



30 Tech Trends for 2026

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30 Tech Trends for 2026

Summary

A clear guide to 2026 technology priorities, showing where disciplined, evidence-based innovation delivers near-term results and long-term advantage.



Product Design & Innovation

Product innovation shifts toward integrated, AI-enabled solutions aligned to core business goals, emphasizing usability, validation, and faster time to value.



Brand

Brand strength increasingly depends on credibility, transparency, and proof, as customers and regulators reward companies that deliver measurable outcomes.



Supply Chain & Operations

Operational strategies prioritize resilience, regional flexibility, and technology integration to manage volatility, constraints, and rising performance expectations.

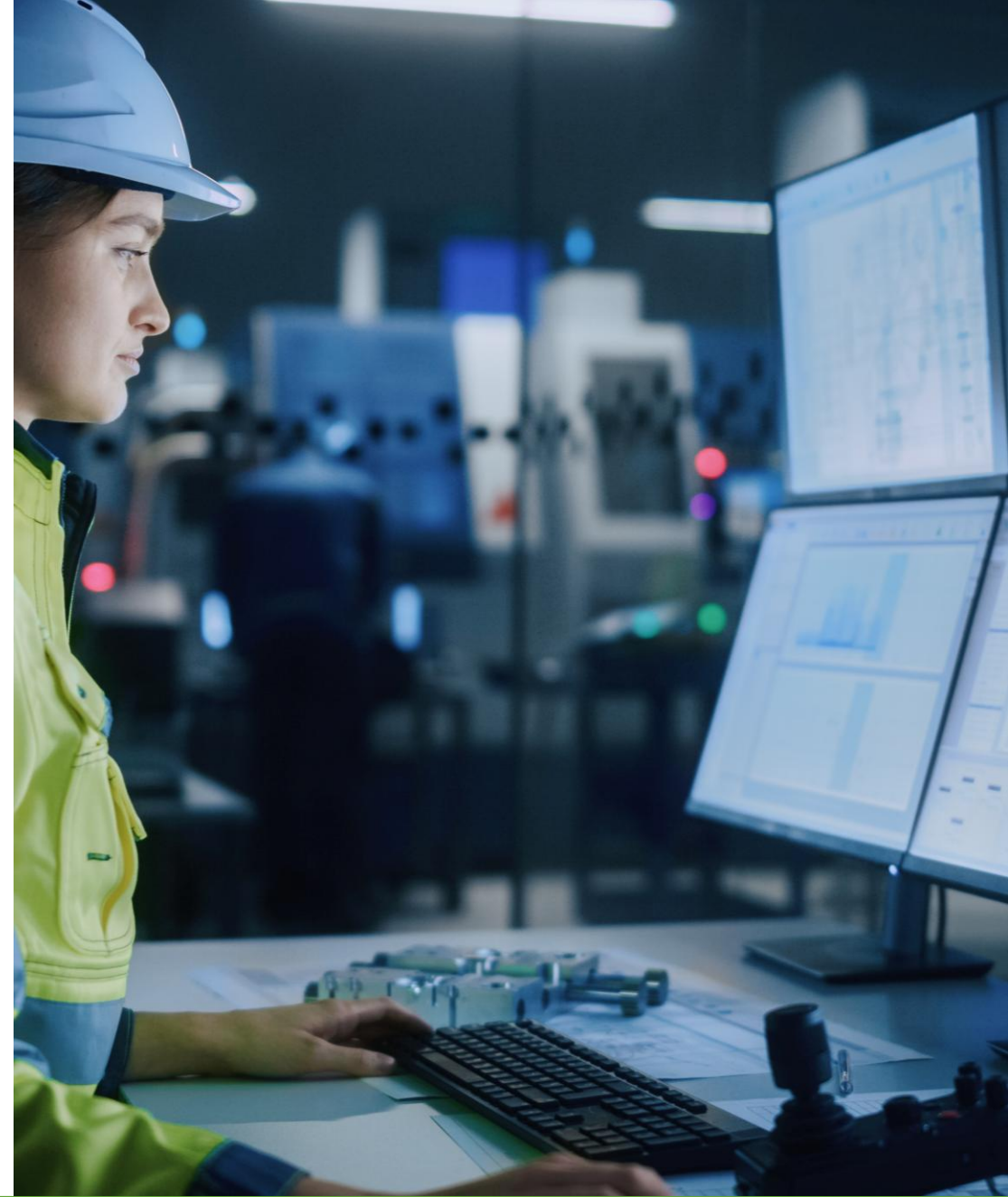


Growth Potential

Growth favors companies scaling proven technologies today while selectively positioning platform investments that can deliver defensible advantage tomorrow.

Prioritizing Speed, Integration, and Results

As companies plan for 2026, technology investment is shifting from bold experimentation to disciplined execution. Across industries, leaders are prioritizing solutions that integrate AI into existing workflows, deliver measurable performance, and address near-term operational pressures. High-cost, long-horizon bets are giving way to pragmatic projects focused on resilience, efficiency, and speed to value. Evidence-based innovation is now the baseline, with regulators, customers, and internal stakeholders demanding proof, usability, and clear returns. Competitive advantage will come from integrating technologies across systems, aligning innovation with business realities, and scaling what works today while selectively positioning for longer-term platform opportunities.



Agrifood & Health



Enhanced Health and Reduced Harm

2026 marks a shift to measurable, evidence-backed functional health, with stratified platforms outperforming broad wellness claims

In 2026, functional health will shift from vague wellness claims to measurable, outcome-driven benefits. Ingredient development will focus on metabolic support, cognitive performance, and gut-driven pathways, leveraging nutrient stacks, botanicals, functional mushrooms, and novel bioactives with enhanced bioavailability and clearer links to health outcomes. Integrated platforms combining targeted ingredients, digital coaching, and biomarker data — such as CGM* devices, microbiome profiles, and inflammation markers — will gain traction among premium consumers. While true one-to-one personalization remains limited, stratified nutritional models will dominate categories like women's health, skin, longevity, and athletic performance. Brands and suppliers that emphasize transparent validation, clear communication, and integration with health systems will lead as wellness becomes part of mainstream preventive care.

Functional Health Ingredients

Mood, cognition, and gut-brain axis-related consumer product developers raise over USD 200 million collectively.

As gut and metabolic health continue accelerating, leading corporations Danone North America, Kyowa Hakko, and ADM continue their research, expansion, and consumer education on adaptogens and psychobiotics. Expect more focus on scientifically validated ingredients as regulators tighten oversight and CPGs demand stronger validation.



Urbi Pathak
Senior Research Associate

Resilience Building

In 2026, data-to-decision platforms that deliver measurable resilience outcomes will drive the greatest impact

In 2025, shifting regulations and implementation challenges forced companies to recalibrate broad sustainability commitments. This pivot elevated resilience outcomes, such as managing feedstock volatility, protecting supply chain continuity, and reducing emissions intensity, as direct drivers of financial performance.

Delivering these outcomes requires capabilities that connect short-term operational choices with long-term strategy across global supply chains. The solutions that will win in 2026 are those that provide credible measurement and verification, enable region-specific interventions, and translate data into decisions rather than dashboards. Companies unable to integrate partners, standards, and data flows will struggle to deliver measurable results. To avoid this, they should focus on a defined set of resilience targets and align technology, partnerships, and governance accordingly. In 2026, differentiation will hinge not on ambition, but on scalable execution — demonstrated through repeatable outcomes and clear ROI.

Value Chain Collaboration

Resilience shifts from pledges to implementation partnerships across the value chain.

As companies reset sustainability goals around achievable, bottom-line resilience targets, they will increasingly depend on regional ecosystems of growers, suppliers, implementers, and tech providers for execution. Partnerships that link on-the-ground action to procurement, reporting, and risk management will gain traction, while standalone tools without clear deployment pathways will lose relevance.



Deepesh Bista
Analyst

Growth Through the Bioeconomy

Biomanufacturing wins when it delivers performance, not just parity — success hinges on actual costs, policy readiness, and clear value

By 2025, biomanufacturing began shifting toward platforms that offer functional advantages over conventional methods. Precision fermentation, enzymatic processing, and AI-assisted design advanced where they enhanced product stability, sensory attributes, or supply resilience — areas where biology provides a clear edge. In contrast, hype-driven categories like plant-based analogs and CO₂-to-protein pathways continued to underdeliver or remained prohibitively expensive, eroding confidence in parity-based targets. New opportunities are emerging where biology enables superior performance. Microbial oils, advanced biobased materials, targeted bioactives with measurable health benefits, and low-impact processes using circular feedstocks are gaining traction as enablers of supply resilience. To succeed in 2026, companies must align innovation with realistic cost trajectories, regulatory strategy, and demonstrable consumer value, turning ambition into scalable execution.

Synthetic Biology

Federally backed biomanufacturing initiatives from Biden's 2022 executive order face major delays, downsizing, or defunding unless they rapidly reposition toward defense or domestic supply security.

The sharpest impacts will hit government-supported tech hubs, such as the iFAB* and affiliated projects. As agencies freeze or reallocate funds, timelines will slip and flagship infrastructure efforts will struggle to maintain momentum in a destabilized policy environment.



Baylie Schott
Senior Research Associate

Purposeful Innovation

2026 innovation will favor performance-led, AI-prioritized solutions and leave novelty-driven concepts behind

Innovation is entering a more purposeful phase as companies face growing pressure to turn investment into demonstrable functional value. AI-enabled formulation, acquisitions of validated biobased actives, and integrated -omics systems are gaining momentum by strengthening claims, shortening development cycles, and supporting compliance with tighter regulations. In contrast, novelty-first approaches — such as costly substitutes that fail to outperform incumbents or digital tools that resist integration — are losing traction.

Organizations are now focusing investments on platforms that deliver measurable operational efficiency and commercial impact. The most promising opportunities will align R&D execution with consumer relevance and targeted outcomes, including health-forward ingredients, low-impact material systems, and digital solutions that influence behavior. Combining real-world performance data with AI will help companies focus resources on innovations that truly scale.

Rise in Large-Language Models

Large-language models (LLMs) continue to deepen the understanding of systems interactions through multi-omics.

While quantum computing remains on the horizon, LLMs will inform upstream discovery in genomics to downstream biochemical pathway modeling and uncovering plant-pest and -microbe-rhizosphere interactions. Despite advancements, don't expect quantum computing to be meaningfully incorporated in discovery pipelines near term.



Hannah Moshay
Research Associate

Impactful Packaging

Brands prioritize packaging that performs under rising policy pressure

Packaging innovation in 2025 shifted toward solutions that can withstand both regulatory pressure and scaled implementation. Many companies cut back or recalibrated their packaging sustainability goals. As a result, materials with verifiable performance impact, like high-barrier coatings and product-specific shelf-life extension technologies, gained traction.

Compostables failing industrial standards, multilayer films that hinder recyclable sorting, and additives with unclear recycling benefits saw reduced interest as performance expectations rose through policy. Despite industries' best efforts, packaging innovations remain early stage — largely driven by startups in EMEA. Companies must align solutions — first to performance needs, second to the growing list of regulatory expectations, and third to specific product applications — and avoid broad substitutions until those innovations are broadly accepted. Progress in 2026 will depend on scaling packaging tech that meets evolving regional standards.

Consumer Packaging Materials

Proactive manufacturers and converters willing to invest dollars drive packaging innovation.

Packaging manufacturers and converters expand their capacity to test new materials, participate in pilot programs, and actively shape market demand. These initiatives will depend on targeted incentives — shared-cost pilots, subsidies, and policy mechanisms — that reduce risk and enable them to move beyond entrenched B2B relationships.



Matilda della Fontana
Analyst

Chemicals



Defossilization of Raw Materials

Regional incentives and infrastructure shape pathway scale-up

Transitioning away from virgin fossil-based inputs remains a forward-looking priority for most chemicals companies, but shifting regulatory pressures, along with concerns over feedstock availability and [authenticity](#), are impacting capital flows and the timing of new pathway adoption. Heading into 2026, advanced plastic recycling continues to face weak economics and supply chain challenges, even as regions such as Europe show greater openness to mass balancing. In contrast, biomanufacturing technologies are positioned to gain support as governments view the bioeconomy as a tool for industrial resilience and national security, providing alternative production pathways and alternatives to critical chemicals. Even the U.S. War Department recognized biomanufacturing as [one of six key technology areas for future security](#). Meanwhile, CO₂-based technologies remain early-stage and costly but will progress where CCU* aligns with near-term product strategies. Overall, defossilization drivers will remain fairly weak in 2026, but opportunities to engage will present themselves region by region.

Plastic Pyrolysis

The EU formally accepts mass balance for recycled content attribution, but it is too restrictive for conventional pyrolysis to operate viably.

The EU will iron out the finer details of the rules around mass balance and officially recognize mass-balanced recycled plastics in preparation for upcoming PPWR* recycled content deadlines in 2030, but the rules will penalize the production of fuel just as harshly as the latest draft rules seem to indicate.



Marcian Lee
Analyst

Decarbonizing Operations

Despite softening decarbonization headlines, net-zero goals remain

Despite muted headlines in 2025, chemicals companies continue to invest in decarbonizing operations, with many top companies still having net-zero ambitions for 2050. Decarbonization remains critical for future-proofing capital-intensive assets, but economic headwinds and funding withdrawals forced difficult decisions across the sector this year, exemplified by Dow's delay of [its Fort Saskatchewan Path2Zero project](#). While energy-efficiency gains, fuel switching, and partial electrification continue to advance, achieving net-zero targets demand further investment in more transformational technologies. Looking ahead to 2026, technologies to watch include electrification of high-temperature heat, more targeted point-source carbon capture, economically anchored carbon utilization, and next-generation low-carbon hydrogen. Success in the new year will hinge on aligning the right technologies to the right assets, navigating electricity price volatility and evolving carbon regulations, and prioritizing selective decarbonization pathways over one-size-fits-all solutions.

Carbon Capture

Another U.S.-based carbon capture and storage (CCS) or direct air capture (DAC) project developer moves to Canada.

Canada has capex incentives, storage reserves, and low-cost electricity. With new project developers like Deep Sky gaining prominence, Canada is an ideal location to scale CCS and DAC.



Mukunda Kaushik
Senior Analyst

Future Materials

Materials innovation will drive the next era of industrial performance

Industries continue to run up against the limits of incumbent materials, and as emerging technologies impose more demanding performance requirements, incremental improvements will not be enough to deliver on future performance needs. Instead, competitive advantage will come from next-generation materials that resolve long-standing tradeoffs, deliver step-change gains in performance, or introduce entirely new functionalities. Companies with strong advanced materials portfolios and development capabilities will be best positioned to unlock future needs. Looking ahead to 2026, innovation is expected to grow around categories such as advanced coatings, advanced composites, structural performance materials, photonic materials, and porous framework materials — each offering potential pathways to overcome today's constraints and unlock new performance frontiers. At the same time, companies will continue exploring capabilities in MI and automation to build agility and accelerate future discovery, especially for materials with large compositional spaces.

Metamaterials

A major AR/VR* device manufacturer partners with a metasurface developer like **Metalenz**.

As AR/VR continues to target lighter, more fashionable form factors, metasurfaces become increasingly attractive replacements for bulk optics and MEMS** -based beam shaping. Ultra-compact imaging or illumination modules could reduce optical stack size, improve wavefront control, and cut power consumption.



Kristin Marshall
Associate Research Director

New Market Opportunities

Balancing near-term and long-term bets and staying agile

Given the slowing demand in target markets like EVs, companies are being forced to balance near-term opportunities with longer-term bets. Unsurprisingly, data centers emerged as a major focus in 2025, driven by the surge in AI use and massive planned capacity buildouts. Companies looked to accelerate their offerings of advanced thermal management materials, such as thermal interface materials and immersion-cooling fluids. This marked a subtle shift from previous years, when many companies focused heavily on energy-transition enablers. With geopolitical volatility adding risk to already uncertain emerging technology markets, companies are increasingly prioritizing markets with clearer near-term pull. Looking to 2026, data centers will continue to dominate attention, as well as other high-growth areas such as materials for automation and robotics and sustained — if delayed — demand from decarbonization technologies and ongoing pressure to replace harmful chemicals in packaging, textiles, and consumer products.

Battery Materials

Under the One Big Beautiful Bill (OBBB), battery projects pivot from roads to racks.

Tighter OBBB compliance and the rollback of select DOE funding will push several U.S. battery and materials projects to slip, shrink, or quietly die. Developers heavily concentrated in the EV market will redirect offtake toward data center backup, uninterruptible power supply, behind-the-meter storage, and niche markets like drones and defense.



Urvi Mehta
Senior Research Associate

Harmless Chemicals

Proactively manage portfolio risk as chemical scrutiny grows

The sentencing of 11 former Miteni executives to a combined 141 years in prison for PFAS groundwater contamination drew wide attention across the chemicals sector this year, underscoring how legacy contamination can carry major legal and financial consequences even when regulatory frameworks lag. PFAS management and phase-out remain priorities as the EU advances broad restrictions and U.S. agencies expand monitoring, reporting, and remediation requirements, with most industry activity focused on groundwater contamination as well as consumer and other high-exposure uses. Microplastics came back into the spotlight this year as EU restrictions phased in. At the same time, growing data on the persistence, bioaccumulation, and exposure pathways of other chemicals continues to broaden scrutiny to other categories, prompting regulators and downstream users to revisit substances once viewed as lower risk. Looking to 2026, companies are expected to intensify portfolio reviews and invest in alternative chemistries where the greatest threats arise.

PFAS

The U.S. EPA establishes enforceable PFAS discharge limits for high-risk sectors such as chemical manufacturing, metal plating, and textiles.

The EPA has begun requiring industries suspected of releasing PFAS in their wastewater to monitor them in their discharge permits and report data. Regulations will begin with mandatory monitoring and progress to numeric effluent standards.



Abhirabh Basu
Senior Analyst

Industrials



Decarbonizing Operations

Decarbonization efforts takes two steps forward and one step back

Industrial companies in all sectors are developing innovation roadmaps to decarbonize their operations, though timelines vary based on policy incentives and asset profiles. Many marquee projects were canceled or postponed in 2025. Though decarbonization pressures have weakened in the U.S. (with global ripple effects), industrial companies should engage with early stage innovators to identify scalable solutions, derisk technology, and chart a path to incorporating them into new assets.

Near-term efforts will come with quick wins with makeshift technologies, like alternative binders for low-carbon concrete. In the midterm, heavy industries are prioritizing carbon capture systems to make substantial reductions in CO₂ emissions. Innovation in low-carbon heat offers a range of decarbonization pathways. Yet, reaching net-zero in the coming decades requires transformational changes in manufacturing technologies. In 2026, we will see these electrified and electrochemical processes make progress in demonstration facilities.

Low-Carbon Cement

A major construction materials manufacturer announces plans for a new plant in the U.S. dedicated to the production of low-carbon cement substitutes.

The cement industry is at a crossroads of higher costs for conventional materials and looming carbon reduction goals. The Trump administration imposed tariffs of at least 20% on cement from various countries, creating an opening for leadership on sustainability.



Kallie Mingay
Senior Research Associate

Resource Security and Circularity

Governments prioritize resource security to reshape economies

Industrial companies must be ready to adjust their supply chain strategies underpinned by technology innovation. In critical minerals, emerging extraction technologies are unlocking mineral assets outside of the current dominant regions. DSM has moved from pure speculation to [a realistic consideration \(with major caveats\)](#). Other technologies, like EV battery recycling, address both resource security and circularity through the recovery of valuable minerals. Advanced plastic recycling is moving ahead despite policy confusion as recycling ecosystems gain momentum through deeper cross-industry collaborations, for example, [for automotive plastics](#).

In 2026, recycling and circularity will remain important themes for innovation but will find traction only where policy creates large economic incentives. Economic security of vulnerable supply chains will [motivate investment](#) and technology development, especially in the [rare earth supply chain](#).

Advanced Plastic Recycling

Advanced recycling capacity grows in APAC but stalls in the Americas and EMEA.

Economic headwinds in the EU and a pullback in government funding on “green” projects in the U.S. drives technology developers to seek commercialization opportunities in APAC. New scale-up activity in the West will face project delays or cancellations, causing advanced recycling capacity growth to slow or stall in the region.



Marcian Lee
Analyst

Next-Gen Materials and Manufacturing

Innovative materials remain a critical differentiator

In 2025, the development of two broad categories of novel materials stood out for their potential commercial impact: [thermal management materials](#) and [advanced membranes](#). Innovators in those fields found success with new solutions to improve system performance in dynamic markets like data center cooling and critical minerals extraction. Data centers were perhaps the hottest topic of the year for Lux clients to explore new opportunities. Further on the horizon, the potential of new platform materials motivated R&D investments.

Trending in the other direction, Industry 4.0 solutions have become commoditized to the point that innovation activity is incremental. Incumbent vendors dominate, while the key challenges are prosaic issues of implementation. More compelling questions remain for innovation executives on the ROI for fundamental R&D projects. Laboratory automation, material informatics, and quantum technologies offer the promise of breakthroughs, but the actual value will become clearer in 2026.

Data Center Cooling

A large HVAC company acquires ZutaCore or Accelsius to accelerate two-phase DTC liquid cooling adoption for high-density racks in data centers.

Single-phase DTC cooling is approaching its limits in terms of flow rates and heat flux capacity. Two-phase DTC offers a natural progression, requiring minimal system modifications compared to immersion cooling.



Akshay Chaudhari
Analyst

Enabling the Energy Transition

Timing in question for profitability of low-carbon businesses

For many climate tech projects, optimism gave way to pragmatism in 2025. The low tide in decarbonization efforts led to canceled and delayed projects, especially large capital infrastructure projects, such as CO₂ hubs in the U.S. and Saudi Arabia's green ammonia mega-project. However, the gradual decrease in cost of smaller-scale renewable power generation and accompanying development of control systems gave a tailwind to [microgrids](#) and [DERMS](#)* in core industries. Low-cost components from China may be a threat to manufacturers but are a boon to end-users. Though EVs took a step back in the U.S., elsewhere the rollout accelerated. Battery swapping looks to be a viable option in many contexts, especially for commercial fleets. Green hydrogen also suffered a pullback in 2025, but under the surface, there are signs of renewal as innovators are developing [a new wave of hydrogen production technologies](#) that avoid the pitfalls of incumbent water electrolysis. In 2026, the continued attention to harsh economic realities should build stronger climate tech companies that can survive without subsidies and large green premiums.

Critical Minerals Extraction

At least five M&A deals emerge among lithium extraction and junior mining firms.

These primarily involve companies developing or owning direct lithium extraction technologies, as established players capitalize on weak lithium prices and delayed project timelines. Strategic acquirers are using this window to secure promising technology developers and project pipelines at discounted valuations.



Abhirabh Basu
Senior Analyst

Retooling for New Market Opportunities

Conglomerates target growth markets with divergent strategies

Although the macroeconomic picture was murky for industrial companies in 2025, the choice to retool for new markets cannot always wait. Honeywell's acquisition of Johnson Matthey (JM)'s catalyst technologies business division provides an [informative case study](#) of two different paths. JM is streamlining to focus on the strength of its core businesses, while Honeywell has been on an acquisition spree to develop a vertically integrated solution in gas to liquids. Honeywell made complementary [moves in quantum technologies](#) and AI. Large industrial players are well positioned to pursue an [acquisition strategy in the hydrogen and carbon economies](#), as overinflated valuations for tech developers drop. The application of generative AI to robotics brought a new wave of investment and enthusiasm, but those chasing hype in robotics will be disappointed as concrete impacts remain just out of reach in 2026. The "low altitude economy" of eVTOL* craft and drones, which is moving quickly in China but under the radar elsewhere, is a high-risk, high-reward market that deserves closer attention in coming years.

Industrial Robotics

Humanoid robotics and robotics software outpace the rest of the field of robotics by a factor of two.

Developers and investors are pivoting from commodified hardware products toward innovation that delivers adaptive intelligence, flexibility, and autonomy, offering short- and long-term benefits that attract elevated levels of venture funding.



Thomas Katucki
Senior Research Associate

Medical Devices & Diagnostics



Build Precision Treatment and Care

Precision care will be rooted grounded in stratified medicine in 2026

Despite growing interest in one-to-one personalization, precision care in 2026 will rely on stratified approaches due to current evidence limitations, regulatory demands, and workflow constraints. Clinical implementation will remain cohort based, as real-world validation, explainability, and operational fit continue to favor well-defined patient groups over fully individualized models.

Feasibility improves in 2026, supported by early programs — such as [AI-driven stroke detection](#), risk-tiered monitoring, and targeted rehabilitation — that demonstrate measurable benefits without disrupting care delivery. At the same time, evolving regulatory frameworks clarify how cohort-based algorithms can satisfy transparency and postmarket monitoring requirements, enabling scalable deployment. More granular personalization, however, will remain limited.

AI-Driven Diagnostics

Major medtech incumbents pursue more “platform + services” deals in 2026, but real progress remains limited.

Incumbents still pursue ecosystem strategies, but the path is more complex than optimistic narratives suggest. Diagnostic and monitoring startups may offer strong technology, but success hinges on reimbursement, integration, and validation, areas where even established players continue to struggle.



Nardev Ramanathan
Associate Research Director

Innovate Point-of-Care Solutions

POC innovation adoption grows in high-need niches in 2026

In 2026, point-of-care (POC) solutions will expand most meaningfully in high-need niches, with scale hinging on demonstrated utility, workload reduction, and regulatory alignment. Noninvasive diagnostics, home-monitoring tools, and minimally invasive sensors are already proving effective in accelerating triage and reducing avoidable visits, especially in diabetes management and [heart failure](#), where early deterioration can be detected weeks in advance. However, broader adoption remains limited by workflow disruption, insufficient evidence, provider readiness, reimbursement uncertainty, and inconsistent data quality from continuous monitoring. Emerging tools, such as rapid molecular tests, saliva-based biomarkers, and smartphone imaging, will see more pilot use but face barriers to scale. To succeed, leaders must focus on validated clinical utility, tangible workload benefits, and navigating regulations that still favor centralized diagnostics.

Noninvasive Glucose Monitoring

Noninvasive glucose and metabolic monitoring moves closer to commercialization in 2026.

Startups advancing optical sensing will initiate FDA presubmission steps or pursue early market pilots. Expect more focused validation studies and at least one company publicly signaling intent to enter the FDA review process.



Safoora Khosravi
Senior Research Associate

Healthcare Operational Excellence

Operational excellence advances in focused, high-volume processes

Operational excellence in 2026 will advance through automation and AI in high-volume, structured processes that consistently yield efficiency gains. Early successes, such as AI triage support, automated supply chain forecasting, AR/VR* for operations, and pharmacy robotics, show that targeted automation can reduce administrative burden and ease workforce strain.

However, broader transformation remains limited by fragmented IT systems, incomplete data, interoperability issues, and uneven trust. Adoption is further slowed by variable model performance, risk aversion, and unclear liability. While automation performs well in standardized workflows, it often adds friction in legacy systems or understaffed units. Hospitals will make progress where workflows are well defined, not across entire care pathways. In 2026, leaders will prioritize tools that demonstrably reduce workload, integrate with existing systems, and align with evolving regulations on clinical AI and data governance — rather than pursuing rapid, system-wide change.

Supply Chain Forecasting

Automated supply chain forecasting gains traction in large hospital systems for high-volume consumables and critical medications.

Early adopters will see measurable reductions in stockouts and waste, yet most hospitals will continue to run hybrid manual-automated workflows as data quality, interoperability, and vendor lock-in issues slow full automation.



Nardev Ramanathan
Associate Research Director

Streamline Laboratory Workflows

Laboratory modernization advances through targeted upgrades where foundational data, assay, and system integration exist

Early adopters of automated sample prep, compact robotics, and enhanced laboratory information systems are beginning to demonstrate real benefits, especially where processes and data flows are already standardized. Yet, broad automation and sustainable practices remain limited by aging equipment, fragmented data systems, inconsistent assays, underdeveloped supplier networks, and chronic staffing shortages. These same barriers also hinder adoption of low-waste consumables and energy-efficient technologies, making it difficult to integrate sustainability into modernization. As a result, labs will prioritize incremental, high-value upgrades that align with existing infrastructure. The most effective progress will come when labs and vendors collaborate to build foundational readiness before pursuing full-scale automation.

Automated Sample Preparation

Automated sample prep systems see growing adoption in high-volume molecular and clinical labs.

Early adopters will achieve faster turnaround times and reduced technician workload, yet most labs will continue using hybrid manual-automated workflows because end-to-end automation still struggles with variability across assays and legacy infrastructure.



Nardev Ramanathan
Associate Research Director

Oil & Gas



Harnessing External Innovations

Looking ahead

Given the near-term focus of the sector, this theme will remain a key area of focus for the oil and gas sector and showed growing momentum in 2025. Two areas will attract the most attention: efficiency improvements and deployments of AI that can reduce operating costs. These can come from lowering energy consumption or increasing uptime and productivity from capital-intensive assets.

Looking toward 2026, interest in AI deployments will be the technology generating the most attention. While the data center sector and more consumer-facing AI industry start to show cracks — suggesting a slowdown within the next two years — proven use-cases will emerge and companies must remain agile to identify new applications and prioritizing their implementation. Quantum technologies, including both computing and sensors, will continue their slow emergence from lab to pilot scale with oil and gas companies prioritizing opportunities in sensing.

Electromaterials

Global investments in electromaterials startups, companies developing next-generation catalyst coatings, catalyst discovery platforms, and advanced additive manufacturing top USD 100 million.

This momentum will be driven by a growing need for improved materials performance and lowering costs of hydrogen production (electrolyzers), green ammonia synthesis, CO₂ conversion, water treatment, and next-generation batteries.



Abhirabh Basu
Senior Analyst

Moving Beyond the Core

Looking ahead

Oil and gas companies scaled back efforts to move beyond their core businesses in 2025, constrained by low oil prices and high interest rates that made long-term, high-risk bets less appealing. Projects without clear paths to profitability faced increased scrutiny or cancellation. Companies underperforming financially reacted most strongly — European firms like BP and Shell were particularly aggressive in pausing long-term initiatives.

Among emerging climate tech, carbon capture, utilization, and storage (CCUS) remains the most resilient. Unlike e-fuels, which threaten core revenue streams, CCUS supports the existing business by managing emissions from hydrocarbons. Direct lithium extraction, while not currently economical, may advance due to its potential strategic value — even in the absence of favorable market conditions.

Direct Air Capture

A direct air capture (DAC) startup announces a major planned commercial scale-up (>100,000 tonne/y) in the Middle East.

With the removal of DAC hub funding in the U.S., startups have limited opportunities for commercial scale, and the Middle East offers low cost energy and available sequestration space.



Thomas Briggs
Senior Research Associate

Meeting Net-Zero Targets

Looking ahead

Progress on net-zero targets will be inconsistent across regions, driven by economics and reliability rather than purely sustainability with policy and regulations playing an important role. As the cost of components for building microgrids falls — particularly Li-ion — grids with increasing costs and falling reliability will see increased amounts of on-site power generation for electrification-focused projects. Those sourcing low-carbon heat will struggle with high energy costs, whether electrified pathways with high electricity costs or high costs for low-carbon fuels.

In 2026, watch for companies to further push or delay net-zero targets, while increasing their reliance on carbon offsets in their roadmap. This move arises from a lower appetite for riskier, capital-intensive transformational projects and a greater focus on extending the life of the core business.

Carbon Capture, Utilization, and Storage (CCUS)

Purchase agreements for carbon credits from biogenic CO2 storage increase.

The voluntary carbon market allows revenue generation from biomass without the need for expensive thermochemical processing. Companies will increasingly integrate ethanol networks with CCUS hubs and store slurried biomass to generate carbon markets and use this business model to compete with the current USD 250/tonne biogenic CO2 commodity cost.



Mukunda Kaushik
Senior Research Associate

Future Chemicals

Looking ahead

The chemicals industry faces ongoing challenges as oil and gas companies continue to shut down steam crackers amid high energy costs and persistent oversupply. With demand expected to stay weak through 2026, these companies are unlikely to reinvest in existing assets or pursue new greenfield projects. Further shutdowns — particularly in Europe, where regulations and energy prices are more severe — are likely.

Despite this downturn, the industry remains committed to defossilization. Technologies such as CO₂ utilization, biomass pyrolysis, and synthetic biology continue to attract interest as alternative carbon sources. However, the sector's strained financial position will likely stall investment in novel commodity chemical technologies, slowing progress toward reducing fossil dependence.

Biomanufacturing

Federally backed biomanufacturing initiatives from Biden's 2022 executive order face major delays, downsizing, or defunding unless they rapidly reposition toward defense or domestic supply security.

The sharpest impacts will hit government-supported tech hubs, such as iFAB* and affiliated projects. As agencies freeze or reallocate funds, timelines will slip and flagship infrastructure efforts will struggle to maintain momentum in a destabilized policy environment.



Baylie Schott
Senior Research Associate

Meeting Demand for Energy

Looking ahead

Data centers have dominated discussions around demand for energy, creating opportunities for oil and gas companies to supply the industry with power solutions (namely gas and carbon capture). In 2025, momentum remained strong, but signs began to suggest load growth estimates are falling. Improvements in hardware and software efficiency are getting more value from fewer electrons, while the financial pressures of AI companies will see them look to increasingly raise prices to recover investment costs.

Beyond data centers, growth in EV sales will happen inconsistently. In China and many parts of Southeast Asia, low-cost EVs with government support mean growth will remain strong, whereas high electricity and vehicle prices will slow growth in North America and Europe. Rising costs of electricity will likely remain a key theme of 2026, as loads continue to grow faster than grids can expand to support, opening up further opportunities for on-site microgrids.

Nuclear Fusion

Nuclear fusion — one of the most well-funded energy technologies of the decade — sees at least a 50% drop in funding compared to 2025.

While funding can be inconsistent year to year as only three companies have raised most funding, the long timelines and capital-intensive nature of fusion development will see a drop in investments. A few strong companies will survive, but smaller players will begin to exit.



Chris Robinson
Senior Research Director

Utilities



Innovating at the Grid Edge

Looking ahead

The growing complexities of DERs require management strategies to meet evolving energy needs, particularly as new technologies reshape how load and generation interact. Innovating at the grid edge exploits flexibility of loads like EVs while balancing generation to keep the grid stable. This year, battery swapping emerged as a viable competitor to fast charging, offering several grid management benefits, while V2G increased its momentum, with large-scale projects and regulatory support. Technologies that rely on rigid, one-directional power flows will continue to lose relevance as more dynamic and responsive systems prove better aligned with modern grid demands.

Commercial and industrial flexibility will be the next frontier as new processes electrify, and utilities seek to offset the burden of absorbing such large demand. Utilities and their customers will see opportunities form around load-shifting platforms and behind-the-meter (BTM) storage to create value while easing constraints. With policy supporting the buildout of new industry and infrastructure, incentives to manage that load through novel business models and energy management tools will emerge. Over the course of 2026, expect significant activity focused on the grid edge as utilities seek to take advantage of this flexibility.

Battery Swapping Adoption

Battery swapping for heavy-duty trucks gains traction in Asia, emerging as the preferred charging method in China, Thailand, and Singapore.

Unlike wired fast charging, battery swapping replicates traditional refueling times, requires less land, installs faster, needs lower grid capacity, and can reduce total project costs by up to 25%. These advantages, coupled with Asia's high population density, favor battery swapping to decarbonize heavy-duty transport.



Juan Camilo Cortés
Senior Research Associate

Low-Carbon Electrons

Looking ahead

Low-carbon electricity will be shaped by utilities' need for reliable, dispatchable power as demand patterns shift and dependence on intermittent renewable power increases. Technologies that offer greater system stability while mitigating weather-related volatility will come into greater focus in 2026. Where available, geothermal will be positioned as an option for utilities seeking firm power, while fuel cells will be utilized by consumers willing to pay a high price for reliability. Low-carbon combustion technologies will gain further momentum in the next year, providing low-carbon thermal generation, while novel nuclear power will find its place in areas with supportive policy.

Utilities must integrate these resources into a grid already balancing intermittent renewables, rising demand, and transmission constraints. As the decade progresses, firm power will increasingly complement low-cost solar and wind. Over the next year, utility strategies will focus on balancing diverse generation sources while strengthening energy supply security.

Perovskite-Tandem Efficiency

The announcement of the world's first high-efficiency commercial perovskite-tandem panel delivers a noticeable performance edge over today's best silicon solar cells.

Perovskite solar cells in commercial sizes have already hit efficiencies more than 30%, but has not translated to a higher efficiency module. 2026 will see a commercially available perovskite tandem module achieve efficiencies close to 27%, pushing them closer to scale with improved stability.



Karthik Subramanian
Analyst

Enhancing Resilience and Reliability

Looking ahead

Higher electricity demand, volatile weather patterns, and complex power flows due to shifting generation and consumption profiles will sharpen the focus on resilience and reliability in 2026. The sector will concentrate on increased flexibility to address system needs as they arise while minimizing disruptions. LDES will be a breakout topic next year, especially where energy storage markets have matured and are incorporating greater levels of intermittent generation into the grid mix. Both utilities and commercial/industrial customers will deploy flow batteries and mechanical energy storage for greater reliability.

Major outages in Chile and Spain this year highlighted the pressing need for resilience strategies. Growing adoption of predictive analytics, outage forecasting, and monitoring platforms will provide grid operators with tools to avoid service disruptions. Assets will also play a role in enhancing resilience; utilities will continue to utilize DERs as modular solutions. Expect both resilience and reliability efforts to be the backbone of many projects across the electricity sector.

Vanadium-Iron Flow Batteries

Rongke Power starts exporting its iron-vanadium flow battery.

With the world's largest installed flow battery capacity, Rongke Power will expand its footprint outside of China by marketing its iron-vanadium chemistry as a lower-cost alternative to all-vanadium flow batteries; it will sign multi-megawatt-hour deals by the end of the year in countries across Asia and the Middle East.



Chloe Herrera
Senior Analyst

Asset Management

Looking ahead

Over the course of 2026, utilities will address increasing system stresses while ensuring stable electricity supply. Meeting these challenges will require managing assets that strengthen existing core infrastructure and add a layer of control across a variety of operating conditions. Novel transmission technologies including solid-state transformers, grid-forming inverters, DLRs, and high voltage DC will become critical tools to stabilize the grid and identify opportunities to enhance flexibility. Energy storage will play a critical role in providing grid services and deferring infrastructure upgrades by adding capacity at crucial points.

While hardware solutions are necessary to address resilience and reliability, software solutions will also play a big role in grid management over the next year. When paired with technologies that maintain the electricity network, control tools will offer new pathways to relieve congestion and recover power loss after disruptions. Opportunities will form around large-scale projects that combine sensing, control, and dispatch capabilities to create a more adaptive power system.

Dynamic Line Rating (DLR)

Successful DLR pilots fuel utilities' interest in deploying the technology at scale.

Positive outcomes from recent DLR deployments will boost utility confidence in the technology and accelerate broader rollout, especially among U.S. utilities that are being pushed toward ambient adjusted ratings (AARs). Because DLR is proving its ability to reliably unlock additional grid capacity, some utilities may skip AARs and move directly to DLR at scale.



Jessica Hernández
Analyst

Meeting Demand for Power

Looking ahead

Data centers' dominance continued to dominate load growth in 2025, which will continue into the new year. However, just as capacity expansion is underway, other industrial players are decarbonizing through electrification. Though data centers will see the lion's share of growth in electricity demand for the foreseeable future, utilities shouldn't ignore the needs of its existing industrial customers. First up for decarbonization is heat electrification — served by both TES and heat decarbonization technologies like heat pumps. Grid connections will remain the point of delay in these efforts. It's still too early to see deep decarbonization across sectors like steel and cement, but pilot projects are ongoing and will start affecting power demand in just a few years' time.

As utilities struggle to meet interconnection requests, their customers are working to secure their own reliable power. With an acute need for reliability, data center operators have inked BTM power purchase agreements to hedge against uncertainty in grid planning timelines. These developments will push utilities to adapt their engagement models as more large customers pursue BTM capacity.

Hydrogen

Hybrid alkaline/PEM deployments for green hydrogen increase.

Sungrow Hydrogen deployed a 27-MW hybrid alkaline/PEM system in China, and Envision's 500-MW plant likely uses a similar setup. Though not yet widespread, hybrid systems — combining PEM responsiveness with alkaline cost-efficiency — boost performance and safety, with more deployments expected in 2026.



Cansu Doganay
Analyst

Policy



Policy and Regulations

Agendas grounded in national defense and economic expansion

Policy and regulation will be decisive forces shaping technology outcomes in 2026. Across sectors, governments are using policy as a tool of economic competition, supply security, and system resilience rather than purely sustainability. Regional divergence is widening: Europe is tightening regulatory oversight, the U.S. remains volatile, and China's policy direction will increasingly set global market dynamics. Success will favor companies that treat regulation as a strategic input, not a constraint — designing technologies that meet evolving standards, enable system-level integration, and remain flexible across jurisdictions. Regulatory agility, evidence generation, and alignment with national priorities will determine which innovations scale and which stall.

What It Means By Sector

- **Utilities:** Flexibility, grid resilience, and load management are becoming regulatory requirements
- **Oil & Gas:** National mandates and trade policy reshape fuels, hydrogen, and supply chains
- **Industrials:** Trade negotiations and critical minerals policy drive location and scale decisions
- **Medical Devices:** Regulatory readiness determines AI adoption more than technical performance
- **Agrifood & Health:** Ingredient safety, evidence, and regional compliance shape global commercialization
- **Chemicals:** National-security priorities increasingly influence funding and policy stability

About Lux

Our mission is to advise leaders about commercially viable science and technology to enable sustainable innovation. We deliver research and advisory services to inspire, illuminate, and ignite innovative thinking that reshapes and grows businesses. Using quality data derived from primary research, fact-based analysis, and opinions that challenge traditional thinking, our experts focus on finding truly disruptive innovations that are also realistic and make good business sense.

The “Lux Take” is trusted by innovation leaders around the world, many of whom seek our advice directly before placing a bet on a startup or partner — our clients rely on Lux insights to make decisions that generate fantastic business outcomes. We pride ourselves on taking a rigorous, scientific approach to avoid the hype and generate unique perspectives and insights that innovation leaders can’t live without.



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