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Sustainability Engineering Trends Q4 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 Q4, 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 Q4, 2022 (Enterprises & Service Providers)

		Product	Process	Place
Energy	Savings		*Scalian Group*	*China Mobile, Ericsson*
	Mix	*Rolls Royce, Neste, Volkswagen, First Hydrogen, EDAG*	*Michelin, Faurecia, bp*	*Toyota, First Solar, Ricardo, Stellantis, Boeing, Toyo Tire*
Material	Savings	*Nescafe*		
	Mix	*Evonik*	*LG Chem*	*Vianode*
Pollution	Reduction	*Danfoss, Nissan, Kobe Steel*	*TotalEnergies, Holcim, GE Digital*	*NTPC, GE Power*
Water	Savings	*Wipro*		
	Mix			*Vedanta Aluminium*
Food/Forest	Wastage		*Bayer*	
	Mix			*Vertical Future*
Overall		*Decathlon, Aramco*		

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 Q4, 2022.
  - Symbio, a Michelin and Faurecia joint-venture for hydrogen fuel cell stacks systems is to invest €1 billion to help develop the hydrogen energy industry across France.
  - bp accelerates and expands in bioenergy, agreeing to buy leading US biogas company Archaea Energy
  - Toyota has started construction of a fuel cell research and development center for commercial vehicles in the Chinese capital Beijing. Once completed, the R&D center will also house fuel cell production and test lines
  - First Solar, the largest solar panel maker in the United States, will invest $270 million in a dedicated thin film PV R&D innovation center in Perrysburg, Ohio.
  - Ricardo celebrates opening of state-of-the-art hydrogen test facility in Shoreham
  - Stellantis Hordain: First Plant in the World to Produce Hydrogen-powered, Electric and Combustion Engine Commercial Vehicles
  - Rolls-Royce and Neste to cooperate on the implementation of sustainable fuels for mtu engines
  - BEL has signed an MoU with Triton Electric Vehicle for the manufacture of hydrogen fuel cells by BEL with technology transfer from TEV.
  - Boeing is investing $200 m in India R&D center to work on eVTOL, sustainable fuel, etc.
  - Volkswagen is developing a hydrogen car that can travel 2,000 kilometers on a single tank. VW and Kraftwerk are filing a patent for a special fuel cell.
  - Rolls-Royce tests a jet engine running on hydrogen. This is the first time a modern aircraft engine has ever been run on hydrogen. Will hydrogen be a good clean option for short haul aircrafts?
  - A new manufacturing site has opened by Toyo Tire in Indija, Serbia. A solar power generation system has been installed at the site to deliver 10.15GWh of sustainable generated electricity annually. To support tire development, the company will use its R&D center in Germany to further develop technologies for each part of a tire's structure, shape and pattern.
  - First Hydrogen has selected EDAG Group (EDAG) as its design partner for its next generation of hydrogen fuel cell vans (FCEVs).

  - German city Wiesbaden to retire its one-year-old hydrogen fuel-cell buses after €2.3m filling station breaks down. It will stick to electric battery buses over long term.
  - Stellantis plans to acquire stake in Symbio, a Faurecia Michelin hydrogen company and leader in fuel cell technologies for mobility industry

- **Energy Savings:** The efficiency of energy usage can be increased by reducing energy wastage and losses across products, processes, and places. Some examples in Q4, 2022.
  - Scalian Group continues to expand in Germany with the acquisition of con|energy.he company's expertise particularly focuses on consulting related to the energy transition, heating and mobility.
  - China Mobile and Ericsson launch energy-efficient 5G smart site

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 Q4, 2022
  - Evonik introduces new powder materials for 3D printing with reduced carbon footprint
  - Vianode has opened a research and development center for sustainable battery materials in Norway
  - LG Chem Makes Equity Investments in Battery Recycling Company, Jae Young Tech

- **Material Savings:** Increased savings in material usage across products, processes, and places. Some examples in Q4, 2022.
  - Nescafe Dolce Gusto has launched a new at-home coffee machine, Neo. The coffee pods for the Neo system are paper-based, home-compostable and use 70% less packaging. Through the use of technology, Neo aims to replicate the "coffee shop at home" experience.

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 Q4, 2022

- Decarbonizing Heavy Industry: TotalEnergies and Holcim Join Forces to Study Solutions for First Carbon-Free Cement Plant in Belgium
- Danfoss announces intent to acquire German compressor manufacturer BOCK GmbH to strengthen expertise in CO2 and natural refrigerants technology
- GE Digital Software Now Offers Carbon Advice and Insights Designed for Emissions Reduction in Thermal Generation Plants
- Nissan to use Kobe Steel's low-CO2 steel and green aluminum for Nissan models
- NTPC Limited and GE Power India Limited sign MoU to reduce carbon intensity from NTPC's coal fired units

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 Q4, 2022.
  - Vedanta Aluminium deploys IoT technology for water conservation at its power plants. It studies real-time operational data and recommends optimum water quality parameters that ultimately lead to water conservation through increase of CoC (or cycles of concentration i.e. reuse of the same water multiple times for cooling the condenser)
- **Water Savings:** The efficiency of water usage can be increased by reducing water wastage. Some examples in Q4, 2022
  - Wipro Designit is supporting one of Europe's largest home appliances manufacturers to define a brand neutral and sustainable design vision for laundry care. Designit will conceptualize and outline the innovative new machine architecture and sustainable product story, including design of the product, the experience, and relevant digital touchpoints. The visionary washing machine concept will act as a lighthouse and will be setting the direction for future sustainable products in this segment.

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 Q4, 2022
  - Vertical Future - the fastest-growing UK-based vertical farming technology and R&D business - has entered into a collaboration with Vertical Farm Systems (VFS), a new company established to work on the Singapore Advanced Vertical Farming (SAVE) project.
- **Food/Forest Wastage Reduction:** Food wastage can be reduced with proper planning. Some examples in Q4 2022.
  - Bayer showcases how to jointly tackle the challenges of food security and climate change. Bayer showcased hybrid wheat, carbon farming, corp protection and fieldview its digital farming platform.

Overall Sustainability Ecosystem

There are some activities in the overall sustainability ecosystem where enterprises and engineering service providers are involved. Some examples in Q4, 2022

- Decathlon reverses its name to NOLHTACED (Decathlon spelled in reverse) in 3 Belgian cities to promote reverse shopping i.e buying from customers the products they don't use to promote the reverse or circular economy. A good initiative supported by an interesting marketing hack.
- Aramco announces $1.5bn Sustainability Fund

Bottom line: Sustainability is slowing down from its earlier pace.

In Q4 2022, we see

- Sustainability programs and announcements are declining compared to earlier quarters
- The focus is more on energy mix, and pollution areas.
- Enterprises are more active than service providers.

- Green Finance is picking up.
- Service providers have started declaring sustainability related deals, acquisitions and partnerships.

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?

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