

EXECUTIVE GUIDE

Energy transition for resilience and energy security

Top five priorities for utility leaders of today

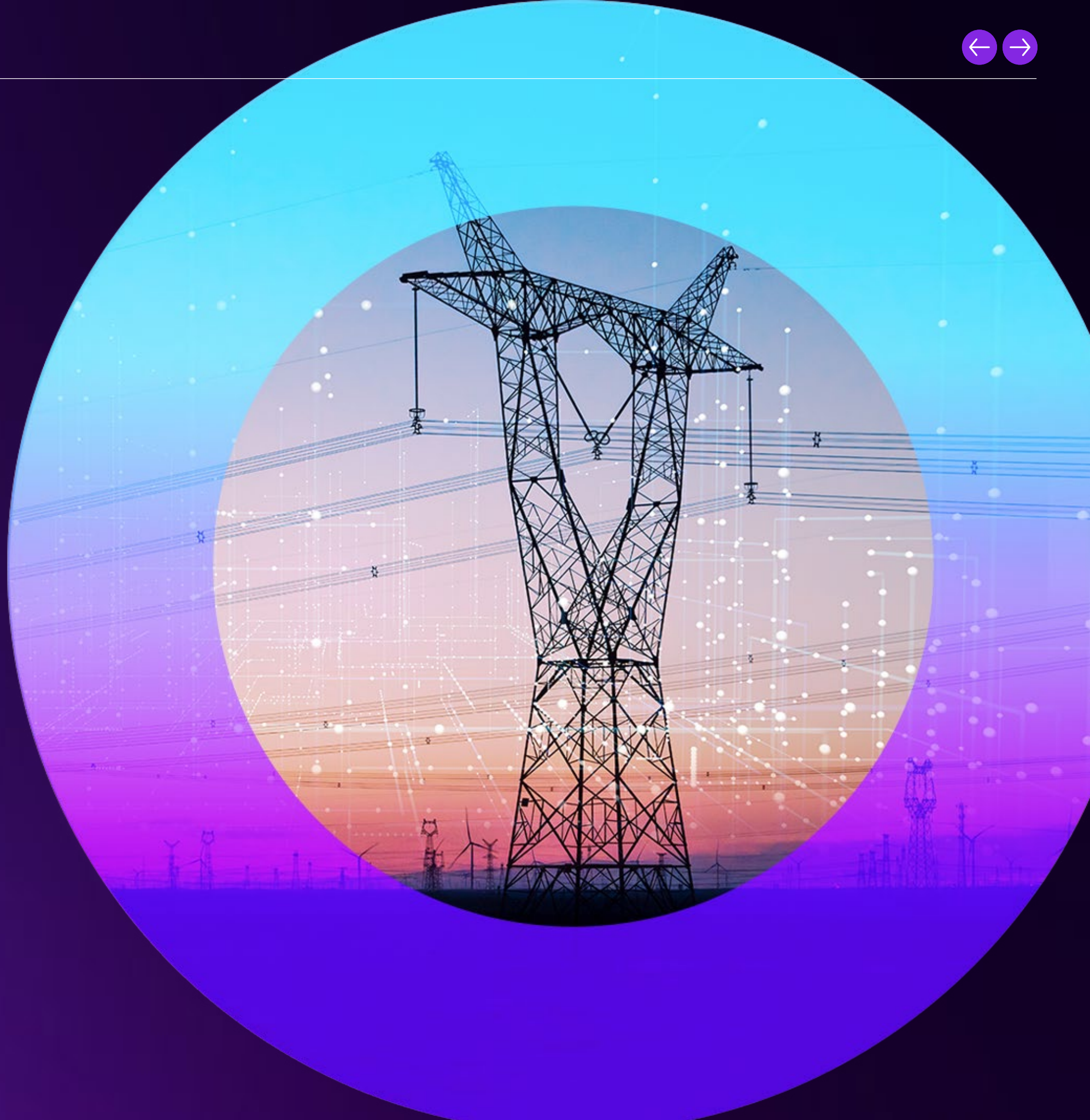


The energy transition is a resilience and affordability strategy

For the C-suite, the energy transition has become one of the most critical levers a utility has to ensure affordability, resilience and energy security. Renewables are now the cheapest source of new power in most markets, they shield customers and shareholders from volatile fossil prices, and a cleaner, smarter grid is a more reliable one. The financial case no longer trails the environmental one; it leads.

What turns that potential into performance is Industrial AI. Utilities already generate more data than almost any other sector, and Industrial AI is the engine that converts it into faster, better decisions across investment planning, grid operations and asset maintenance. It enables leaders to capture the affordability and resilience the transition promises, instead of leaving value on the table.

This guide outlines five priorities for utility executives approaching the energy transition as a business strategy. Each priority is grounded in a recent, hard number, showing that the case is now economic as much as environmental.



1. Expand renewables portfolio to enhance resilience

Once built, renewables sidestep the fuel-supply and geopolitical shocks that destabilize fossil generation, and they price competitively at wholesale. For a board, that is risk management.

\$2.2T

investment in clean energy worldwide in 2026, nearly double the \$1.2 trillion going to oil, gas and coal, as fossil-importing economies invest to cut their exposure.

Source: IEA, World Energy Investment 2026

Renewables change a utility's risk profile as much as its cost line. Once a wind or solar asset is built, its fuel is effectively free and domestic, so it sidesteps the supply-chain and geopolitical shocks that send fossil-fuel prices, and earnings, swinging. Overdependence on volatile fossil fuel has become one of the largest unhedged risks on any industrial balance sheet, which is why a record 814 GW of wind and solar was added worldwide in 2025.

The cost signal is clearest at wholesale level. Through early 2026, markets with a high renewable share such as Spain, Portugal and the Nordics ran significantly lower wholesale prices than fossil-heavier Italy or Ireland. For an industrial buyer on a ten- to twenty-year horizon, that means lower price risk and a more predictable cost base, even where it does not pass straight through to consumer bills. Boards increasingly treat diversified renewables, storage and electrification not as a sustainability initiative but as a sensible allocation of capital to protect margins and build resilience.

In practice: Operators such as National Grid use AI-driven investment planning to compare hundreds of thousands of scenarios at once, balancing cost, risk, performance and carbon in a single view.

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2. Make Industrial AI the engine

Utilities already own the raw material. The constraint on value is decision latency, not data volume.

100– 200 EB

of data the energy sector generates every year, more than almost any other industry. The limit on value is no longer how much data a utility holds, but how fast it can turn that data into a decision.

Source: [IFS analysis](#)

Industrial AI is the engine that closes that gap. It acts as both filter and integrator, connecting siloed data across assets, grid, workforce and supply chain, surfacing the signals people miss and forecasting problems before they occur. Agentic AI and digital workers increasingly carry routine decisions on their own, which matters commercially as a generation of experienced engineers, the sector's "grey tsunami", heads for retirement. The scale of the prize is large: IFS analysis suggests



full adoption across its top three markets alone would abate more emissions than all of global aviation.

The barrier to capturing this is rarely the technology. It is organizational, cultural and regulatory, and fragmented data is what keeps utilities stuck in endless pilots. A single connected data foundation is what lets AI run across the whole operation instead of in disconnected proofs of concept, and it is what makes every priority that follows deliverable rather than aspirational.

In practice: Utilities such as Tampa Electric run investment planning, asset management, field service and AI on one platform, turning siloed calls into coordinated, enterprise-wide decisions.

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3. Unlock the grid

Generation is no longer the constraint. The network is. And software buys capacity faster than steel.

2,500 GW

of new renewable, storage and large-load projects are stalled in grid connection queues worldwide. The grid, not generation, is now the binding constraint.

Source: IEA, Electricity 2026

headroom. Industrial AI gives operators real-time visibility, predicts congestion before it bites, and supports dynamic line rating, while pointing new capital at the constraints that genuinely matter.

In practice: Dynamic line rating has unlocked up to 30% more capacity on existing lines for one European grid operator – headroom found in data, not infrastructure

Demand is climbing fast – electrification, EVs and data centers – while grid build-out lags far behind generation. New lines take 5 to 15 years to plan and build, against 1 to 5 years for the renewables waiting to connect, and the IEA estimates annual grid investment must rise about 50% from today's \$400 billion to keep pace.

Much of the capacity to move power already exists. It is simply run conservatively, without a live view of what the network can safely carry. Treating the grid as a data problem as well as a physical one is the quickest way to find



4. Keep critical assets running

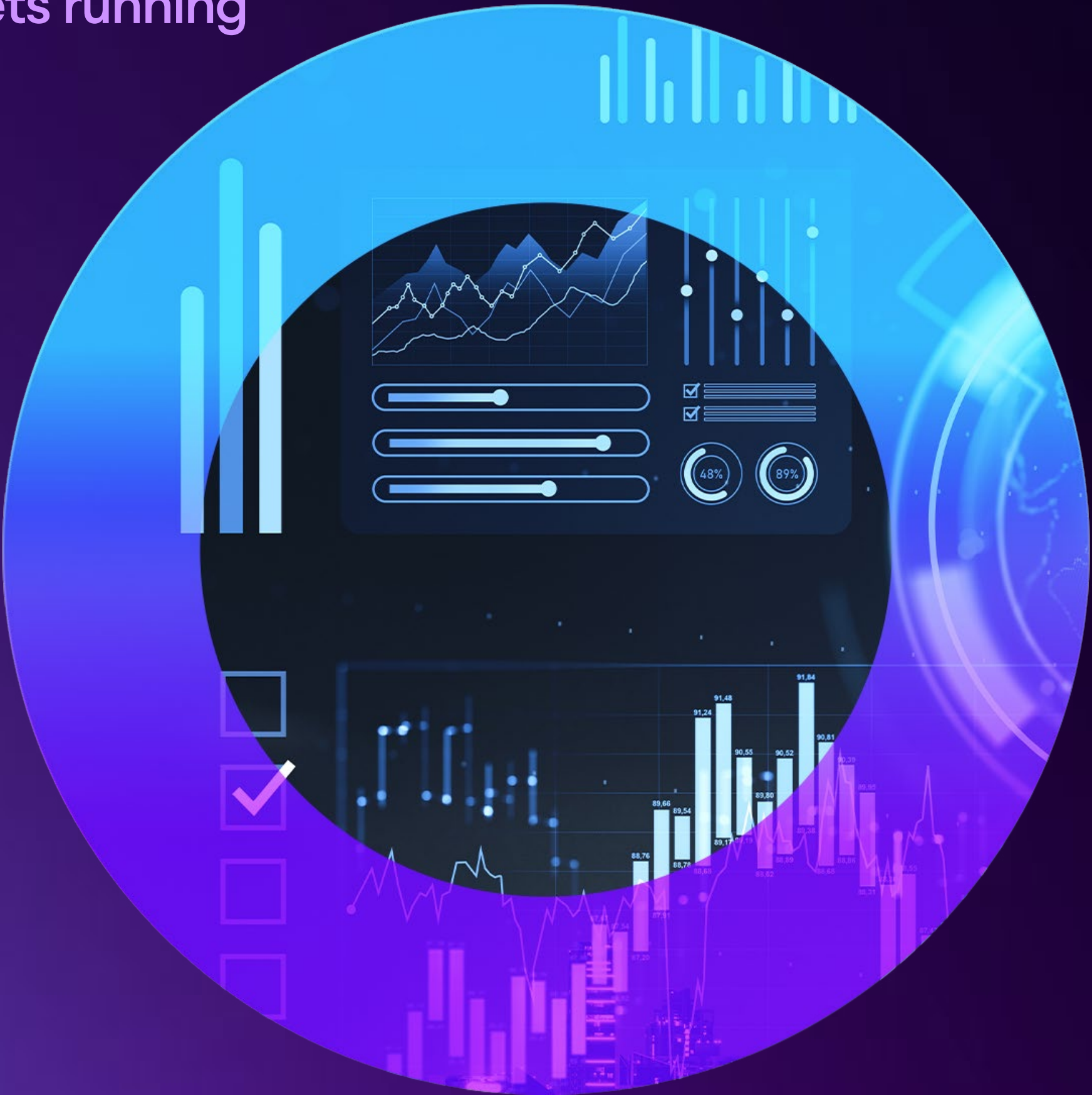
The transition only pays off if the assets behind it run. Every hour a wind farm or line is down is clean capacity the grid has to replace.

25% - 30%

of global greenhouse gas emissions are “waste” emissions, costing money and hastening climate change.

Source: [IFS analysis](#)

Integrating renewables is not only about building them; it is about keeping them productive and operational . Renewable and grid assets tend to be younger, more numerous and more widely distributed than the plant they replace, so availability is a live operational challenge rather than a solved one. Reactive maintenance leaves utilities most exposed when extreme weather and supply-chain pressure arrive together, and it quietly erodes the output of assets already built and paid for.



Industrial AI shifts the model from reactive repair to predictive, condition-based maintenance. Reading performance data, it flags failures before they happen, extends asset life and keeps clean capacity on the grid, which is what makes an integrated, lower-carbon system dependable rather than fragile. The same intelligence optimizes the field operations that support those assets: IFS customers cut field-service travel by an average of [37%](#), lowering cost, fuel and Scope 1 emissions while improving response.

In practice: Energy operators including Total Energies and Noble Corporation have logged measurable uptime gains from predictive, condition-based maintenance – keeping more generation available, more of the time.

[Read more](#)

5. Plan for a changing climate

Extreme weather is now an operating condition, not a tail risk. Resilience has to be planned decades ahead.

\$115B

the cost of the 23 separate billion-dollar weather and climate disasters that struck the US in 2025, among the highest tallies on record.

Source: Climate Central / NOAA, 2026

Climate change has become an operational variable, not a distant scenario. More frequent heat, drought and storms are already driving asset failures, and infrastructure planned for yesterday's climate grows more fragile each year. The leaders are moving from reacting to events toward planning for them, using long-horizon, data-driven asset investment planning that weighs climate risk alongside cost and carbon.

This is where decision analytics and Industrial AI earn their keep. Anglian Water, which supplies almost seven million people across one of the UK's hottest and driest regions, models the probability of watermain bursts out to 2070 and tests intervention strategies against future climate scenarios. Putting cost, carbon and value on a common scale has helped it target the right investments and deliver a 61% reduction in capital carbon, while strengthening the resilience of the network its communities depend on.

In practice: Planning to a multi-decade horizon turns climate resilience from a reporting line into a capital allocation decision leaders can defend



From priorities to delivery

IFS has worked with utilities since 1983. The thread running through all five priorities is a simple one: the energy transition is not a risk to be made resilient; it is how resilience and energy security get delivered. Affordable clean power, a resilient grid, reliable assets, climate-ready planning and Industrial AI at scale, all create a unified system that is more secure, affordable and future-ready than the one it replaces.

What connects them is the ability to plan, execute and optimize as one loop, working from a shared view of the data.

Is your utility ready to adopt transition as the energy security lever?

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IFS Cloud is a fully composable AI-powered platform, designed for ultimate flexibility and adaptability to our customers’ specific requirements and business evolution. It spans the needs of Enterprise Resource Planning (ERP), Enterprise Asset Management (EAM), Supply Chain Management (SCM), and Field Service Management (FSM). IFS technology leverages AI, machine learning, real-time data and analytics to empower our customers to make informed strategic decisions and excel at their Moment of Service™.

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