

Sustainability Engineering Trends Q3 2021

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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, 2021 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, 2021 (Enterprises & Service Providers)

		Product	Process	Place
 Energy	Savings	Airbus	Nokia, MY Airlines, GE Digital	ABB, HK Airport Atos, Johnson Controls
	Mix	Accenture, Glenfiddich, Volkswagen, IOCL, Sungrow, Ricardo, ArcelorMittal, Alstom, Porsche, Siemens, Shell, Rolls Royce	Force Technology, Chevron, Delta, Google, Alstom, Plastic Omnium, Volkswagen	Shell, T Mobile, Siemens, Continental TotalEnergies,
 Material	Savings	BMW	BatteryLoop, HiQ	
	Mix	Faurecia, Footprint, Skoda, Kemira	LG Chem, Coupang	ABB, Renewcell, Continental
 Pollution	Reduction	SSAB, Volvo, GE	SwissRe, Accenture, Climeworks, Duke Energy, Microsoft, Caterpillar	Sinpoec, thyssenkrupp, Lhoist, Wartsila, BHEL
 Water	Savings		LTTS	PepsiCo
	Mix	ABB	Kurita	TCS
 Food/Forest	Wastage	Wiliot	TCS	
	Mix		AFRY Opticet	
Overall		Infosys, Economist, Kubota, Accenture, Capgemini, GASAG, Globant, Salesforce, Unilever, Henkel, L'Oreal, LVMH, Natura, T-Systems		

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, 2021.
 - New test center in Denmark by Force Technology for hydrogen. The test centre shall carry out tests and analyses in the production, transport and consumption of hydrogen – e.g., material testing, hydrogen quality analysis, metrology, efficiency, emission and leakage tests.
 - Shell is supplying renewable energy to T-Systems sister company, T-Mobile US. In turn, subsidiaries of Shell have awarded T-Systems a contract to install more than 10,000 EV chargers in Germany
 - Free2Move eSolutions and Accenture Join Together to Accelerate Energy Transition Towards Net-Zero
 - Glenfiddich uses its own whisky waste to fuel trucks.
 - Electric Highway Tests for Trucks Accelerate in Germany. Now there are three test tracks in Germany. Siemens Mobility is working with Continental Engineering Services in the development of pantographs for trucks.
 - Volkswagen to create research center for biofuel engines in Brazil
 - IOCL to build India's first green hydrogen plant at Mathura refinery
 - Sungrow, the global leading inverter solution supplier for renewables, opened R&D Center in Nanjing, China. The center focuses on the R&D in smart technologies, big data, software integration, etc.
 - French oil giant TotalEnergies will acquire BlueSG's EV charging network. Bluecharge is currently Singapore's largest EV recharging network, with 1,500 recharging points representing around 85% of the island's recharging points.
 - Ricardo to engineer zero emission buses for UK's first hydrogen transport hub
 - ArcelorMittal Plans \$9 Billion Renewable Energy Investment In India
 - Chevron, Delta Air Lines, and Google Announce Intent to Measure Sustainable Aviation Fuel Emissions Data, Increase Industry Transparency
 - Alstom's Coradia iLint hydrogen train runs for the first time in France
 - Porsche and Siemens Energy have joined forces with a number of international companies to build an industrial plant for the production of nearly CO₂-neutral fuel (eFuel) in Punta Arenas, Chile.
 - Shell to build one of Europe's biggest biofuels facilities

- Alstom and Plastic Omnium partner to design onboard hydrogen storage solutions for railway
 - Volkswagen is the first automaker to transport most of its new vehicles overseas using low-emission LNG ships (LNG – liquefied natural gas). It will cut the ships' CO2 emissions by up to 25 %.
 - Rolls-Royce is investing in Berlin-based start-up Kowry Energy GmbH, a provider of sustainable and decentralized energy systems. Kowry supports the sustainable expansion of energy infrastructure in Sub-Saharan Africa by combining renewable energy sources such as photovoltaic and battery storage systems.
- **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, 2021.
 - ABB to deliver artificial intelligence modelling for data center energy optimization in Singapore. Pilot project with ST Telemedia Global Data Centres to map the potential of artificial intelligence, machine learning and advanced analytics, with a target of at least 10 percent energy savings
 - Hong Kong's airport has become the first in the world to adjust its air conditioning based on real-time weather data, cutting down its yearly energy consumption.
 - Atos and Johnson Controls to partner to accelerate journey to Net Zero Buildings by marrying Atos' Net Zero Transformation Portfolio and EcoAct advisory solutions with Johnson Controls OpenBlue Net Zero Buildings portfolio of sustainability offerings
 - Nokia launches fifth generation routing silicon, sets new benchmarks for IP network security and energy efficiency
 - Airbus launches extra high performance wing demonstrator to fortify decarbonisation ambition. Similar to how an eagle soars, adapting the shape, span and surface of its wings and feathers, this demonstrator allows for increased flight efficiency.
 - Malaysia Airlines Partners with GE Digital to Modernize the Airline's Fuel Analytics Platform to meet its sustainability goals.



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, 2021
 - Faurecia to create sustainable, smart materials division, targets EUR 3 b sales by 2030.
 - Footprint, a global materials science technology company announced plans for a European R&D center in Eindhoven, The Netherlands. EU regulations banning many single-use plastics create potential tailwinds for Footprint sustainable solutions
 - LG Chem and Coupang Join Hands To Recycle The Plastic Waste From Deliveries. Eco-friendly project created through partnership between Korea's largest chemical and e-commerce companies.
 - ABB wins large-scale order for automation, electrification, quality control systems, motors and drives at world's first commercial-scale textile recycling plant in Sweden by Renewcell.
 - ŠKODA AUTO has developed a sustainable, ecological material from sugar beet pulp and applied for a patent. It is also researching another material based on the reed plant miscanthus. Both could be used in the interior for example for the door trim and decorative inlays in the dashboard. They are investigating how materials such as coconut fibres or rice husks can be used in the future.
 - Kemira opens its new APAC R&D center in Pujiang Town, Shanghai, China, to meet rapidly growing market demand and accelerate efforts to develop renewable, biodegradable and recyclable products in the Asian region.
 - Continental Enables Use of Recycled PET Bottles in Tire Production as of 2022
- **Material Savings:** Increased savings in material usage across products, processes, and places. Some examples in Q3, 2021.
 - BatteryLoop, a company which gives electric car batteries a second life as energy storage systems, in collaboration with HiQ, is now developing a digital platform that enables an estimate as to how long a battery has left to live, thus its economic value in a circular business model.
 - Secondary First': BMW Group aims to increase significantly the percentage of secondary materials in its vehicles. On average, current vehicles are manufactured using almost 30 percent recycled and reusable materials. With the 'Secondary First' approach, BMW Group plans to successively raise this figure to 50 percent.



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, 2021

- Accenture Helps Climeworks Filter More CO₂ from the Air and Inspire One Billion People to Be Climate Positive
- Sinopec has initiated China's first megaton carbon capture, utilization, and storage (CCUS) project. The Project is estimated to reduce carbon emissions by 1 million tons per year. Sinopec will establish a carbon capture, utilization, and storage R&D center to advance a series of core technologies and bottleneck problems
- SSAB has now produced the world's first fossil-free steel and delivered it to Volvo for trials.
- Swiss Re has signed the world's first long-term agreement to take carbon directly out of the air. The contract with Climeworks AG will net the climate technology company \$10 million over 10 years.
- Duke Energy Teams with Accenture and Microsoft to Develop First-of-its-Kind Methane-Emissions-Monitoring Platform. It will track and prioritize data associated with leaks using advanced detection methods such as satellites, fixed-wing aircraft and ground-level sensing technology. It will allow field response teams to more rapidly identify and repair methane leaks.
- thyssenkrupp Steel will use the climate neutral product line LEVEL BLUE of global lime producer Lhoist for decarbonizing the supply chain on its way towards sustainable steel production.
- Wärtsilä was one of the leading partners in the LINCCS (linking carbon capture and storage) consortium. The LINCCS project is focused on reducing costs for new carbon storage facilities by 70% and advancing the development of carbon capture technologies in a range of sectors including maritime.
- BHEL successfully demonstrates high ash coal gasification based Methanol plant.
- Caterpillar acquires CarbonPoint Solutions. It provides technology to concentrate and capture CO₂ for utilization or sequestration.
- GE Developing 3D-Printing-enabled System to Capture CO₂ from the Air



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 Q2, 2021.
 - TCS is engaged by a US-based water management and services major, to develop a secure, cloud based IoT Platform for Data Analytics & Digital Twin implementation at their chemical manufacturing plants, which will help improve hygiene & food quality, regulatory compliance and customer service & satisfaction.
 - Kurita, a global player in the geothermal market for water treatment services, announced the opening of its new European Technology Center in Viersen, Germany.
 - ABB's technology in Singapore's first dual-mode desalination plant helps tackle water scarcity in region
- **Water Savings:** The efficiency of water usage can be increased by reducing water wastage. Some examples in Q3, 2021
 - LTTS has been chosen as a partner to implement a water & wastewater system for the beverage plant of a leading food and beverage conglomerate. The sustainability initiative will reduce the water wastage and adhere to local regulations.
 - PepsiCo announced its ambition to become "Net Water Positive" by 2030, aiming to replenish more water than the company uses.



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, 2021
 - AFRY and OptiCept enter a strategic cooperation agreement with the aim of developing technology for future food production
- **Food/Forest Wastage Reduction:** Food wastage can be reduced with proper planning. Some examples in Q3 2021.
 - TCS is selected by a leading US-based electricity and gas company, for GIS-based wildfire applications development and support. This program aims at significantly improving detection and emergency response for wildfire events, thereby ensuring environment protection and public/employee safety.

- IoT startup Wiliot secures \$200 million investment led by SoftBank in estimated billion dollar valuation. It has developed a stamp-size computer, based on ARM architecture, which can attach to any food, product or packaging to sense a range of physical and environmental data.

Overall Sustainability Ecosystem

There are some activities in the overall sustainability ecosystem where enterprises and engineering service providers are involved. Some examples in Q3, 2021

- Infosys and The Economist Group Announce Ambitious New Strategic Partnership Around Sustainability
- Kubota has formed a strategic partnership with Accenture to accelerate its ongoing digital transformation by evolving its business model to further contribute to solutions for food, water, and environmental sustainability.
- Capgemini launches Net Zero Strategy offering to help organizations move from pledges to results on their sustainability journey
- Working with Capgemini Invent, GASAG one of Germany's largest energy suppliers, took the first step towards the goal of achieving carbon neutrality by 2040 by validating neutrality targets, identifying fields of action, and developing a CO2 Savings Roadmap.
- Globant to invest £65m over the next three years in UK to strengthen its operations by quadrupling its teams and creating a Sustainability Hub
- Accenture and Salesforce are enhancing Mastercard's ability to measure and analyze carbon emissions across its value chain. By using Salesforce Sustainability Cloud with the help of Accenture, Mastercard is gaining comprehensive insights around the emissions of its suppliers, helping it to work more effectively with the organizations in its partner network to take meaningful climate action.
- New cosmetics consortium to co-design environmental impact assessment and scoring system. Unilever, Henkel, L'Oreal, LVMH and Natura &Co invite the cosmetics sector to join the consortium
- T-Systems has developed a web-based solution for sustainability. "Syrah Sustainability" enables companies to keep track of all sustainability indicators. A standard catalog lists 80 to 100 indicators which is fully aligned with the United Nations' Agenda 2030 with its 17 sustainability goals.

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

In Q3 2021, we see

- The focus is more on energy, and pollution areas.
- Enterprises are more active than service providers.
- Service providers have started declaring sustainability related deals.
- Service providers are developing their sustainability engineering offerings

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

About the Author

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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, 50+ countries and 2000+ 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. Some of the media publications he is quoted in include Harvard Business Review (HBR), NDTV, Times of India, Economic Times, Business Standard, Hindu, Business Line, Livemint, Indian Express, Financial Express, Deccan Herald, Bizzbuzz, Rediff, Voice of America, Moneycontrol, Quartz, Business Today and Business Insider.

Pareekh is a thought leader, having authored various 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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