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Towards Resilient Infrastructure Investment Planning

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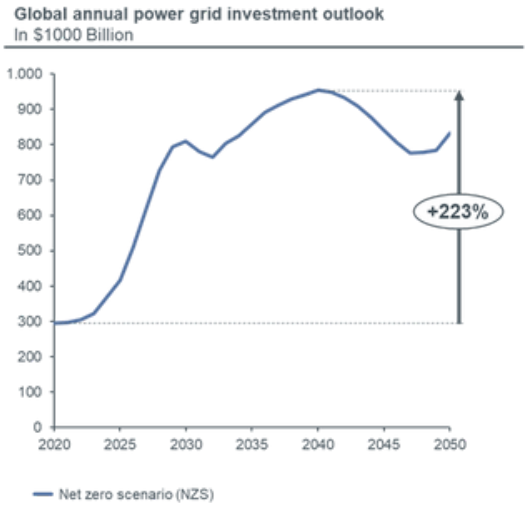
Position Paper

Resiliency in Infrastructure Investment Planning

Resilient Investment Prioritization is a holistic, adaptive approach to infrastructure planning that enables utilities to make informed, balanced decisions in a rapidly evolving energy landscape. Unlike traditional methods, which often rely on static processes and fragmented data, resilient prioritization integrates advanced analytics, real-time asset health information, and stakeholder perspec-tives to align investments with both immediate operational needs and long-term strategic objectives.



This approach goes beyond system implementation. It requires the continuous evolution of business processes, digital integration, and governance structures to ensure that investment decisions are robust against uncertainty, adaptable to change, and optimized for value creation. By bridging the gap between expansion, replacement, refurbishment, and retirement strategies, resilient investment prioritization empowers organizations to allocate resources efficiently, manage risk proactively, and support the transition to a sustainable, future-ready grid.

Traditional Infrastructure Investment Planning Eco-system are increasingly insufficient for Modern Grid Challenges

Utilities are routinely faced with complex decisions: balancing grid expansion with reliability, weighing investments in greenfield versus brownfield projects, and responding to a mix of socio-economic, market, and governmental factors. Yet, these decisions are often made without a pragmatic, data-driven approach. Instead, planning tends to be top-down, with limited involvement from those closest to the operational realities and challenges.

Despite the widespread adoption of Asset Investment Planning (AIP) systems, the realisation of tangible value on the ground remains a distant goal. System implementation alone is not the solution; it is merely the first step towards building a comprehensive, effective investment planning framework. The core problems persist:

Case Study 1: Overreliance on the System
Utilities often implemented a state-of-the-art Asset Investment Planning (AIP) platform, expecting immediate improvements in investment outcomes. However, without adapting their underlying processes, the system became a reporting tool rather than a driver of strategic decisions, resulting in little change to actual value delivery.

“The system conveys the story what its owner wants it to say”

Case Study 2: Fragmented Digital Landscape

A regional grid operator invested heavily in digital platforms but failed to integrate them across the enterprise digital ecosystem. The lack of interoperability and data sharing meant that innovation stalled, and the digital landscape remained fragmented, undermining the potential for holistic planning.

“Each system communicates in its own language”

Traditional Infrastructure Investment Planning Eco-system are increasingly insufficient for Modern Grid Challenges

Case Study 3: Adoption and utilisation
Organisation rolled out an advanced Asset Investment Planning (AIP) system, but the absence of a structured change management program led to poor adoption. Employees were not adequately trained or engaged, resulting in the people pivoting back to the old inefficient mode of operation.

"Organisations often tend to undermine the power of adoption"

Case Study 4: Failed Business Integration
AIP systems are often well implemented at the IT level, but business integration falls short. Real-world challenges—like balancing expansion, replacement, refurbishment, and retirement—are not effectively modelled in the system. Without technical and business expertise, the system fails to support strategic decisions.

"It's like having the tool but lacking the knowledge"

Case Study 5: Insufficient Focus on Resilience
Once an AIP system is implemented, it marks not the end, but the beginning of a transformative journey. The way the business operates must evolve—processes are redefined, RACI (Responsible, Accountable, Consulted, Informed) matrices shift, and a cycle of rediscovery begins. What was perceived as the final step becomes the starting point for building organisational resiliency, as teams adapt to new ways of working and continuously refine their approach to investment planning..

"Its not the end, but the beginning of transformation"

Traditional Infrastructure Investment Planning Eco-system are increasingly insufficient for Modern Grid Challenges

As a result, utilities struggle to monetise asset risk and performance, integrate stakeholder perspectives, and leverage data for informed decision-making. The absence of a holistic, integrated planning framework leads to suboptimal resource allocation, delayed project delivery, and missed opportunities for long-term value creation.
To move beyond these limitations, system implementation must be viewed as the foundation for a broader transformation—one that integrates advanced analytics, stakeholder engagement, sustainability, and continuous improvement into every aspect of investment planning.

Unaddressed Planning Gaps Leave Utilities Vulnerable and Investments Inefficient

The shortcomings in traditional investment planning do not arise in isolation—they stem from specific, recurring issues in how utilities approach transformation. When utilities rely on systems without adapting processes, data remains fragmented and decisions are made on incomplete information. Poor adoption and lack of business integration mean new tools are used superficially, while real-world challenges go unaddressed. Without a focus on resilience, organisations treat system implementation as an end-point, missing opportunities for continuous improvement. These gaps lead to inefficient investments, delayed projects, and increased vulnerability to operational and financial risks—leaving utilities unprepared for future challenges.

Building a Holistic Integrated Ecosystem for Infrastructure Investment

A resilient investment ecosystem is not just about technology—it's about fundamentally transforming how people, processes, and systems interact to deliver value. The solution lies in three mutually reinforcing shifts:

- Breaking Down Silos - Conceptually and Systemically

True transformation begins by dismantling barriers between departments, disciplines, and data sources. This means fostering collaboration between asset managers, planners, operations, and finance—not just in meetings, but in how information flows and decisions are made. At the system level, it requires integrating asset health, risk, and operational data so that insights are shared and acted upon across the organisation. When silos are broken, investment decisions become more holistic, balancing expansion, replacement, refurbishment, and retirement based on a unified understanding of risk and value.

- Enabling Digital Integration Through a Common Information Model

To ensure systems no longer operate in isolation, utilities must adopt a common information model—such as a Standardized Information Model (SIM) - that harmonises data formats and definitions across platforms. This enables seamless interoperability between AIP, SCADA, GIS, and other digital tools, creating a single source of truth. With digital integration, data-driven insights can be generated in real time, supporting scenario analysis, risk quantification, and agile investment planning.

- Evolving Strategy, People, and Processes

A holistic ecosystem is sustained by continuous organisational evolution. Strategic alignment is achieved when investment priorities reflect both long-term business objectives and the realities of the operational environment. This requires upskilling teams, redefining roles and responsibilities, and embedding new ways of working. Business and operational processes must be adapted to fully leverage the capabilities of integrated systems, ensuring that the adoption of AIP platforms leads to genuine transformation—not just automation of old habits.

Implementation Pathways

1. Maturity Assessment

Start by evaluating the maturity of both your digital landscape and conceptual frameworks. Ensure systems can provide the right data types, and that business concepts are well-defined to support accurate, actionable information. This step sets the foundation for meaningful integration and alignment.

2.AIP System Implementation

Introduce the Asset Investment Planning (AIP) system as an enabling tool. Recognise that technology is only a small part of the transformation; its true value is realised when it supports strategic objectives and technical requirements.

3. Business Integration & Simulation

Integrate the AIP system into real business processes. Simulate end-to-end scenarios to test how well the system models complex decisions—such as expansion, replacement, refurbishment, and retirement—ensuring technical and strategic needs are addressed.

Implementation Pathways

4. Change Management and Adoption

Drive adoption through structured change management. Engage stakeholders, provide targeted training, and foster a culture of continuous learning so that new ways of working are embraced across the organisation.

5 .Alignment of Processes, People, and Structure

Realign business processes, roles, and organisational structures to fully leverage the capabilities of the integrated ecosystem. Ensure that strategic priorities and technical expertise are reflected in day-to-day operations.

6. Continuous Improvement

Embed mechanisms for ongoing review and enhancement at both the strategic and digital ecosystem levels. Use performance data and stakeholder feedback to refine processes, adapt to new challenges, and sustain long-term value creation.

By following these pathways, utilities can bridge the gap between strategy and technology—moving from fragmented, reactive planning to a dynamic, resilient investment ecosystem that unlocks greater value and supports a sustainable energy future.

Future Outlook: System Implementation Is Only the Beginning

As the energy sector continues to evolve, it is clear that implementing new systems alone will not deliver the resilience, efficiency, and value that modern grid challenges demand. Instead, system implementation must be recognised as the first step in a much broader journey—a catalyst for 360-degree organisational evolution.

The true transformation occurs when utilities move beyond technology deployment to embrace continuous alignment of strategy, processes, people, and digital capabilities. This ongoing evolution enables organisations to break down silos, integrate data and expertise, and adapt to changing market, regulatory, and technological landscapes.

Looking ahead, those utilities that treat system implementation as the start—not the end—of their transformation journey will be best positioned to unlock the full potential of resilient investment prioritisation. By fostering a culture of continuous improvement and holistic integration, they will build the adaptive, future-ready infrastructure needed to thrive in an increasingly complex energy world.

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ABOUT ELIA GRID INTERNATIONAL

The earlier we join your project, the greater the impact. From concept to boardroom and policy discussions, our multidisciplinary experts help you navigate complex power system challenges, anticipate risks, and turn uncertainties into confident decisions.

With successful projects in 20+ countries and 7 offices worldwide, EGI combines hands-on experience with innovative thinking. As part of Elia Group, a European leader in transmission and renewable energy integration, we bring proven expertise to de-risk your project from the start.

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