

An aerial map of a coastal region, likely in the Netherlands, showing a complex network of waterways and land parcels. The land is colored in shades of red and pink, while the water is a deep blue. The map is oriented with the coastline on the right side. The text 'StateUp' is positioned in the upper left quadrant, with a small white square icon to its right.

StateUp

The Triple Transition:

Navigating the
New Geopolitics
of Technology,
Defence, and
Energy

The Triple Transition: Navigating New Geopolitics of Technology, Defence, and Energy



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Introduction

For over a decade, leaders in government and industry have been guided by the concept of a “twin transition”—the concurrent shifts towards a green and digital future. Yet, as new risks emerge, it is clear that this framework is no longer sufficient. We are operating in an era of profound geopolitical instability and fast-paced disruptions, where the weaponisation of energy infrastructure, the vulnerabilities of digital systems, and disruptions to global trade are present realities (OECD, 2025). This new strategic landscape demands a more integrated paradigm for building national and regional resilience.

This is the imperative for the Triple Transition. The framework, central to StateUp's work, posits that resilience—the capacity to adapt, transform, and thrive amid cascading crises—can only be achieved by addressing three interconnected domains in concert:

- **Advanced Digital Technologies:** Digital and emerging technologies, including artificial intelligence, present tremendous opportunities across countries and sectors, but also bring with them advanced threats and risks. Government and firm leaders now require an advanced understanding of global competition and the ability to nurture strategic cooperation on technology, trade, and governance.
- **Defence and Security Innovation:** The modern threat landscape requires a broader definition of defence that includes the protection of critical energy, digital, and physical infrastructure, demanding new capabilities and a greater degree of cooperation between countries and sectors (Filer, 2025).
- **Low-Carbon Energy Systems:** The shift to more diversified, cleaner energy sources is not merely a climate imperative but a critical component of energy independence and national security in the face of geopolitical risks.

Treating these transitions in silos leaves governments and operators dangerously exposed. Governments are increasingly grappling with the need to build economic and

social resilience against a backdrop of rapid technological evolution and unexpected crises (StateUp, Resilient Cities Network, Visa, 2024). Here, we present two expert perspectives on navigating this challenge.

Tanya Filer lays out the urgent thesis for the Triple Transition. She argues that making Europe safer requires a proactive, collective mindset that breaks down entrenched policy and industry silos across energy, technology, and defence, while inspiring public trust.

Steve Unger provides a vital reminder that the interplay between critical infrastructure, technological disruption, and geopolitical power is not a new phenomenon. His essay, "Echoes of Power: Infrastructural Rivalry from Telegraph to AI" demonstrates that the struggles over control of critical telecommunication infrastructure and networks in the 19th and 20th centuries offer powerful lessons for navigating the threats and resilience imperatives of today.

Our Strategic Defence Needs a Triple Transition

By Tanya Filer, PhD

Tanya Filer introduces the 'triple transition' as a new, essential framework for European prosperity and resilience. Moving beyond the established but often ill-defined 'twin transition,' she argues that the realities of geopolitical shifts demand that leaders integrate low-carbon energy, advanced technology, and defence innovation into coherent, joined-up strategies. This is the new mandate for twenty-first-century statecraft.

For over a decade, Europe has been engaged in discussions about the “twin transition”—the idea of green and digital developments sweeping business and society to transformative effect. A European Commission working paper this year found that “the exact meaning of this term remains ambiguous”, and it is not translating into cohesive policy guidance (Aloisi, 2025).

As the UK and Europe face the reality of possible conflict in the near-term future, we must urgently shift from a vague “twin transition” to spearhead instead a clear, integrated “triple transition”. Making Europe safer requires galvanising the trio of low-carbon energy and sectors, digital and advanced technologies, and defence innovation, and ultimately designing and funding them in concert. National and regional resilience—the ability to withstand major shocks and stresses—demands advancing all three together at speed and scale.

In the UK, the Ministry of Defence is bracing for the cost of a “wartime footing,” with defence spending projected to reach £87 billion annually by 2030. As the UK Strategic Defence Review (SDR), published this year, notes, energy diversification could offer some financial benefit. It will certainly boost national security (UK Ministry of Defence, 2025). Like elsewhere in Europe, the UK needs a diverse, resilient, and innovative energy system not only to cut greenhouse gas emissions but to ensure energy independence, and to keep the lights on and economy running if critical cyber-physical energy infrastructure—increasingly weaponised—is attacked (Falkner, 2023).

Energy diversification also underpins defence innovation. AI-based defence platforms such as the UK's Aurora AI and other advanced technologies like quantum are becoming increasingly integral to military operations, and demand vast, reliable compute power (UK Ministry of Defence et al., 2025). From decentralised energy supplies to grid forecasting, innovation is needed to guarantee operational reliability and protect against single-point energy failures or disruptions.

A triple transition must be a proactive, collective mindset, not a distant goal. Its key ingredients include a unified approach to public and industrial policy and procurement, strong innovation ecosystems, and public trustbuilding.

The Baltic states, fearing impending Russian aggression on their own soil, have been the earliest in Europe to recognise the need to integrate energy, technology, and defence planning and development in concert. Estonia, Latvia, and Lithuania disconnected from the Russian and Belarusian grids this year, synchronising instead with EU networks. Their approach—combining innovative grid management and cybersecurity—demonstrates how energy policy can and must serve national security, alongside climate goals (Männi, 2025).

This security imperative also motivates the private sector. SkyCorp Technologies, an Estonian company, is developing hydrogen-based drones with national security use cases from mine detection to monitoring of critical infrastructure. Sunly, a Tallinn-based developer of solar, wind, and battery projects across the Baltic states, aims to reduce reliance on centralised power systems, vulnerable to aggression. CleanTech for Baltics, an industry association, describes its members' low-carbon innovations simply as "Europe's first line of defence."

The UK is beginning to build ecosystems to foster co-development of the innovative systems and processes that will power the triple transition. The NATO Defence Innovation Accelerator for the North Atlantic (DIANA), headquartered in London with sites across

the alliance, is an early example of the type of infrastructure needed. DIANA is designed to accelerate the development of both defence and dual-use technologies, which have applications across civilian and military domains, strengthening resilience throughout the alliance. The accelerator supports startups with critical focuses such as securing energy supplies and developing advanced sensing and surveillance methods for defence and commercial use.

A precise monetary valuation for the triple transition has not yet been developed. Yet its economic case is already becoming evident in the strategic investments and new markets emerging at the intersection of energy, technology, and defence. For instance, the UK Ministry of Defence's recent trial of hydrogen power units to charge its electric vehicle fleet demonstrates a critical fusion of defence and energy security (ADS Advance, 2024). A 35% surge in patent filings for green AI technologies in 2023 signals the supply to meet a rapidly growing potential market for solutions to resilience needs, such as the challenge of aging grids that are no longer fit-for-purpose (Butson, 2024). The value of the triple transition lies in its capacity to catalyse new industrial ecosystems, and forms of trade cooperation, where the pursuit of security and energy resilience becomes an engine for economic growth and technological leadership.

The core technologies underpinning future resilience are predominantly being developed by tech companies and university spinouts, not the state. A copacetic public-private relationship is therefore essential to ensure industry meets large-scale needs, regulation fosters resilience-building innovation, and democratic guardrails are in place where needed. While procurement has generally been understudied as an

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innovation instrument, the scale and relative dependability of the government's £400-billion annual procurement spend makes it one of the most powerful policy instruments for stimulating new technologies and their purpose-driven application (Filer, 2021). Whether the UK obtains with sufficient speed key defence innovations and broader tools for national resilience will partly depend on how effectively the Procurement Act 2023—now in force—is implemented (UK Parliament, 2023).

The triple transition must be more than an alliterative catchphrase. In the face of trade-offs such as higher defence spending in exchange for greater preparedness for conflict, it will be made or broken by public opinion. As Oliver Moody writes in *Baltic: The Future of Europe*, an exploration of Baltic resilience and what the rest of Europe can learn from it, Western countries must learn quickly that public consent for new resilience-enhancing measures “cannot simply be assumed; it must be earned.” New technologies—especially those relating to climate change and defence—have already become the subject of conspiracy theories that spread quickly online, placing a premium on public engagement and education. The triple transition will be top-down—we need to acquire digital resilience, defence, and energy innovations now—but it cannot only be top-down (Debnath, 2023).

Tanya Filer, PhD, is Founder and CEO of StateUp, the platform of research, strategy, and training for governments and firms to navigate through the technological and green transitions. Tanya is also Founding Editor-in-Chief of the Cambridge Forum on Technology and Global Affairs, the peer-reviewed journal for leading research and policy analysis on technological change and geopolitics.

Echos of Power: Infrastructural Rivalry from Telegraph to AI

By Steve Unger, PhD

The strategic anxieties surrounding artificial intelligence and energy interdependence are not novel. They echo historical contests for technological and infrastructural dominance. Steve Unger provides an essential historical grounding for the Triple Transition, tracing the geopolitical rivalries that shaped the deployment of global telegraph and wireless networks. His analysis reveals that the nexus of technological innovation, economic power, and national security is a persistent feature of international affairs. The lessons drawn from the age of radio waves and subsea telegraph cables offer a powerful precedent for policymakers.

By the end of the 19th century, over 250,000 kilometres of subsea telegraph cables had been laid around the world, connecting every continent to every other. This was the first global digital platform, and it was controlled by European countries:

- British, American, French and German companies all laid cables connecting Europe to North America. But most of the companies concerned joined the 'Atlantic Pool' cartel, which was controlled by the Anglo-American Telegraph Company.
- Two companies laid telegraph lines from Europe to India – Britain's Eastern Telegraph Company, and Germany's Indo-European Telegraph Company.
- Two companies laid telegraph lines from Europe to China – Britain's Eastern Extension Telegraph Company, and Denmark's Great Northern Telegraph Company.

Overall, two thirds of the global market for subsea cables was controlled by the United Kingdom, while the other significant cable powers were the United States (15.8 percent), France (8.9 percent) and Denmark (5.3 percent). But this dominance was about to be challenged by a new and disruptive technology, wireless telegraphy.

In 1901, Marconi became the first person to send a wireless message across the Atlantic Ocean, from Cornwall to Newfoundland. A report of this event that was published in *The Times* illustrates how this event captured the public imagination:

“It is in some degree of shock to all preconceived notions to be told that [Marconi] has received on the shores of Newfoundland signals transmitted from his station at Poldhu in Cornwall.”

During the period before the first world war, two companies competed to lead the world in the development of wireless telegraphy – the Marconi Company, founded in Britain in 1897, and Telefunken, founded in Germany in 1903. The principal battleground in these early years was maritime communications, and this led to an early dispute over technical standards, which became highly politicised.

Marconi dominated the market for maritime communications systems, and Telefunken was trying to challenge this dominance. Marconi (supported by the British and Italian governments) protected his position by denying interoperability between his wireless systems and those produced by other manufacturers. Telefunken (supported by the German, French and American governments) promoted interoperability. In 1906, delegates to the first meeting of the International Radio Telegraph Union resolved this tension by signing the first international treaty governing radio communications. This asserted that maritime systems must ‘exchange radiograms without distinction of the radio system adopted’.

Then, at the end of the first world war, two new competitors emerged – the Compagnie Générale de la Télégraphie Sans Fil (CSF), founded in France in 1918, and the Radio Corporation of America (RCA), founded in America in 1919. The events that led to the creation of RCA were particularly interesting from a geopolitical perspective. The American market for wireless telegraphy was dominated by a subsidiary of the Marconi Company, but the American government decided that wireless telegraphy was too important to be subject to foreign control – so it forced Marconi to sell his American business to RCA.

Wireless telegraphy came into its own during the 1920s, thanks to the invention of ‘beam wireless’ systems. The wireless telegraphy systems used up to that point in time transmitted high-power signals in all directions, so were expensive to operate. Beam wireless systems transmitted signals in one specific direction, rather like the beam of the

torch. This greatly reduced the power that was required, transforming the economics of the fledgling wireless telegraphy industry.

It soon became clear that beam wireless systems posed a commercial threat to the existing global networks of subsea cables. This provoked very different reactions from the British and American governments. The British government held back the development of wireless telegraphy, to protect its legacy communications networks, whereas the American government embraced it. The United States, and wireless telegraphy, were the victors.

At the time, Britain still had an empire that spanned the world. In 1928, delegates from the various countries of the empire met at the grandly named Imperial Wireless and Cable Conference. They agreed that subsea cables still had strategic value because of the 'secrecy and certainty' they could provide. However, the price of sending messages using beam wireless was now low enough to threaten the commercial viability of subsea cables. The delegates to the conference decided to eliminate this competitive threat.

To achieve this, they merged the cable companies and Marconi's wireless telegraphy company into a single entity, in the expectation that it could then set prices without worrying about competitors. Naturally, this company became known as Cable and Wireless. However, this protectionist strategy was fundamentally flawed, as foreign competitors were still free to provide wireless telegraphy on many international routes. Cable and Wireless struggled financially, and in January 1947 it was nationalised.

In stark contrast, RCA prospered. It built an extensive wireless telegraphy network, and it diversified into radio and television broadcasting. At the start of the Second World War, it was able to record with some satisfaction the greatly enhanced national security that its commercial success had conferred on the United States:

"RCA's radio communications services, vital to national defense and commerce, maintained direct service with 45 countries, and between 12 cities of the United States. In 1914 such radio service was non-existent, and this country's international communications were dependent upon cable facilities, which were to a large extent controlled by other nations".

I take three lessons from this story, none of which are surprising. The first is that geopolitics and digital policy have always been inseparable – this is just a fact of life. The second is that digital sovereignty relies on the coordinated use of economic power – and in the current European context, that requires us to consider what we really mean by a ‘European Union’. The third is that protectionist responses are likely to fail –

success lies in embracing new technologies, and creating space for a new generation of entrepreneurs.

[...] digital sovereignty relies on the coordinated use of economic power – and in the current European context, that requires us to consider what we really mean by a ‘European Union’.

This article is an edited extract from Steve Unger’s book ‘From Beacon Fires to Fibre Broadband: A history of innovation, enterprise and regulation’ (2025).

Steve Unger previously served on the board of Ofcom, the UK regulator responsible for telecoms and media, where he held several senior roles (CTO, CSO, Acting CEO). He represented the UK on BEREC, the convening body for EU regulators. He now has a portfolio career, which includes serving on the board of Building Digital UK.

References

The insights in this booklet are grounded in extensive research. To provide a focused reading experience, we have included a selection of key sources below.

The full list of references is available online. We invite you to explore our resource hub, using the QR code below, for further insights.

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URL: www.stateup.co/resources/triple-transition

About StateUp

Governments and firms are charged with solving unprecedented, complex challenges born of a turbulent world. Traditional, cookie-cutter management tools are inadequate to address them. Inspired policies and technologies are urgently needed but creating and embedding them meets heavy, entwined barriers: information can seem boundless but hard to access or verify, and silos impede trust and coordination.

We remove these barriers through products and knowledge that meet the speed and scale of today's leaders' needs. Our work is based on evidence-rich research, rooted in depth and innovation, trustworthy data and analytics, and context-specific project implementation that unlock resilience and growth.

Our work is driven by the conviction that the integrated advancement of low-carbon energy, digital technologies, and defence innovation is the foundation for building resilient states and thriving, sustainable economies.

Our end-to-end offer integrates:

Knowledge and Data: Knowledge partnerships and cutting-edge research translated for practical application, combining human intelligence with data & AI-based tools.

Policy & Strategy Design and Implementation: Designing targeted tech, trade, and energy-related policies, strategies, and evaluations and partnership on delivery.

Executive Leadership Training: Expert-led training & targeted policy and tech meetings to enable decision-making and unlock major projects, with certifications options available.

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