MONTHLY RESEARCH DIGEST

An Executive Briefing on New & Notable Sustainability Research

In This Issue – **August 2025**

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CORPORATE SUSTAINABILITY STRATEGY

Sustainability Signals: Corporates 2025

By Morgan Stanley Institute for Sustainable Investing

View the full report here

Notable Highlights

- **88% of companies globally see sustainability as a value creation opportunity** (up from 85% in 2024).
- **65% say they are meeting or exceeding expectations** for delivering their corporate sustainability strategy (up from 59% in 2024).
- The **top five barriers to companies delivering on sustainability strategies** are the high level of investment required, political and macroeconomic uncertainties, a lack of internal understanding of the company's sustainability performance, and difficulty translating strategy into action.
- 57% say **severe weather events have impacted operations** in the past year, through higher costs (54%), workforce disruptions (40%), and revenue loss (39%).
- **Over two-thirds believe physical or transition climate risks are likely to impact** demand, costs, investment needs, and investor relationships within five years.
- Technological advancements aligned with the company's business model (33%), a favorable economic and operating environment (32%), and growing demand (28%) are the **top key enablers for delivering on sustainability strategies**.

Objective

- To examine sustainability decision makers' views on corporate sustainability strategy, including sustainability value creation opportunities, barriers to delivering on strategies, and potential sustainability challenges and opportunities in the next five years.

Background

- The data in this second annual report is based on a survey of 336 sustainability decision makers at public and private companies with at least $100 million in annual revenue, in North America, Europe, and the Asia Pacific (methodology on pg. 3, 29-32).

- An additional 101 decision makers were surveyed across the Middle East and Latin America. Responses were excluded from the global number to maintain comparability with last year's survey.

Report Findings

Corporate sustainability strategies (pg. 6-11):

- **Views on how sustainability and/or ESG impact long-term corporate strategy vary widely by industry and have changed significantly from last year.**
    - Some industries now see sustainability primarily as a value creation opportunity, including Utilities (78%, up from 58%), Consumer Staples (68%, up from 45%), Real Estate (59%, up from 45%), and Materials (51%, up from 38%).
    - Other industries see sustainability as both risk management and a value creation opportunity, including IT (46%, up from 10%) and Financial (48%, up from 38%).
- **30% say their sustainability investments mainly focus on OpEx for risk reduction**, 22% mainly focus on capex and R&D for new projects, and 31% pursue both.
- **83% say they can measure the return on investment** for their sustainability-related capex, R&D, and OpEx in a similar way to non-sustainability initiatives.
- **Barriers to companies delivering on corporate sustainability/ESG strategies:**

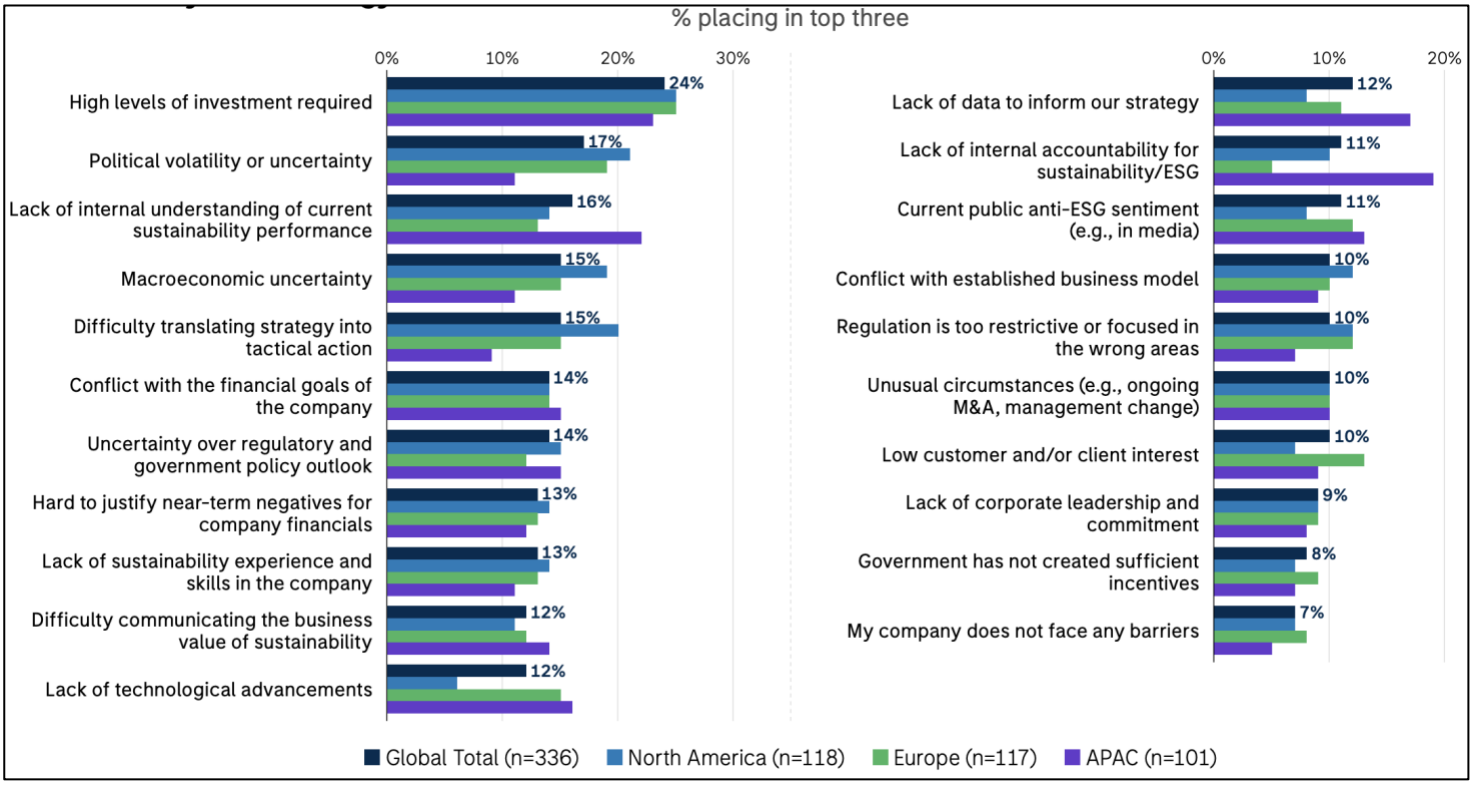

Image taken from pg. 9

Potential challenges and opportunities in the next five years (pg. 17-20):

- **25% see increased profitability as the most significant value creation opportunity for sustainability in the next five years**, followed by increased revenue growth (19%), a lower cost of equity and/or debt (13%), and greater visibility over cash flows (13%).
- **Just over half of companies cite costs as the primary way sustainability could create challenges in the next five years**, including higher costs from regulations, the costs of changing processes leading to higher customer prices or lower profit, reduced economies of scale, and higher raw material costs.
- 80% feel “very” or “somewhat prepared” to increase climate resilience.

Regional highlights (pg. 21-27):

North America:

- **Political and macroeconomic uncertainty**, as well as difficulty translating strategy into action, are **higher barriers** in North America than in other regions.
- North American businesses are **most likely to see climate change as a business model risk.** The likelihood of future negative impact from physical and transition climate risks is rated around 10% higher than that of European and APAC companies combined.

Europe:

- **Higher costs or legal risks from regulation** (18%) and low consumer interest (13%) are **higher barriers** in Europe than in other regions.
- Concerns about a lack of data are similar to or lower than those of North American and APAC companies.
- **Growing demand, relevant employee skills, and support from lenders are key enablers** for European companies delivering on sustainability strategies.

Sustainability at a Crossroads

By GlobeScan, ERM Sustainability Institute, and Volans

View the full report here

Notable Highlights

- **93% of sustainability experts believe the global sustainability agenda needs revision** (radical (56%) or modest (37%)) to meet 2030 sustainability goals.
- Experts rate the **private sector's** (48%), **institutional investors'** (52%), and national governments' (63%) **contributions to sustainable development as "poor."**
- **70% say there is significant backlash against the sustainability agenda in their country** (up 13% from 2024), including 91% in North America and 71% in Europe.
- The following Report Findings break down **actions** for companies and investors **to drive positive sustainable outcomes** within five years.
- Companies could have the most significant positive sustainable outcomes in the next five years through **technological innovation/R&D for sustainability solutions, sustainability-linked compensation,** and **better products and services**.

Objective

- To analyze the evolution of the global sustainability agenda and identify corporate and investor actions/interventions that could create significant positive sustainability outcomes in the next five years.

Background

- The report data is based on a survey of 844 sustainability experts across 72 countries, from corporations (37%), "service and media" (31%), academia and research (10%), NGOs, (9%), Others (8%), and government (4%) (methodology on pg. 4, 17).
- The authors assessed 64 potential actions and interventions for companies, investors, governments, and civil society to drive the global sustainability agenda.

Report Findings

Actions/interventions for companies and investors to drive positive sustainable outcomes in the next five years (pg. 17-22):

The authors created a matrix (pg. 18) that maps each action's feasibility (political will, economic costs, social acceptance, and technical readiness) against its potential to drive positive sustainable outcomes within the next five years. ***Pages 28-36 break down the actions by stakeholder, with separate rankings for impact and feasibility.***

High impact, high feasibility actions:

Investor / capital market actions	**17.** Proactively engaging investors on sustainability **18.** Sustainable finance / green bonds **19.** ESG integration into investment decisions **22.** Impact investing **23.** Central bank / financial regulator actions on climate risk
Corporate / business actions	**27.** Compliance with mandatory sustainability/reporting regulations **29.** Science-based targets initiatives **31.** Supply chain engagement/performance **33.** Commercialization of sustainability through better products/services **34.** Integration of sustainability within companies **44.** Technology innovation / R&D for sustainability solutions **45.** Collaboration within/across sectors **47.** Circular economy practices

High impact, low feasibility actions:

Investor / capital market actions	**26.** Integrating natural/social/human capitals into accounting systems
Corporate / business actions	**36.** Internal carbon pricing **37.** Corporate sustainability-linked compensation **38.** Mandatory human rights / environmental due diligence **42.** Build culture where employees prioritize sustainability in day-to-day work **46.** Nature-based solutions

Low impact, high feasibility actions:

Corporate / business actions	**28.** Voluntary sustainability reporting/disclosure **30.** Ratings/rankings of corporate sustainability performance **32.** Stakeholder engagement **35.** Industry sustainability standards **41.** Participation in sustainability-focused business associations / collaborations **43.** Artificial intelligence

Low impact, low feasibility actions:

Investor / capital market actions	**20.** Filing/supporting shareholder resolutions **21.** Divestment **24.** Principles for Responsible Investment (PRI) **25.** EU Taxonomy for Sustainable Activities
Corporate / business actions	**39.** UN Global Compact principles for responsible business **40.** B Corp certification **48.** Carbon capture/utilization/ storage (CCUS) **49.** Geoengineering

Images taken from pages 19-22

ENVIRONMENTAL RISK MITIGATION

The Disclosure Dividend 2025

By CDP

View the full report here

Notable Highlights

- Every **$1 spent on addressing physical climate risks could deliver a return of up to $21** for some firms, with an average return of up to $8.
- Per company, **the costs to mitigate climate-related issues are 13x lower than the costs of financial risks**.
- Companies that take environmental action could **unlock a median $33.1 million worth of opportunities** for every $4.6 million invested to realize them.
- 90% of large companies **have a process for identifying and assessing their environmental dependencies**, impacts, risks, and opportunities or intend to do so within the next two years.
- **43% of companies have a climate transition plan** in place, with nearly half of large companies considering water (66%), biodiversity (45%), and plastics (38%) in addition to climate change.
- The report includes corporate case studies on disclosures and supplier engagement.

Objective

- To explore the returns companies receive from disclosing and acting on their environmental risks, impacts, and opportunities, including access to capital, business resilience, and compliance.

Background

- The report data is based on over 24,800 organizations (large and SMEs) that submitted environmental issue response data to CDP during the 2024 disclosure cycle (the methodology can be found in the report and the press release).
- The median benefit-cost ratio is based on companies' self-reported estimates of the financial impact of physical climate risks over medium- and long-term horizons (whichever is higher) and the associated response costs.

Report Findings

The cost of environmental business risks:

- Inaction on climate-related disasters is projected to **cost the global economy up to $38 trillion annually by 2050**.
- 2024 financial statements showed that **companies already have revenue exposure to environmental risks**, including climate (14% of revenue vulnerable to physical risks, 19% vulnerable to transition risks), forest (17%, 15%), and water (7%, 12%) risks.
- **28% of companies said that policy is their highest perceived risk** (including changes to carbon pricing, increased environmental standards, or changes to national legislation), followed by acute physical risks (e.g., wildfires) at 19% and chronic physical risks (e.g., declining water quality) at 14%.

Returns and opportunities from mitigating environmental business risks:

- **The costs to mitigate environmental risks are lower than the estimated cost of impacts across the board:**
  - Climate: estimated impact of risks ($6.1 trillion) vs. cost to mitigate ($1.4 trillion)
  - Forests: estimated impact of risks ($43.9 billion) vs. cost to mitigate ($1.4 billion)
  - Water: estimated impact of risks ($339 billion) vs. cost to mitigate ($58.7 billion)
- **All industries see a potential return on mitigating physical climate risk:**

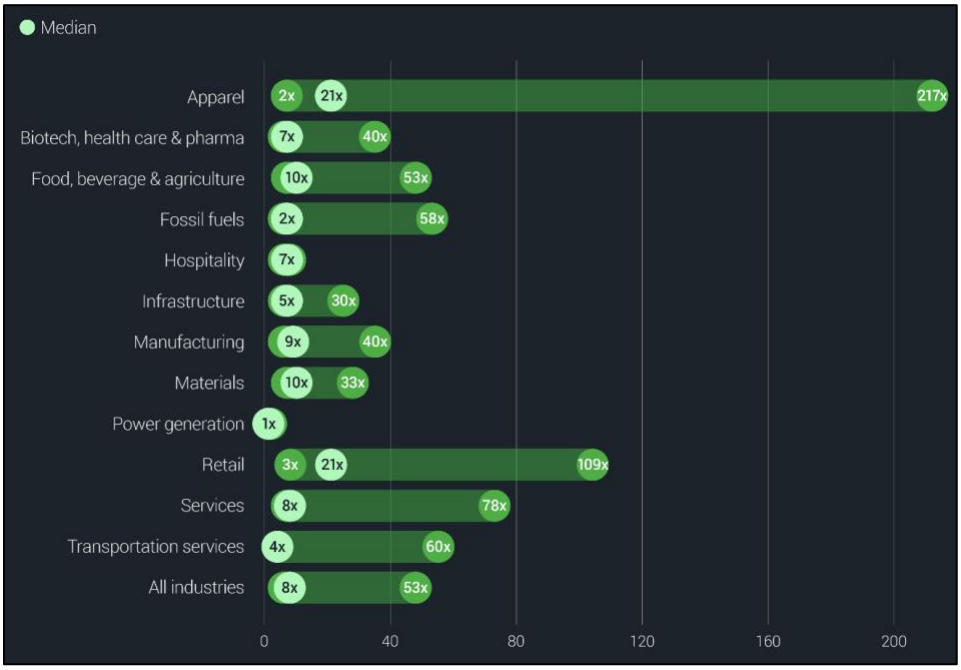

Image taken from the report

- **Japanese and Canadian companies identified the most significant environment-related financial opportunities** (about $73 million in potential gains per company), compared to $56 million for EU companies and **$15 million for US companies**.

Companies aren't fully utilizing available tools and pathways to mitigate risks and harness opportunities:

- **35% of companies offer low-carbon goods and/or services**, while 55% don't offer them and don't plan to. **30% of companies have low-water-impact goods and/or services,** 17% plan to do so, and 29% don't plan to do so.
- **15% have aligned their revenues with new climate-related commercial opportunities**.
- Only **11% of companies offer suppliers financial incentives** to improve environmental performance.
- **21% don't conduct scenario analysis** for any environmental outcomes or plan to do so in the next two years. Of those conducting scenario analysis, 63% use at least one high-emissions scenario (3°C or higher).

ENERGY SYSTEMS

Flexible Data Centers and the Grid: Lower Costs, Higher Emissions?

By National Bureau of Economic Research (NBER)

View the full report here

Notable Highlights

- Data center electricity demand is projected to increase by 7-12% by 2030.
- **Data center "temporal flexibility"** (the ability to shift workloads over time) **reduces costs** by shifting loads from peak to off-peak hours**, flattens net demand, and facilitates renewables integration**, thereby increasing the economic value of wind and solar generation.
- However, without adequate clean power generation, **flexibility can make it more cost-effective to run baseload fossil fuel plants**.
- **The impact of flexibility on emissions depends on the surrounding resource generation mix.** In systems with high renewable penetration and limited remaining coal capacity, flexibility mainly enables greater renewable utilization and emissions reductions. In fossil-heavy systems, flexibility may increase emissions.
- **Strong policies** that accelerate renewables deployment (e.g., carbon pricing or investment incentives) **must be deployed** to ensure temporal flexibility supports decarbonization.

Objective

- To model power systems in three US regions that collectively host 82% of the nation's projected 2030 data center demand (Texas, the Mid-Atlantic, and the WECC) and evaluate the effects of data center workload flexibility on grid operations, capacity, the generation mix, the total annual system cost, and emissions.

Background

- Data centers typically maintain utilization rates around 80%, leaving a 20% "flexible workload" to accommodate shifting demand.
- The report data is based on the GenX capacity expansion model, with input data from PowerGenome. The model was modified to explore various scenarios for data center

temporal flexibility, including the time window in which loads can be shifted (from 1 to 24 hours) ("the shifting horizon") and the percentage of shiftable demand out of 20% of total gross demand (methodology on pg. 1-3, 14-15).

- The costs associated with data center load shifting were not modeled.

Report Findings

The impact of flexibility on grid and data center operations (pg. 3-5):

- **In all scenarios**, flexible data center load **reduces system ramping requirements**.
- The 24-hour and 100% share of flexible workload scenario shows the most extensive redistribution of data center load. However, **even modest flexibility** (12-hour shifting horizon and 60% share of flexible load) **can significantly rebalance the grid.**

The impact of flexibility on capacity and the generation mix (pg. 6-8):

- Flexibility increases the economic value of wind and solar generation, leading to **increased solar investment in the Mid-Atlantic** (and to a lesser extent in the WECC) and **increased wind investment in Texas.**
- The graph on page 8 shows the **capacity and generation across regions and various technologies and levels of flexibility**.

The impact of flexibility on carbon emissions (pg. 8-11):

- **In Texas,** where wind and solar are projected to supply 54% of generation, high levels of flexibility result in **up to 40% lower CO2 emissions** and faster retirements of coal and nuclear plants.
- In the **Mid-Atlantic**, average hourly **coal utilization increased by 9%,** even with complete flexibility.

The impact of flexibility on the total annual system cost (pg. 11-12):

- **Data center flexibility reduces costs at all levels of flexibility. The source of savings varies by region,** including reduced investments in new natural gas in the Mid-Atlantic, aligning data center load with cheap VRE resources in Texas, and increased solar investments in the WECC.
- Increasing the shifting horizon and the share of flexible workload reduces costs by up to 4% in the Mid-Atlantic, 5% in Texas, and 2% in WECC.

Data Center Powering Models Report

By Sightline Climate

View the full report here

Notable Highlights

- **Power (including grid connection and generation) is now the main determining factor for choosing data center sites**, followed by clusters (to share workloads), fiber, latency (the delay in fulfilling data requests), and cost.
- In the U.S., and in congested grids generally, data centers are offering grid services, additional capacity, or local investment to make projects more attractive to utilities.
- Most data center operators are **compromising on at least one power model attribute** (clean, fast, cheap, firm) to get projects built.
- **The average data center project size (and investment) is rising rapidly:** 150 MW constituted a large project a few years ago, while 1GW is common today. The median project investment is $800 million.
- Pages 13 and 18 include **case studies on companies** pursuing various near-term and long-term data center power models.

Objective

- To provide an overview of data center power models, rank near-term and long-term models (based on being clean, firm, etc.), and analyze data center deployment progress.

Background

- The report data is based on 294 data center projects with a total of 73.6 GW of demand (methodology found here).
- This report is the condensed public version. The full report is available for Sightline clients here.

Report Findings

Data center power models come with trade-offs in speed, cost, scalability, and emissions (pg. 8-11):

- **Grid-connected systems** have balancing built in. However, they can result in long waits for interconnection, and they require carefully structured electricity tariffs to avoid increasing costs for other ratepayers. Restarting recently retired generation can avert many of these challenges.
- **Off-grid systems** give developers more control over power sources and are faster to build. However, they're expensive to balance, they require active management, and they come with higher outage risks.
- **Clean firm power** is increasingly the goal for hyperscale projects. Developers are looking beyond virtual PPAs to hourly matched, dedicated contracts. In Europe, excess clean firm power is leading to discounted rates and fast-track grid connections.
- **Fossil power** is usually the fastest power route. Small gas turbines don't have the wait times and supply chain challenges of larger systems. Some developers are promising hydrogen-ready turbines or CCS projects to decarbonize their power eventually.

Ranking data center power models (pg. 13-16):

Near-term and long-term power models were ranked based on the following requirements: clean, firm (power is available nearly 24/7), fast, low-cost, scalable, and additive (adding clean power to the grid). (Green = meets the requirement, Yellow = could meet the requirement in the future or partially does today, Red = does not meet the requirement)

Near-term power models (pg. 13-16):

Image taken from pg. 14

- Given that bear-term models generally repurpose preexisting assets, **all models are fast, but only Off-Grid Renewables and Storage are scalable and additive**. They're mainly differentiated by their cost and how clean they are.
- Pages 14-15 include **deep dives** on Excess or Curtailed Generation on Managed Sites and Repurposing Existing Grid Connections.

Long-term power models (pg. 18-21):

Image taken from pg. 19

- **Most long-term models are at least partly additive, and almost all are clean.** They vary from two-year timeframes (e.g., Gas Without CCS) to over 10 years (e.g., Advanced Nuclear).
- Pages 20-21 include **deep dives** on Gas, Potentially with CCS, and Funding Commercial-Scale Geothermal.

Data center deployment progress (pg. 23-24):

- **The U.S. leads all regions in data center capacity,** but mega-projects in the U.K. and France signal a **wave of AI infrastructure in Europe and Asia**, particularly as US grids get congested.
- Out of 294 data center projects analyzed, **Big Tech companies account for nearly a quarter of projects (70)**, the US Department of Energy accounts for 16, and the EU's EuroHPC JU accounts for 11.
- **Clean power tariffs** are being developed in the U.S., **providing hyperscale developers with a pathway to secure clean, firm power,** absorb grid costs, and de-risk utility investments.
- **The average data center project size (and investment) is rising rapidly.**

- AI-specific builds are 5-6x more capital-intensive than enterprise facilities.
- Developers investing in new generation face significantly higher costs, but they can avoid grid connection delays and energy price volatility.
- Building retrofits offer around 35% cost savings.

Power Systems Transformation: Delivering Competitive, Resilient Electricity in High-Renewable Systems

By Energy Transitions Commission (ETC)

View the full report here

Notable Highlights

- Global required annual **grid investments could increase from $370 billion in 2024 to around $850 billion** in the 2030s and 2040s. These costs could be reduced by up to 35% through the application of innovative grid technologies.
- Many **countries can operate systems with 70% to 80% of electricity from wind and solar and deliver electricity at costs comparable to or lower** than today's fossil-based systems in most parts of the world.
- As electricity systems shift to accommodate rising electricity demand and higher shares of renewables, **power systems must rebalance energy supply and demand**, posing technical and timing challenges.
- Rebalancing challenges **can be addressed using a range of available technologies and business models,** including flexible dispatchable generation, innovative grid technologies, long-distance interconnection, energy storage solutions (e.g., batteries or pumped hydro), and demand-side flexibility.
- The following Report Findings break down **six private sector focus areas to enable cost-effective power system transformation.**

Objective

- To analyze how electricity systems must shift to accommodate rising electricity demand and high shares of renewables and outline actions for the private sector to enable a cost-effective power system transition.

Background

- The report was developed in consultation with ETC Members and participation from various companies, financial institutions, NGOs, nonprofits, multilateral organizations, and research institutes (methodology on pg. 153).
- The report data is based on ETC's 2050 net zero scenarios: Accelerated by Clearly Feasible (which assumes rapid but technically and economically feasible action) and Possible but Stretching (which assumes aggressive policy support and faster-than-expected technological progress) (pg. 12).

Report Findings

NOTE: The report includes detailed findings on managing energy system balancing challenges, managing grid expansion to minimize grid costs, and total system generation, balancing, and grid costs in the long-term and during transition. See the Table of Contents on pages 9-10.

Six private sector focus areas to enable cost-effective power system transformation (pg. 123-151):

The following report sections include detailed actions and recommendations.

#1: Strategic vision and planning that includes (pg. 125-126):

- Clear, ambitious **emissions intensity-reduction targets** aligned to net-zero goals, with long time horizons to guide infrastructure investment.
- **Targets for clean capacity**, including renewables, grids, energy storage, and flexibility.
- **Accurate models and forecasting** to set targets and better integrate new technologies.
- **Anticipatory funding** to shift from short-term, reactive investment to long-term, whole-system planning.

#2: Market design for efficiency and lower cost of capital (pg. 126-137):

- **Enable market access for all eligible technologies,** and ensure revenue stacking is available so technologies have access to multiple revenue streams.
- **De-risk emerging technologies** through reformed market structures (e.g., capacity markets to better value flexibility) and targeted mechanisms (e.g., PPAs).
- Provide **early-stage R&D funding** to bridge gaps in early-stage innovation and accelerate the commercial readiness of novel solutions like ultra-long duration storage.
- **Strengthen price signals** through better use of locational and temporal pricing.

#3: Infrastructure upgrades for faster grid connection (pg. 139-140):

- **Build, upgrade, and optimize grid infrastructure** through strategic investments in substations, transformers, and line upgrades to reduce grid connection queues.

#4: AI and digitalization for more efficient grid management (pg. 143-144):

- Use data analytics and AI to improve system resiliency and optimize grid operations (examples on pg. 143).
- **Use advanced metering and digitalization** to optimize demand-side flexibility, increase visibility for grid operators, and improve grid resilience and predictive maintenance.

#5: Addressing supply chain and workforce constraints (pg. 144-148):

- Transformers, cables and HVDC systems, gas turbines, and energy storage systems are particularly exposed to supply chain vulnerabilities (based on ETC research). **To increase supply chain resilience, implement:**
    - Strategic supply chain planning (including clear, credible demand signals to enable manufacturing investment).
    - Targeted interventions to ease supply pressures in the short term and address demand and capacity imbalances in the long term.
    - Stronger stakeholder collaboration to anticipate demand surges and synchronize system buildout timelines.
- **Continuously upskill and reskill workers on emerging grid technologies.** Collaborate with academic institutions to align energy sector needs with educational programs and ensure a steady pipeline of skilled professionals.

#6: Consumer engagement and product design to enable demand-side flexibility (DSF) (pg. 149-151):

- **Up to 30% of global power demand could be time-shifted through DSF.**
- To build consumer trust in flexibility technologies, energy service providers must:
    - **Invest in consumer education**, highlighting how flexibility delivers cost savings, emissions reductions, and improved resilience.
    - Ensure **transparency and user control** so that consumers can adjust settings for personal or operational preferences.
    - Guarantee strong **data privacy protections**.
- Energy service providers must **increase customer engagement in products and services** through seamless automation that allows customers to set boundaries and preferences, interoperability for flexible assets, and transparency.
- Page 151 includes **consumer engagement solutions** across storage and flexibility technologies to improve grid efficiency.