LIQUID GAS PERSPECTIVES
Essential Energy Resilience by James Rockall, CEO, WLGA

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Energy systems built for ideal conditions are failing real-world stress tests. This article looks at why resilience, not just decarbonisation, needs to be central to energy policy, and how LPG's flexibility and scalability offer a practical path forward. A must-read for anyone thinking about what it really takes to build energy systems that last.

When Assumptions Break, So Do Energy Systems

The past few years have been a stress test for energy systems around the world. Geopolitical conflict, extreme weather, infrastructure failures, rapidly changing demand and pressure on global supply chains have all exposed vulnerabilities, even as electrification accelerates, renewable energy expands, and new sources of demand, from data centres to electric vehicles reshape how energy is produced and consumed.

The lesson is increasingly clear. Energy systems designed around a narrow set of assumptions become vulnerable the moment those assumptions change, and resilience therefore needs to become a fundamental principle of modern energy policy rather than an afterthought bolted on once problems emerge.

A resilient energy system is not one that attempts to predict every possible disruption. It is one with sufficient flexibility, diversity and capacity to adapt when circumstances change. Recent experience shows why this matters. Major electricity outages have affected entire countries and regions, infrastructure bottlenecks have constrained new supply, geopolitical events have redrawn established trade routes, and extreme temperatures have driven peaks in demand at precisely the moments when infrastructure is already under strain.

None of this argues against the transformation taking place in global energy systems. If anything, it makes the case for that transformation more compelling. But it does demonstrate why transformation and resilience must advance together rather than as competing priorities.
As economies electrify, electricity networks will become ever more important, and investment in grids, generation, storage and demand management will be essential. Yet greater dependence on interconnected infrastructure also creates new dependencies. A system can be highly efficient under normal conditions and still prove fragile the moment one critical part of it becomes unavailable.

What does a Flexible Energy System Actually Look Like?

Modern energy systems therefore need options. They need multiple sources of energy, multiple supply routes and technologies capable of complementing one another. They need energy that can be stored, transported and deployed independently of fixed networks, alongside solutions that can be scaled rapidly as demand shifts. These are among the characteristics that LPG, as

part of the broader Liquid Gas industry, already brings to energy systems today, and they are worth examining honestly rather than simply asserting.

LPG is inherently flexible. It can move by ship, rail, road and barge, and can be stored close to where it will ultimately be used. It can be supplied through major international terminals or delivered directly to a single home or business, and supply can be increased, redirected or diversified without building an entirely new network first. That flexibility operates at global scale, connecting major producing regions in North America, the Middle East and elsewhere with consumers across Asia, Europe, Africa and Latin America through a network of terminals, storage, vessels and distributors that allows supply to respond as conditions change. Like any fuel, it carries its own exposures, including price volatility in globally traded markets and reliance on shipping routes that geopolitical events can disrupt. These are precisely the vulnerabilities the industry is working to design out, through strategic and distributed storage held close to demand, diversified sourcing and supply routes, and the flexibility of the delivery network itself, so that a disruption to any single route need not translate into a disruption of supply.

The same principle applies locally. In Japan, LPG forms part of national emergency energy planning precisely because it can be stored and deployed independently of centralised networks. Across Europe, North America and Australia, distributed Liquid Gas infrastructure supplies homes, businesses and communities beyond the reach of pipelines, while in many developing economies, cylinder distribution allows energy access to expand community by community, without waiting for major fixed infrastructure to arrive.

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From a Single Cylinder to a National Grid: Can One Fuel Scale?

Scalability matters just as much. The transition will not happen at the same speed everywhere. Demand is growing rapidly across many emerging economies. But while developed markets rebuild existing infrastructure, billions of people still lack access to modern energy services even as electricity demand accelerates. Liquid Gas meets that spread of needs directly. A household can begin with a single cylinder, and distribution networks can expand as demand develops. Bulk storage can serve businesses and industry while import terminals and strategic storage can support entire national markets. Increasingly, this pathway is beginning to extend beyond conventional LPG. Renewable Liquid Gases are still developing but they offer a credible route to retaining the advantages of existing infrastructure, portability and storage while progressively reducing the carbon intensity of the energy supplied.

This matters because resilience should never be treated as an alternative to sustainability, and security, affordability and sustainability should not be pursued in isolation. A system that is sustainable but unreliable will eventually lose public support. One that is secure but unaffordable will exclude the people who need energy most. One that is affordable today but unable to evolve will fail the needs of tomorrow. The objective must be to advance all three dimensions of the energy trilemma together, and no single source can achieve that alone. The strongest systems will combine electrification, renewable power, storage, flexible fuels, digital technologies and, increasingly, renewable molecules.

For policymakers, this means asking how the system will hold up when conditions change rather than only how it performs under ideal ones. Can it adapt and scale as demand grows? Can energy

be stored close to where it is needed, and can supply still arrive if one route fails? Can additional energy be brought online quickly when events require it? As we invest in the energy systems of the future, we have a genuine opportunity to make them cleaner and more efficient, but also stronger and more adaptable, by designing flexibility in from the outset rather than retrofitting it later. LPG and the broader Liquid Gas industry can contribute to that flexibility today, from global supply chains through to the point of use. As renewable Liquid Gases develop, the same infrastructure can help carry the transition towards lower-carbon energy.

What are the three key takeaways from this article?

1. Resilience must be designed in, not bolted on
2. Flexibility and scalability are what make a system resilient, and LPG delivers both
3. Security, affordability and sustainability have to advance together, not be traded off.

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Mr Rockall has 30 years of global experience in the energy sector. He has a very strong energy and business development background having worked for Shell International in senior management positions in The Netherlands and Venezuela. Prior to joining the WLPGA, James worked as a Director of the global energy group ALSTOM SA.

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