



Accelerating to net-zero emissions:

→ How integrated solutions can unlock corporate decarbonization

There has never been a better time to switch to low-carbon operations. Public policies and incentives are ushering companies toward tangible decarbonization. The technology behind renewable energy, energy efficiency and electrification is maturing quickly and becoming increasingly competitive amid fossil fuel price volatility.¹ Global annual investments into clean technology and low-emissions fuels are set to reach a record USD \$1.7 trillion in 2023. However, to keep global warming below the critical 1.5°C threshold, this figure must almost triple by the end of the decade.²

Half of the world's largest companies have set public net-zero emissions goals, with commitments up by more than 40% since 2022.³ To stand a chance at tackling the climate crisis, companies now must move from ambition to action and cut their operational emissions across offices, fleets, industrial and manufacturing sites.

As business leaders implement roadmaps to decarbonize operations, they face trade-offs between costs and emissions reductions, what is technically feasible, the return on investment, and available capital, slowing down the pace of adoption.

Companies often have engineers, sustainability and facilities managers study and implement decarbonization solutions and technologies in isolation. By integrating clean energy with mobility and efficient digital monitoring and management systems, businesses can now get on a fast track to net zero.

Integrated approaches can reduce operational emissions by up to 50%,⁴ secure energy supply and optimize returns on capital investment and the risk profile of technology adoption.

To harness the full potential of integration, businesses and policymakers must align in a critical decarbonization effort by considering the energy transition holistically and adopting cross-sector sustainability governance strategies and new financing models.

ABB, Accenture, Eaton, Schneider Electric together with the BASE Foundation, Climate Group and Global Sustainable Electricity Partnership (GSEP), collaborate in the World Business Council for Sustainable Development (WBCSD) [Switch project](#) to help companies harness the potential of integrated approaches.

In this brief, Switch members and partners define and make the case for integrated approaches, demonstrating their value through lighthouse examples. Together, they advocate for breaking down silos within business sustainability leadership, finance and policy and outline three practical recommendations for bringing integrated decarbonization to life.

¹ International Energy Agency (IEA) (2023). [World Energy Investment 2023](#).

² International Energy Agency (IEA) (2023). [World Energy Investment 2023](#).

³ Net Zero Tracker (2023). New analysis: Half of world's largest companies are committed to net-zero.

⁴ Schneider Electric (2022). [Towards Net-Zero Buildings: A quantitative study](#).

Integrated approaches: *the next frontier for operational decarbonization*

Decarbonizing business operations requires embracing diverse solutions, including renewable energy adoption, electrification in heating and transportation and proactive energy efficiency measures.

Integrated approaches combine decarbonization solutions across the three domains of infrastructure – **mobility, buildings and energy** – with digitalization enabling companies and critical infrastructure owners and operators to accelerate energy efficiency gains. Integrated approaches encompass solutions that connect infrastructure assets through clean energy technologies such as integrated energy, sector coupling or distributed energy resources.

Engineers, sustainability, and facilities managers often study decarbonization solutions and technologies in isolation. By bundling them, synergies for incremental environmental and financial benefits emerge, allowing businesses to **better align the decarbonization business case with medium- and long-term sustainability plans and investment cycles.**

A fast lane to operational emissions abatement

Bundling heat electrification, onsite solar, storage and active energy efficiency can generate immediate CO₂ emissions reductions of 20% to 50% in service buildings (both retrofits and new constructions). By 2030, companies could decrease an estimated 50% to 70% of carbon emissions in this segment, representing about 40% of global building emissions. The estimated emissions reduction is even greater for residential buildings.⁵

Optimized investment and risk profile

The **upfront cost of newer decarbonization technologies is on course for a steady decline until 2030** and will make capital investments increasingly attractive.⁶ Integration through digitalization also provides an opportunity to optimize investment costs by optimizing energy efficiency for pre-existing infrastructure and progressively scaling the approach.

Furthermore, compared with isolated capital injection in decarbonization solutions, **diversifying solutions and packaging them allows for an optimized investment risk profile.**

Diversifying energy sources and incorporating energy storage solutions, in addition to improving energy efficiency, provides vital **energy security and increases resilience** to energy price volatility and supply disruptions.



Photo credits: Accenture Song

⁵ Schneider Electric (2022). Towards Net-Zero Buildings: A quantitative study. Retrieved from: <https://www.se.com/ww/en/insights/sustainability/sustainability-research-institute/towards-net-zero-buildings-a-quantitative-study.jsp>.

⁶ Schneider Electric (2022). Towards Net-Zero Buildings: A quantitative study. Retrieved from: <https://www.se.com/ww/en/insights/sustainability/sustainability-research-institute/towards-net-zero-buildings-a-quantitative-study.jsp>.

Net savings on the total cost of acquisition, and more value creation

Aggregate savings and new revenue generation opportunities related to integrated approaches can help counterbalance the upfront capital investment.

Service building operators can achieve **savings on energy spending ranging from 15% to 50%** through retrofitting with electrification and digital bundles. The **paybacks are at or below 10 years on average**. For new acquisitions, the total impact of additional upfront investment on the total cost of acquisition is minor and typically below 4%, a figure falling to 2% to 3% in 2030.⁷

The energy efficiency achieved can **increase property values**, as buildings with a high energy rating sell at a premium of 7% to 8.5%.⁸

In addition to operational energy savings, integrated systems create flexible conditions in which companies can sell surplus electricity back to the grid, creating more revenue streams. In use cases where commercial service buildings such as supermarkets and dairy farms combine solar electricity generation with solutions including heat pumps, battery storage or fleet electrification, **the revenues from surplus electricity sale allow payback periods as low as 3 years and systematically under 10 years.**⁹

So, what's next? The integrated paradigm shift

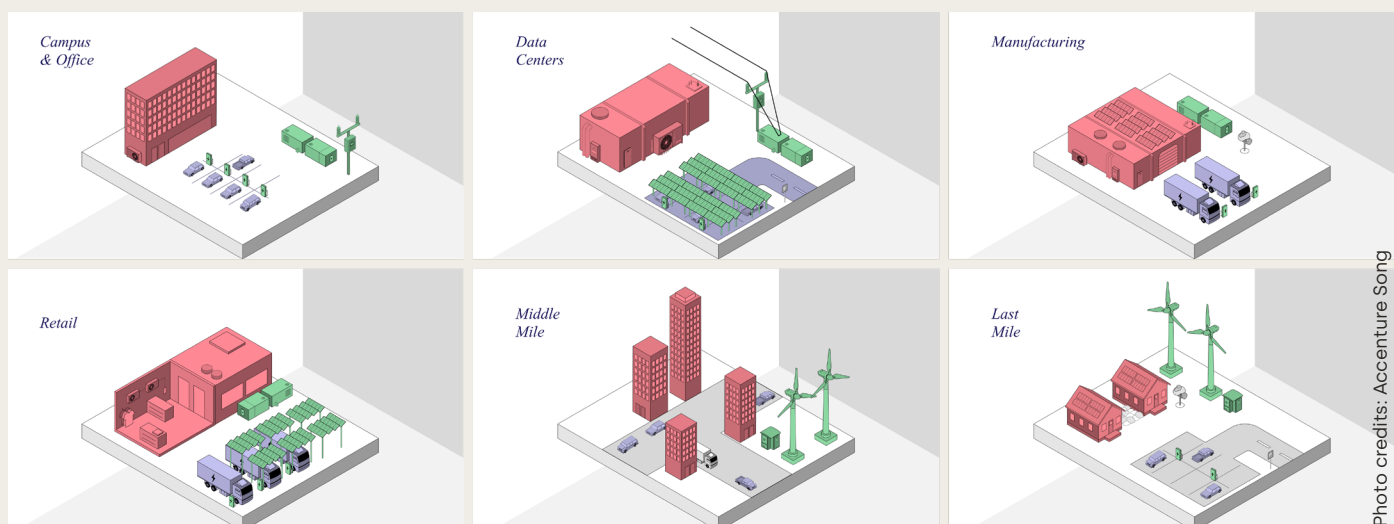
The technology required to massively electrify, decarbonize and enhance energy efficiency is within companies' reach. With digital infrastructure management solutions on the rise and given the potential of integrated approaches to accelerate decarbonization, they will be the cornerstone of the global race to net-zero emissions. Incorporating decarbonization across mobility, buildings and energy calls for an equally integrated business sustainability governance, financing models and policy development.

Recommendation 1

Make operational decarbonization a business-wide strategy.

Businesses harnessing the incremental benefits of integrated approaches can no longer consider decarbonization as siloed investments in retrofits or new technologies. Instead, they must look holistically at their operational needs and facilities to identify opportunities. In particular, they need to ask the following questions: Where are operational energy needs and operational emissions concentrated? Where does energy supply need reshuffling and where can the business achieve consumption efficiency? What is the optimal financing strategy?

Figure 1: Examples of integrated approaches combining decarbonization solutions across buildings, energy and mobility decarbonization for various physical asset types



⁷ Schneider Electric (2022). Towards Net-Zero Buildings: A quantitative study. Retrieved from: <https://www.se.com/ww/en/insights/sustainability/sustainability-research-institute/towards-net-zero-buildings-a-quantitative-study.jsp>.

⁸ Schneider Electric (2022). Towards Net-Zero Buildings: A quantitative study. Retrieved from: <https://www.se.com/ww/en/insights/sustainability/sustainability-research-institute/towards-net-zero-buildings-a-quantitative-study.jsp>. International Energy Agency (IEA) (2019). [Multiple Benefits of Energy Efficiency](#).

⁹ Frontier Economics and Integrate to Zero (2023). Integrate to Zero: Identifying opportunities for commercial consumer savings with distributed energy systems. Retrieved from: <https://integratezero.org/s/integrate-to-net-zero.pdf>.

Leading companies are making Integration the red thread that connects all ends of business operations, from facility managers to sustainability and financial executives, including external service providers such as energy procurement or fleet managers.

Companies should **incorporate a strong governance framework for their integrated decarbonization strategy** into their management structure, in alignment with and as part of overall performance management system. This requires a clear executive-level commitment to decarbonization and creating clear reporting lines between units that manage operational infrastructure and with the chief sustainability and financial officer functions.¹⁰

Effective monitoring and reporting that can quantify the benefits of integration and that align environmental and financial targets builds trust and a shared understanding of the integrated solutions the business is implementing.

Companies should develop or adopt **new carbon modeling tools** that support decision-making on integration by balancing the investment cost with a well-articulated financial and non-financial benefit assessment. They can build these on the findings captured from initial pilots. Such modeling tools will enable companies to move from pilots to scaling integration.

Enhancing data collection and sharing capacity (internally and externally) will facilitate technology integration, proper monitoring and the development of more accurate models.

Companies must deploy upskilling and training programs that enable the various business functions to learn from the reporting on existing lighthouse integration projects, understand the imperative and the opportunities in integrated approaches, and effectively implement integrated decarbonization roadmaps. Companies must also invest in the capacity of operational, facility and data business functions to engage in collaboration with external parties such as utility providers, fleet operators or their supply chain. Third parties such as governments or non-governmental organizations can facilitate cross-sector dialogue and peer learning.

Recommendation 2

Decarbonization pays back, so rethink the balance sheet.

Companies implementing integrated approaches are effectively debunking the belief that net-zero emissions efforts are necessarily more expensive, riskier or less attractive than other operational investments. Businesses require **new thinking about infrastructure investment and funding models for decarbonization to rapidly scale integrated solutions and address these misconceptions.**

Businesses considering investments in integrated approaches must factor the reduced operating costs, the favorable cost abatement curve, opportunities for revenue stacking and the value of future-proofing their operations into the decision. They must also consider the added opportunities for revenue generation from offering flexibility services to the grid (for example from aggregated electric vehicles (EVs)), reselling electricity through the grid, or providing paid access to on-site EV charging.

¹⁰ WBCSD (2023). Guidelines for an Integrated Energy Strategy. Retrieved from: <https://wbcspdpublications.org/integrated-energy-strategy/>



Furthermore, integrated approaches provide **an opportunity to consider innovative financing models for clean technology deployment that can lower the upfront capital investment and reduce perceived risk.**

Leasing agreements, energy-as-a-service or energy performance guarantee contracts are all examples where a third party facilitates asset financing to absorb some level of risk. On-bill financing, which involves repayments through utility bills, enhances the upfront affordability of sustainable or energy-efficiency upgrades and other decarbonization measures.

Recommendation 3

Incentivize and standardize integration.

The disconnection between various governance levels and jurisdictions on policy packages and investment for decarbonization is a threat to the widespread adoption of clean technologies and integrated approaches.

Governments must provide a comprehensive and coordinated strategy that prioritizes the integrated decarbonization of infrastructure over the dispersed adoption of clean energy solutions and building and fleet decarbonization.

Businesses and governments should invest in R&D in integrated decarbonization technologies and the development of new modeling tools to support cost and benefit assessments and decision-making.

Grids risk becoming the weak link in clean energy transitions. It will be essential to standardize, upgrade and modernize grid infrastructure and reform energy market regulatory frameworks to enable demand-side flexibility, in particular by anticipating bidirectional exchange and facilitating energy optimization.¹¹

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Coordination

WBCSD

Furthermore, utilities and businesses must cooperate to facilitate grid flexibility and technology integration. Governments should enforce connectivity and interoperability standards to drive system responsiveness and collaboration spanning sectors.

Energy pricing strategies must guarantee fair market access and allow for dynamic time- and location-specific tariffs to enable companies and consumers to make optimal energy consumption choices in an increasingly variable energy system.

Governments must **prepare for the deployment of new clean technologies and new market roles** by updating codes and standards with built-in flexibility and by streamlining permitting processes. They must advance legislation focusing on buildings ambitiously to accelerate the modernization of built infrastructure and drive businesses to adopt active energy-efficiency measures. Policymakers should couple this with fiscal support schemes for businesses to modernize and electrify buildings based on an integrated approach.

Connect with Switch

Businesses and partners of the WBCSD Switch project mobilize projects, build and share best practices, and advocate for the adoption of integrated approaches in leading events.

For more information about how to get involved, consult [our website](#) or contact [Thomas Deloison](#), Director, Transport & Mobility, WBCSD.

¹¹ International Energy Agency (IEA) (2023). Electricity Grids and Secure Energy Transitions.

Retrieved from: <https://www.iea.org/reports/electricity-grids-and-secure-energy-transitions>.

Schneider Electric (2021), Electric vehicle smart charging in buildings. Retrieved from: <https://www.se.com/ww/en/insights/sustainability/sustainability-research-institute/electric-vehicle-se-sustainable-research-institute.jsp>



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