

## Sustainability Engineering Trends Q3 2022

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Sustainability is a megatrend and all enterprises are striving to increase their sustainability efforts. Engineering service providers can help to improve the sustainability of enterprises.

This is our quarterly sustainability engineering trends tracker based on our sustainability engineering framework defined in our earlier [PoV](#).

Sustainability services can be classified into five categories: energy, material, pollution, water, and food or forest. These categories are further divided based on changes in usage mix, reduction in wastage, or increase in efficiency. The five categories are applicable across three segments: products, process, and place.

There are many examples of sustainability services and initiatives we found in Q3, 2022 across these five categories and three segments, as summarized in Exhibit 1. Details are discussed in sections to follow.

**Exhibit 1: Summary Sustainability Engineering Engagements Q3, 2022 (Enterprises & Service Providers)**

		Product	Process	Place
 <b>Energy</b>	Savings	Ericsson		Holcim, Vitesco, Pratt & Whitney
	Mix	Cummins, Komatsu, Boeing, REGENT, BRP, Alstom, Rolls-Royce, Mercedes-Benz	GKN Aerospace, Siemens	Petronas, Bosch
 <b>Material</b>	Savings			Bosch
	Mix	Stellantis	Kuka, GM	Mondi
 <b>Pollution</b>	Reduction	TotalEnergies	bp, thyssenkrupp	Posco
 <b>Water</b>	Savings			Intel
	Mix			Kubota, Accenture
 <b>Food/Forest</b>	Wastage	Evonik, BASF	Trimble	
	Mix			Amazonia, Next Gen Foods
<b>Overall</b>		HCL, Accenture, Genpact, UST, BCG, NTT DATA, Tech Mahindra, Salesforce, Siemens, Climate First Bank		

Source: EIIRTrend, Media Reports



## Energy

Energy, especially that produced from fossil fuels, is a major concern for sustainability. There are two ways in which energy can be leveraged for sustainability: by changing the energy mix and by generating savings in energy usage.

- **Energy Mix:** Many enterprises are reducing the use of fossil fuels by changing the mix of their energy usage. Some examples in Q3, 2022.
  - Cummins and Komatsu have signed a MoU to collaborate on the development of zero-emissions haulage equipment. They plan to focus initially on zero emissions power technologies including hydrogen fuel cell solutions for large mining haul truck applications.
  - Petronas Hydrogen has committed to invest Rs 31,200 crore to set up a renewable energy plant in Mangaluru, creating 3000 jobs.
  - GKN Aerospace is to lead two Dutch collaborative R&D programs worth €112M, focused on electrification and thermoplastics, to support the development of sustainable aviation technologies.
  - Siemens acquires ZONA Technology, a renowned specialist in the field of aeroelastic simulation solutions. It increases Xcelerator capabilities for climate-neutral aviation.
  - Boeing to open new R&D center in Japan to focus on sustainable aviation fuels (SAF).
  - REGENT and Siemens collaborate for revolutionary zero-emission electric seaglider which will dramatically reduce time and cost of moving people and goods between coastal cities. Siemens Xcelerator Teamcenter is REGENT's fundamental design, engineering and development platform
  - BRP has announced the acquisition of an 80% stake in Pinion GmbH, a pioneer in gearbox technology based in Denkendorf, Germany. Driven by a passion to shape sustainable mobility, Pinion's team of over 60 full-time employees designs, develops, assembles and sells mechanical gearboxes for traditional and electric bicycles.
  - Bosch plans to expand operations in Anderson County, US. The company's \$200 million investment will create 350 new jobs. The Bosch facility will be the company's first production operation of fuel cell technology in the United States.
  - Cummins is powering the world's first fleet of hydrogen trains in Bremervörde, Lower Saxony, Germany. The Alstom Coradia iLint trains are outfitted with Cummins fuel cell systems and will run on the world's first 100%-hydrogen train route in passenger operation.
  - Rolls-Royce and Sanlorenzo team up for methanol propulsion in luxury yachts.
  - Cummins is presenting a 12-ton Mercedes-Benz Atego truck repowered with a Cummins B6.7H hydrogen internal combustion engine (H2-ICE). Cummins accomplished the

powertrain and fueling system integration in cooperation with the EDAG Group's truck, complete vehicle and hydrogen experts

- **Energy Savings:** The efficiency of energy usage can be increased by reducing energy wastage and losses across products, processes, and places. Some examples in Q3, 2022.
  - Holcim inaugurated its 1.6Mta Agadir-Souss cement plant in Morocco and with its Industry 4.0 technology including AI, data, predictive maintenance, automation, energy savings and wind-powered energy supply, it is expected to set new standards for modern smart cement plants.
  - Vitesco Technologies, a leading manufacturer of modern drive technologies and electrification solutions, inaugurated its plant of the future at Talegaon, Pune. The plant is climate-neutral in operation and is strongly pursuing automation, digitization, and Industry 4.0.
  - Pratt & Whitney's Industry 4.0 Strategy Driving Operations Modernization. It enables integrated, real-time demand planning, automated workflows, real-time materials and data tracking, scheduling, and energy optimization. It has connected over 40% of total machines to date and plans to connect 100% of original equipment manufacturer (OEM) machines and 75% of Aftermarket machines enterprise-wide by 2024.
  - Malaysia's 5G network to use new, energy-saving Ericsson radios



## Materials

Materials are made from a combination of different metals and elements. Most metals are non-replenishable resources and their proper and environment-friendly use and reuse is essential. There are two ways materials can be leveraged for sustainability: by changing the materials we use and by savings in material usage.

- **Material Mix:** Swapping the materials we use with more environment-friendly options across products, processes, and places. Some examples in Q3, 2022
  - Support for a sustainable circular economy: Kuka Recycling robot tackles electrical waste. Automated recycling robots eliminate the need for human contact.
  - Mondi, a global supplier of packaging and paper, is investing around €5 million in a new research and development facility at Mondi Steinfeld in Germany. This investment will support customers by helping them to develop solutions that achieve their sustainability goals.

- Stellantis Mirafiori Complex in Italy will be home to its leading Circular Economy Hub, starting with three activities for the sustainable use of vehicles and parts: vehicle reconditioning, vehicle dismantling, and parts remanufacturing.
- GM and Lithion Announce an Investment and Strategic Partnership Agreement to Pursue a Circular EV Battery Ecosystem.
- **Material Savings:** Increased savings in material usage across products, processes, and places. Some examples in Q3, 2022.
  - Quantum computing company Multiverse Computing announced a collaborative research project with the Bosch Automotive Electronics plant in Madrid to leverage the power of quantum computing in the digital twin of a factory. The Multiverse software solution will leverage data to assess the performance of individual equipment as well as broader production processes to enhance quality control and improve overall efficiencies, including energy and waste management.



## Pollution

Pollution is one of the major concerns for sustainability, and it is imperative to reduce pollution. Many enterprises aspire to be net-zero emissions enterprises. Some examples in Q3, 2022

- bp and thyssenkrupp Steel work together to advance the decarbonization of steel production.
- Posco and Britain's Primetals Technologies to jointly design an eco-friendly steelmaking pilot plant using its HyREX technology. It is a steelmaking method to manufacture molten metal using iron ore fines and hydrogen. It uses hydrogen instead of fossil fuels, thus can dramatically reduce carbon emissions in the steelmaking process.
- Australia: TotalEnergies, INPEX and Woodside Join Forces to Develop a Major Offshore CO2 Sequestration Project



## Water

Water is one of our fundamental needs. We require it directly and as an input for many processes and maintenance of places. Its efficient use is essential for sustainability. There are two ways water can be leveraged for sustainability: by changing the water mix and by savings in water usage.

- **Water Mix:** Many enterprises are changing their water mix by treating and reusing water, which was not possible earlier either due to technology, cost, or convenience. Some examples in Q3, 2022.

- Kubota and Accenture have formed a new joint venture company, Kubota Data Ground to accelerate the digital transformation of the Kubota group's business model and operating infrastructure using digital technologies including IoT. New company will work to address global issues related to food, water, and the environment by utilizing data and cutting-edge digital technology.
- **Water Savings:** The efficiency of water usage can be increased by reducing water wastage. Some examples in Q3, 2022
  - Intel's operations in the United States, Costa Rica and India are officially net positive on water use. In those countries, Intel restores and returns more freshwater than it takes in.



## Food/Forest

There are two ways food or forest can contribute to sustainability. The first way is by changing the food or forest mix and the other is by reducing waste in food/forest.

- **Food/Forest Mix:** There are sustainable alternatives for food. Some examples in Q3, 2022
  - Plant-based protein, supplements and health food company Amazonia looks to open a brand-new R&D center next month on Queensland's Gold Coast.
  - Next Gen Foods, a Singapore based producer of alternative meats opens US headquarters, R&D center at Chicago.
- **Food/Forest Wastage Reduction:** Food wastage can be reduced with proper planning. Some examples in Q3 2022.
  - Trimble to Acquire Bilberry to Extend its Selective Spraying Capabilities for Sustainable Farming
  - Evonik and BASF partner to reduce the environmental footprint for feed and animal protein industries

## Overall Sustainability Ecosystem

There are some activities in the overall sustainability ecosystem where enterprises and engineering service providers are involved. Some examples in Q3, 2022

- HCL Technologies launched its first comprehensive sustainability-focused solution, Net-Zero Intelligent Operations (NIO). NIO is a cloud-agnostic, scalable solution that enables enterprises to monitor, normalize, and reduce energy consumption and GHG emissions in

real-time. This helps enterprises optimize the energy intensity of assets and processes. It also enables calculation, reporting and identifying emission optimization potential for workspaces and shop floors.

- Climate First Bank launches residential solar loan platform. The solar loans, available to Florida customers, come with no dealer fees.
- Accenture Invests in pulsESG™ to Advance ESG and Sustainability Measurement, Decision Making and Reporting for Companies
- Genpact and Climate Vault Join Forces to Rapidly Accelerate Towards a Carbon-Neutral Future.
- Accenture has acquired Carbon Intelligence, a leading carbon and climate change strategy consultancy, adding more than 160 professionals. Carbon Intelligence is focused on helping global businesses understand their overall carbon footprints, and ways to reduce them, using Science Based Targets Initiative (SBTi) strategies.
- NTT DATA Launched Japan's First Greenhouse Gas Emissions Visualization Service Incorporating Data from the International NGO, CDP into its platform C Turtle. By using this service, companies will be able to use the "Company-wide Emission Allocation Method", a way to calculate their emissions while reflecting the impact of reductions of their suppliers, thereby promoting reduction throughout the entire supply chain.
- UST Partners with GGI to Accelerate Innovation in the Green Technology Marketplace
- BCG to acquire Quantis to further strengthen climate and sustainability (C&S) expertise and transformation capability. Quantis with 250 consultants helps companies to better understand their climate, biodiversity, water, land, and plastics footprints; and develops and delivers bespoke strategies to align with the planet's boundaries.
- The FIA, the governing body of world motorsport and the federation of the world's leading motoring organizations, has selected Siemens as Official Sustainability PLM Software Supplier.
- Tech Mahindra Launches End-to-End ESG Offerings to Accelerate Sustainable Transformation of Enterprises Globally
- Salesforce announced the launch of Net Zero Marketplace, a new carbon market aimed at connecting buyers with environmentally-focused entrepreneurs, and making carbon credit purchases simple and transparent.

## Bottom line: Sustainability is picking up across industries and sectors.

In Q3 2022, we see

- Sustainability programs and announcements are declining compared to the last quarter
- The focus is more on energy, and materials and pollution areas.
- Enterprises are more active than service providers.
- Green Finance is picking up.
- Service providers have started declaring sustainability related deals, solutions and partnerships
- Service providers are acquiring sustainability engineering firms

We will keep you updated on sustainability trends in future quarters. Keep watching this space.



## About the Author

### Pareekh Jain



Pareekh Jain is CEO and Lead Analyst of EIIRTrend and Pareekh Consulting.

EIIRTrend is an information platform for discovering engineering, IoT, Industry 4.0 and R&D (EIIR) trends, information, insights, best practices, across 12 industry segments, 24 service segments, 75+ countries and 2500+ providers and buyers. Pareekh Consulting is a focused analyst and advisory firm for EIIR.

A seasoned EIIR professional, Pareekh has seen the EIIR industry from four perspectives: service provider, sourcing advisor, enterprise buyer, and industry analyst.

He is regularly quoted in media on EIIR trends. He has provided more than 500 media quotes to various global and India media outlets. Some of the media publications he is quoted in include Harvard Business Review (HBR), NDTV, ZEE TV, Forbes, Times of India, Economic Times, Business Standard, Hindu, Business Line, Livemint, Indian Express, Financial Express, Deccan Herald, Business Today, Telegraph, Hans India, Bizzbuzz, Informist, Voice and Data, Rediff, Voice of America, Moneycontrol, Quartz, Trak, NHA Asia, NZZ, The Ken, Techcircle, Nearshore Americas, Siasat Daily, Firstpost, and Business Insider.

Pareekh is a thought leader, having authored more than 200 publications on topics related to EIIR outsourcing. He loves business fiction writing in his free time, and has authored a novel, Who Is That Lady?

Pareekh received his MBA from the Indian Institute of Management (IIM), Bangalore and his Bachelor of Technology degree from the Indian Institute of Technology (IIT) Delhi.

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