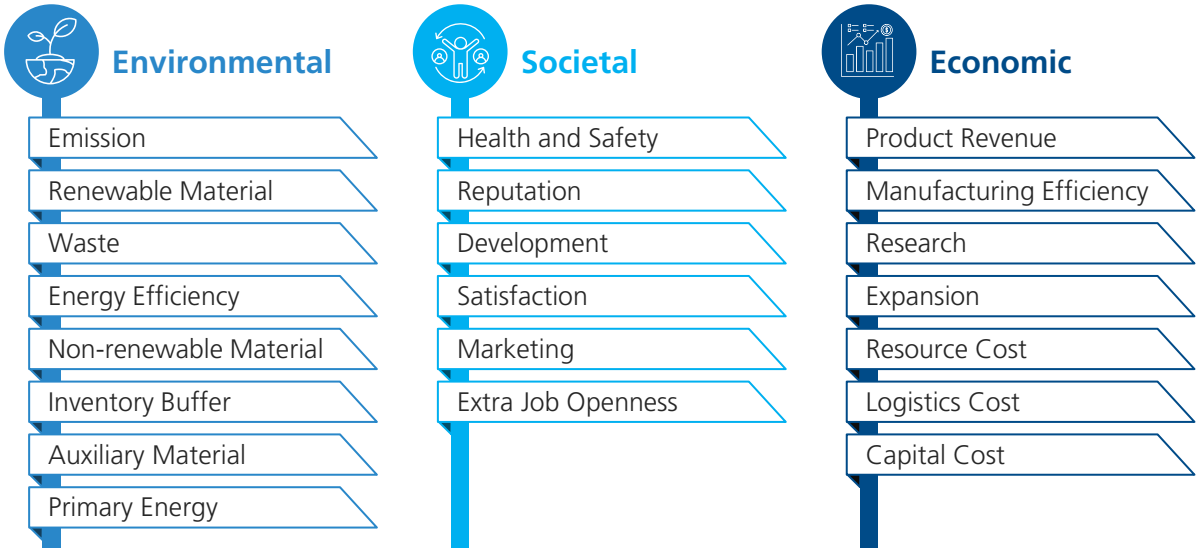

Table 1: Various factors impacting the sustainability

Reporting and compliance

In September 2020, the Global Reporting Initiative (GRI) and the Sustainability Accounting Standards Board (SASB) announced a shared vision for a comprehensive corporate reporting system. It included both financial accounting and sustainability disclosure, connected via integrated reporting. As of August 2022, the International Sustainability Standards Board (ISSB) of the International Financial Reporting Standards (IFRS) Foundation has assumed responsibility for the SASB Standards. These standards play an important role in the first two IFRS Sustainability Disclosure Standards—IFRS S1 General Requirements for Sustainability-related Disclosures and IFRS S2 Climate-related Disclosures.

Most major industry classification systems use sources of revenue as their basis for classifying companies into specific sectors and industries. A new industry classification was needed to group similar companies based on their sustainability-related risks and opportunities. The Sustainable Industry Classification System® (SICS®) solves that problem[7]. SICS groups companies into sectors and industries to build on and complement traditional classification systems. The classification is based on a fundamental view of their business model, resource intensity and sustainability impacts, and sustainability innovation potential. For example, appliance manufacturing is grouped under consumer goods. The table below captures some of the metrics required to be reported by manufacturing companies.

Topic	Metric	Category	Unit of Measure
Product Safety	Number of (1) recalls issued and (2) total units recalled	Quantitative	Number
	Discussion of processes to identify and manage safety risks associated with the use of its products	Discussion and Analysis	
	Total amount of monetary losses due to legal proceedings associated with product safety.	Quantitative	Presentation currency
Environmental Impacts	Percentage of eligible products by revenue certified to an energy efficiency certification. Percentage of eligible products by revenue certified to an environmental product lifecycle standard.	Quantitative	Number

Table 2 : Various sustainability metrics for manufacturing companies
Source: Sustainability Disclosure Topics & Accounting Metrics, Whirlpool, http://www.whirlpoolcorp.com/2020SustainabilityReport/disclosures/sasb.php

Besides, the IFRS Foundation, which designs standards used by over 29,000 publicly listed companies (roughly 60% of its total population), calls for standardization and comparability of reporting. These institutions declare that sustainability and climate change issues are becoming increasingly important to capital markets. The market should be built on the existing initiatives with a climate-first approach and on existing standard operating procedures. To improve the effectiveness of sustainability reports, all essential sustainability issues must be addressed with standardized categorization of reported information.

Manufacturing sustainability

Technologies linked to the ERP and other enterprise systems can track, collect, reuse, and recycle to reduce waste. This can help optimize investments and increase return on investment (ROI).

Supplier sustainability

Manufacturing companies must ensure (for example) that governance features of the procurement tool for company-wide purchasing provide ways to assess new and existing suppliers against sustainability criteria. At least 70% of suppliers must have effective and sustainable development policies and standards.

The new SAP Ariba software environment can be configured to achieve a commitment to sustainability by taking advantage of templates to enable sustainable supplier choices using SAP Ariba solutions.

SAP solutions

Building sustainability into operations, processes, data, and regulatory compliance, both internally and across ecosystems, essentially forms the backbone of any organization. An ERP system like SAP S4HANA with capabilities at the micro level can be a game changer. Per the sustainable production model, micro-level and factory-floor-level reporting on carbon emissions from production orders, work centers, and production activities is crucial for plant managers. This would help achieve the emission targets during production as set by management.

A SAP solution allows manufacturing companies to[8]:

- Dive into business processes and energy flows and explore how and where emissions occur
- Analyze your carbon footprint and take action to reduce your emissions

SAP has integrated sustainability into its core supply chain management solutions suite, encompassing energy and resource management, operational risk management, and product and safety stewardship. This ongoing integration reflects SAP's collaborative approach as it continues to innovate alongside its partners in driving sustainability initiatives. Daniel Schmid said regarding one of their main customers[9]: "Danone, for example, can see the carbon footprint of their 35,000 stock units with our solutions on a monthly basis."

SAP has launched a sustainability control tower that enables businesses to:

- **Set actionable targets:** Set targets, gain insights into your core processes, forecast outcomes, and analyze scenarios
- **Monitor and improve your progress:** Link your initiatives to your sustainability targets and track progress
- **Drive sustainability impact at scale:** Bring sustainability insights into your key business processes and functions to make better decisions.

Organizations using SAP solutions can leverage current sustainability metrics to report on regulatory compliance, define organization-specific sustainability targets, and track their performance. They can also identify and analyze unmet sustainability targets and act on them.

An example of the use of technology

Leveraging the SAP product portfolio

Salzgitter AG leveraged SAP Product Footprint Management to measure its overall carbon footprint and complete its digital transformation. The application allows organizations to make smarter business choices across the entire product life cycle. This is done by incorporating frequent and scalable preset and adjustable footprint scores into business processes. SAP's ability to configure easily, manage, and report data in different ways allows it to track the sustainability factor through the journey of business operations.

This SAP S/4HANA transformation program has major goals. It can build on SAP Product Footprint Management, SAP Environment Health and Safety Management, and SAP Sustainability Control Tower, leveraging SAP S/4HANA and Business Logic to gain insight into environmental data[10].

Conclusion

On the issue of sustainability, several organizations worldwide are working together to discover how economic growth and environmental protection can go hand in hand. This is the culmination of two different views in a single outlook to protect the future for generations to come.

Given the nature of the challenge, two critically interdependent and causal factors need attention. Companies that report on the positive impact of their operations on the environment are enhancing their reputation.

This is also a challenge for marketing a company's goods. Businesses must consider societal expectations and consumers' views of the environmental impact of company operations in branding and marketing. It is no longer enough to engage with customers responding to market-oriented policies. Taking care of customers who are responsive to societal and environmental policies is also imperative.

As Peter Graf puts it, sustainability is "the biggest transformation in business since the invention of the Internet[11]." Use your current or newly implemented ERP system as a starting point. Engage internal and/or external sustainability consultants, along with your CFO, Chief Sustainability Officer (CSO), and CIO. Together, you can transform your ERP and other enterprise capabilities into a coordinated system, enabling you to record, report, and act on sustainability goals. Tap ERP's potential is not only to monitor progress but to reveal areas for improvement.

ERP connections and industry standards help companies share environmental targets with ecosystem partners. Environmental sustainability should be a core part of 360-degree annual review processes.

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Author bio

Ashish Bhat

SAP Application Solution Architect, LTIMindtree

Ashish is an SAP application solution architect at LTIMindtree and heads application support for a media company. He has over two decades of professional experience managing SAP implementations and various projects for Manufacturing, Media, Airports, and Banking clients.

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