Special Feature: Realising Disaster-Resilient and Sustainable Societies 4

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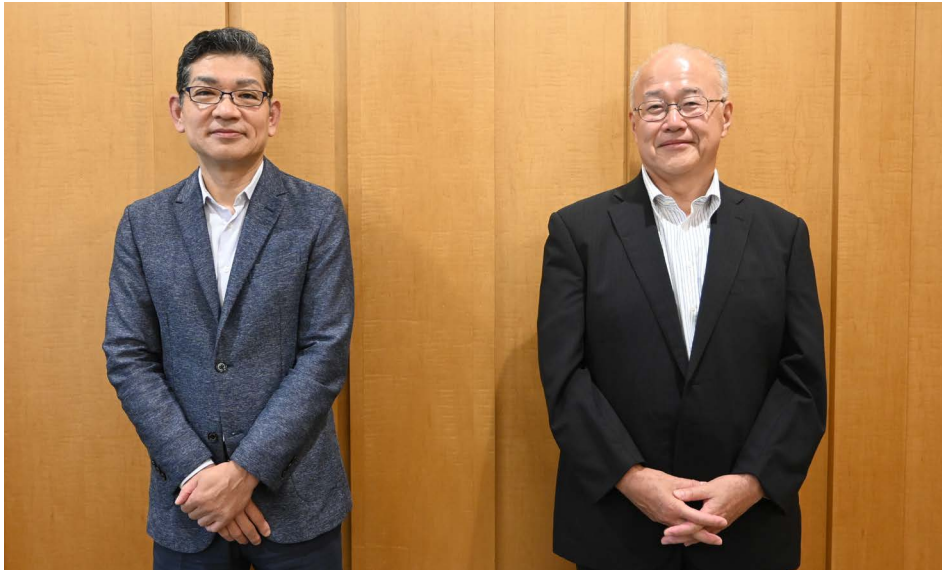

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As climate-related disasters such as floods, heatwaves and typhoons intensify globally, and the persistent threat of major earthquakes continues to challenge resilience, we have entered an era in which disasters—whether driven by climate change or not—can no longer be dismissed as unprecedented events.

Disaster resilience extends beyond traditional disaster prevention—it represents the capacity to minimise damage and achieve rapid recovery. Delivering this capability through our Group's solutions and expertise has become a critical challenge in advancing societal resilience.

ID&E Holdings has continuously developed technical expertise and knowledge at the forefront of disaster response over many years. Through specialist technical professionals providing field response, operational networks spanning 160 countries worldwide, and the integration of insurance and technology through collaboration with Tokio Marine Group, we are committed to realising disaster-resilient and sustainable societies.

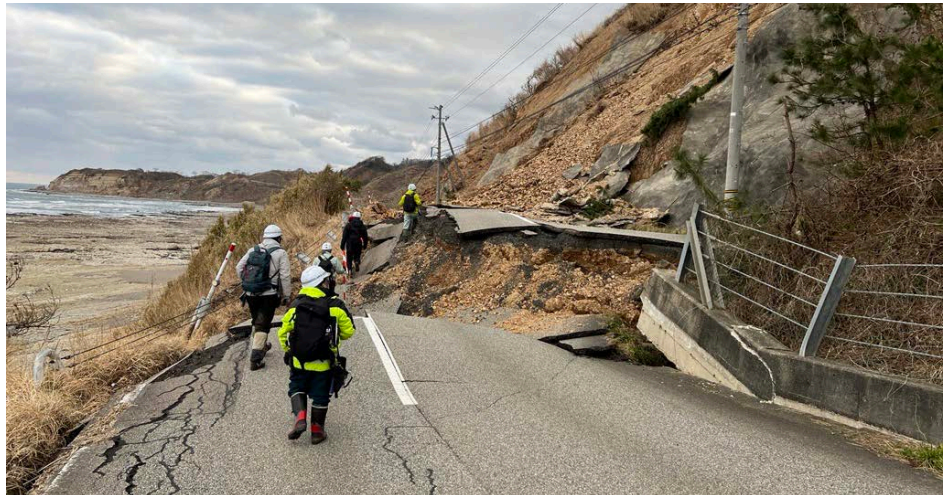
This article presents insights from two specialists who have confronted disasters throughout their careers, discussing the essence of disaster resilience and ID&E's essential role. We hope this dialogue will provide an opportunity for every member of the ID&E Group to seriously engage with the fundamental question of how to accomplish to realise disaster-resilient societies.

What is "Disaster Resilience"—Exploring the intersection with Sustainability

Ueshima: ID&E's sustainability strategy has recently evolved to incorporate disaster resilience as a material focus area. This strategic repositioning, catalysed by our integration with Tokio Marine Group, reflects our commitment to comprehensive risk management and long-term value creation. This prompts us to revisit the question: what exactly does the concept of disaster resilience encompass?

Sumita: Disaster resilience represents a critical capability that transcends traditional disaster prevention and mitigation approaches. Our framework operates on the recognition that complete damage prevention is not feasible, instead prioritising damage minimisation and rapid restoration to original or enhanced operational states. Resilience functions as an essential short-term response capability that must be systematically integrated within our broader sustainability strategy targeting long-term value preservation. Given the increasing frequency of extreme events, proactive engagement across individual, community, and enterprise levels has become a strategic imperative.

Fujiwara: Our deployment in response to the Noto Peninsula Earthquake (Japan) demonstrated the critical importance of comprehensive recovery planning. Field observations revealed limited recovery progress and persistent community displacement one-year post-event—a pattern consistent with outcomes from the Great East Japan Earthquake. Traditional disaster response approaches focusing on individual events have proven insufficient. Our analysis indicates the necessity for temporal integration across multiple planning horizons, incorporating "Build Back Better" principles through multi-stakeholder collaboration to achieve effective regional recovery outcomes.



Noto Peninsula Earthquake (Japan)

Ueshima: This illustrates the strategic integration requirements between sustainability—which establishes enduring operational conditions—and resilience—which enables rapid restoration to enhanced performance states are inseparable as concepts.

Competitive Differentiation Through Technology and Strategic Partnerships

Ueshima: What constitutes ID&E Group's competitive positioning within the disaster response and resilience market?

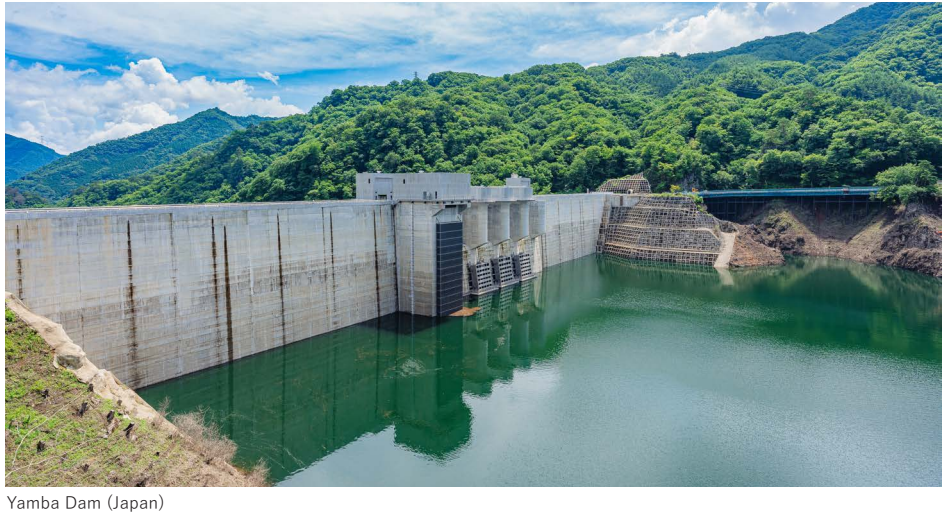
Sumita: First, we possess comprehensive technical excellence supported by our expertise and track record. We employ professional technical specialists with deep knowledge across rivers, geology, disaster prevention, transport, and urban planning sectors, maintaining networks spanning 160 countries globally as well as domestically—strengths that other companies cannot easily replicate. Our extensive consulting experience in disaster prevention, mitigation, and infrastructure development particularly distinguishes us from competitors.

Second, our group composition itself represents a key differentiator. Beyond urban spatial and energy sectors, becoming part of Tokio Marine Group enables us to provide integrated solutions that incorporate decision making from the perspective of insurance. This transcends traditional construction consulting, offering unique value through multifaceted approaches to societal challenges.

Technology Protecting Lives: Disaster Response Rooted in Experience

Fujiwara: We were involved in a broad range of operations related to the construction of the Yamba Dam project in Gunma Prefecture, Japan, which we believe truly demonstrated the strength of our integrated capabilities. The project faced numerous challenges, including opposition movements and legal disputes; nevertheless, the Ministry of Land, Infrastructure, Transport and Tourism pressed with determination, responding to local calls for its swift completion. After its completion, tourism facilities were developed, contributing to the revitalisation of the region.

One of the key roles of the Yamba Dam was flood control. During the 2019 typhoon season, Yamba Dam prevented downstream flooding by capturing upstream Tone River waters, despite being in trial impoundment. As the on-site trial impoundment manager, I witnessed our planned slope protection measures function perfectly under rapidly rising water levels. The infrastructure's ability to capture massive river water volumes and prevent damage was profoundly impactful from an engineering perspective. While this project was met with a range of perspectives and criticisms, I came to truly appreciate that many lives and properties had been protected. It reaffirmed my belief that the path we had taken was the right one.



Yamba Dam (Japan)

Sumita: Dam construction typically involves incremental increase in water level during trial impoundment phase in the construction, monitoring for leakage or displacement. However, when the typhoon caused rapid water level rises, Yamba Dam's unwavering stability demonstrated our technical excellence.

Our involvement in Oda River improvement project (Okayama Prefecture, Japan) exemplifies this urgency—flooding during the planning phase claimed approximately 50 lives that might have been saved through earlier project completion. This experience reinforced our commitment to accelerated recovery and reconstruction programmes, ensuring communities remain protected when similar disasters occur.

Addressing Sediment Disasters: Managing Recurring Risk

Ueshima: Disaster preparedness encompasses a wide range of areas, but among them, landslide countermeasures and sediment control projects represent one of ID&E's longstanding focus areas.

Fujiwara: These projects fundamentally address sediment disasters. Slope failures cause devastating regional damage, and without proper countermeasures, disasters repeatedly occur in the same locations, causing continuous harm to communities. We conduct investigations and design countermeasures for such vulnerable areas.

Ueshima: Beyond monitoring dams and subsurface conditions, we must focus on protecting lives and livelihoods whilst developing cost-effective solutions. Such judgements require extensive engineering experience.

Fujiwara: Particularly for public works projects, maintaining cost-effectiveness balance is critical. Since these considerations aren't codified in standards or legislation, we prioritise collaborative discussions with clients to determine optimal approaches that balance budget constraints with safety requirements.

Supporting Resilient Infrastructure Worldwide

Ueshima: The importance of disaster resilience is growing not only domestically but internationally. How do you perceive the current situation?

Fujiwara: Whilst ASEAN countries experience economic development, their disaster preparedness remains nascent. Prime Minister Ishiba's ASEAN visit confirmed strengthened disaster prevention cooperation, expanding opportunities to deploy Japanese technology to governments and enterprises across these countries. We feel that instances where we can contribute locally are increasing.

Sumita: In Japan, disaster resilience is positioned as a national strategy, with policies promoted by the Cabinet Secretariat under the Basic Act for National Resilience. The entire nation, including prefectures and municipalities, works towards resilience enhancement, and ID&E provides technical support aligned with this direction. We also participate in SIP (Strategic Innovation Program), advancing disaster counter-measures utilising cutting-edge technology.

Private Sector Expansion: New Value Creation Through Insurance and Technology Integration

Ueshima: ID&E focuses not only on public sector programmes but also private sector expansion. What value do you provide through group collaboration with Tokio Marine?

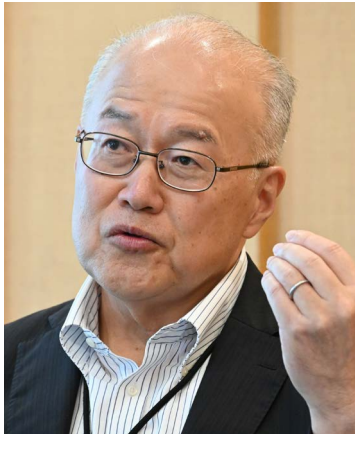
Sumita: Enhancing value provision in disaster prevention for private operators represents a key objective in our collaboration with Tokio Marine. Particularly in "private disaster prevention," we broadly address soft aspects including corporate BCP (Business Continuity Planning) support, evacuation guidance, and risk assessment. Numerous latent needs exist in these fields that haven't yet materialised, and we anticipate certain expansion going forward.

Fujiwara: For private enterprises, initial investment and post-disaster recovery timing are crucial. Unlike public works, companies make decisions based on 20–30-year cash flow projections. Whilst insurance covers certain aspects, technical approaches are necessary for uncovered areas. Through collaboration with the Tokio Marine Group, providing total solutions combining insurance and technology represents our strength.

Future Prospects: Taking "Disaster Resilience" Globally

Ueshima: Please share your vision for the value ID&E can provide in the future.

Sumita: Our distinguishing feature lies in providing comprehensive, one-stop solutions across all processes: prevention, response, assurance, and recovery. Through collaboration with the Tokio Marine Group, we're developing new solutions that integrate insurance and engineering technology. We're also advancing integrated digital infrastructure solutions to address labour shortages, considering delivering new value to society as our mission. Thus, we envision long-term goals that transcend disaster-resilient societies to construct societies that overcome disasters and regenerate better.



Fujiwara: We aim to advance shifts in awareness and human resource development so people in all countries can protect their lives and livelihoods from disasters through their own capabilities. Since overseas resources are insufficient, developing locally capable technical professionals is crucial. By leveraging Nippon Koei's networks and Tokio Marine's bases, deploying insurance and technology as integrated packages will establish sustainable frameworks.

The following case studies illustrates how the principles and challenges discussed in the interview are being addressed through on-the-ground initiatives.

National Land Conservation—Slope Disaster Prevention and Sediment Control Initiatives

Japan's steep and complex terrain makes it particularly susceptible to sediment-related disasters, including landslides, debris flows, and large-scale slope collapses. These events are often triggered by intense rainfall during typhoon seasons or seismic activity and tend to occur simultaneously across wide areas, posing serious risks to both human life and critical infrastructure.
To address these challenges, Nippon Koei has developed a range of advanced engineering solutions aimed at creating safe and resilient environments. Drawing on extensive field experience, our teams provide technical support from a construction consultancy perspective, conducting site investigations, designing counter-measures, and implementing monitoring and mitigation strategies tailored to each region's specific needs.

Slope Disaster Prevention (Landslide Countermeasures): Yui District Landslide Countermeasures Project

In the Yui-Nishikurasawa area of Shimizu Ward, Shizuoka City, large-scale slope instability has been identified. This region is a vital transport hub, and any landslide event could cause in significant human casualties and economic disruption in the case of severed key east–west transport arteries.

Since FY 2005, the Ministry of Land, Infrastructure, Transport and Tourism has designated this site for direct intervention. The project aims to proactively prevent landslides caused by heavy rainfall or earthquakes through comprehensive slope stabilisation measures.

Strategic Protection Scope—Safeguarding Lives, Infrastructure and Economic Continuity*

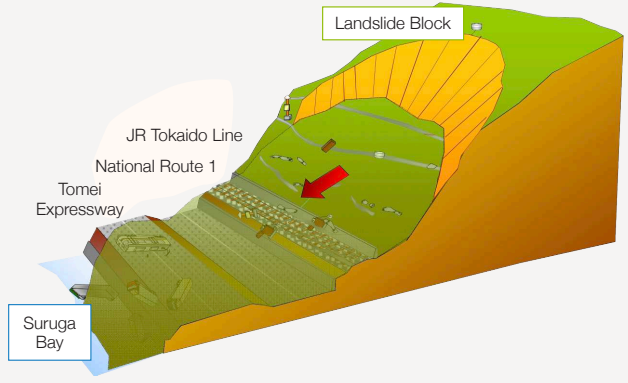
The designated protection area for this countermeasure project includes facilities within the anticipated impact zone that are at risk of being buried by landslide debris. In addition to the threat to human life and property, prolonged disruption of key transport arteries—such as the JR Tokaido Line, National Route 1, and the Tomei Expressway—could have far-reaching consequences not only for the local region but for the Japanese economy as a whole.

To address these risks, slope stabilisation efforts have been continuously implemented in this area since 2005 and remain ongoing today.

Estimated affected house-holds	44 (including 3 business premises)
Potential traffic disruption	approximately 80,000 vehicles per day
Railway passenger impact	approximately 250,000 people per day
Freight disruption	approximately 76 million tonne-kilometres per day

*This section was prepared with reference to materials produced by the Chubu Regional Development Bureau, Ministry of Land, Infrastructure, Transport and Tourism (Japan).

*Source: "Yui District Direct Landslide Countermeasure Project Explanation Materials" Available at: https://www.cbr.mlit.go.jp/kikaku/jigyou/data/r0612/shiryo_06_2.pdf, pp. 3, 10 (Japanese only)



Community-Based Sustainable Disaster Prevention Initiatives

The ID&E Group aims to contribute to the realisation of sustainable and secure lifestyles by working with local communities to rethink approaches to disaster prevention. This includes developing and implementing integrated disaster prevention and energy systems that leverage local resources—such as community networks, natural assets, and regional knowledge—to build long-term resilience.

"Daily Life as Training" Tsunami Evacuation Complex Facility: Izu City's Disaster Prevention Tourism Model

Tsunami evacuation complex facility "Terrasse Orange Toi"

Shizuoka Prefecture's Izu City Toi district became Japan's first nationally designated "Tsunami Disaster Special Alert Zone (Orange Zone)." This region is advancing a tourism-based approach to disaster-resilient urban development, under the theme of "Living with the Sea," exemplified by the tsunami evacuation complex facility "Terrasse Orange Toi" developed within Matsubara Park.

This facility represents Japan's first dual-purpose infrastructure, functioning as a life-protecting tsunami evacuation facility during disasters whilst serving as an observation deck and tourism hub during regular operations. The design incorporates mechanisms whereby routine observation deck visits naturally constitute evacuation training, organically enhancing disaster prevention awareness amongst local residents and tourists.

This project, based on Izu City's tourism disaster prevention urban development promotion programme, involved design and supervision by Nippon Koei Urban Space and the University of Tokyo's Imai Laboratory. Citizen-participatory examination committees were established from the planning phase, and evacuation drills were actively conducted in collaboration with local residents after the construction of the facility, demonstrating disaster-resilient urban development integrated with the community.

Akan Microgrid: Integrating Agricultural and Renewable Energy Systems


Battery Storage and Energy Management System

Nippon Koei Energy Solutions participates in the Akan Microgrid project in Kushiro City, Hokkaido, developing regional energy independence and enhanced disaster resilience. The initiative optimises distributed energy resources (DER) including solar power, biogas generation, and battery storage systems centred on dairy farming operations.

Our team delivered the core energy management systems and battery storage infrastructure. This configuration improves dairy facility energy efficiency during normal operations whilst maintaining autonomous power supply to multiple local consumers during grid disruptions.

Planned "non-firm connection" capabilities will enable surplus power sales to transmission networks, generating revenue streams that support both economic viability and operational sustainability.

This project demonstrates successful integration between regional agriculture and renewable energy systems, establishing a replicable model for disaster-resilient and environmentally sustainable rural development. The community-based framework represents measurable progress towards our long-term sustainability objectives.

Katsurao Village Integrated Energy Management System: Post-Disaster Recovery Through Localised Systems

Nippon Koei Energy Solutions participated in a smart community project in Katsurao Village, Fukushima Prefecture, which was implemented to enhance sustainability and disaster resilience. As part of the initiative, Nippon Koei Energy Solutions contributed to the development of an integrated community energy platform. The project deployed solar generation facilities (1.2MW), battery storage systems (700kW/3MWh), a proprietary distribution line extending up to a length of 5km, and a Community Energy Management System (CEMS) to achieve stable power supply whilst promoting local energy production and consumption. Following the 2011 Great East Japan Earthquake, this initiative targeted regional energy self-sufficiency and enhanced disaster preparedness for Katsurao Village's recovery and revitalisation. Our Community Energy Management System (CEMS) optimises power flows between solar generation and battery storage, ensuring economic operation and stable supply-demand balance.

The system enables rapid emergency power supply to the village centre during disasters, significantly enhancing community resilience.

This project established Japan's first distributed energy platform incorporating existing residential consumers across dispersed rural areas into a unified proprietary power system. Despite limited regulatory precedent requiring extensive coordination with METI (the Ministry of Economy, Trade and Industry), power companies, and emergency services, the project achieved successful commissioning and stable consumer power delivery. These initiatives, alongside the Akan Microgrid development, demonstrate ID&E Group's systematic approach to building energy-resilient communities whilst advancing our sustainability commitments. The operational knowledge gained supports our strategic expansion within the renewable energy sector and continued contribution to regional recovery programmes.