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Security today goes beyond military defence, requiring an integrated approach to interconnected risks like climate change, resource scarcity, and infrastructure vulnerabilities. This perspective is sparking new dialogue on the links between security and sustainable finance.

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Europe's energy future hinges on large-scale renewable energy investments, system integration, and grid expansion, according to a white paper by Copenhagen Infrastructure Partners. The report calls for ambitious action to secure energy security, economic competitiveness, and climate goals, with a vision of delivering over 90% of Europe's energy from clean sources by 2050.

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Over the past decades, Lithuania has cut its reliance on Russian energy, led by state-owned EPSO-G through strategic grid expansions and investments. Looking ahead, the country aims for 10 GW of solar and wind by 2030, with EPSO-G focusing over half its investments on modernizing the electricity network to support this transition.

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Despite rising investment in cybersecurity, cyber threats are growing more complex. This paper outlines five key trends: increased EU targeting amid geopolitical tensions, spillover effects, cyberattacks triggering kinetic escalation, cybercrime used for warfare, and the unclear role of non-state actors. While the EU has strengthened regulations to protect critical infrastructure and digital products, true resilience requires deeper public–private collaboration beyond compliance.

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# Letter to the reader

Dear reader,

For the past 6 years, we have provided readers of the publication formerly known as 'The Green Bond', which going forward will be called the 'Sustainable Finance Outlook', with regular updates on the state of the clean energy transition.

When we started writing the Transition Update in 2019, there were still doubts about global warming and many saw the clean energy transition as a costly political crusade. However, we started with two strong convictions. The first was that the link between emissions and global warming was already proved beyond reasonable doubt. The second was that renewable energy was exhibiting all the hallmarks of past technology revolutions like the automobile and the microprocessor, which meant that accelerated deployment would come with positive feedback effects in the shape of falling costs.

In 2019, our assessment was that both renewable energy and electrified transportation were close to the tipping point where they no longer needed subsidies. Developments over the past six years have proven both our convictions right.

Sadly, global warming is already a reality after the first year of 1.5 degrees above pre-industrial era levels. More encouragingly, renewable energy is now undisputedly cheaper than fossil energy and electric vehicles have started outperforming internal combustion engine vehicles without subsidies.

The supply of solar and wind power has continued to rise beyond even the most optimistic expectations, and batteries have evolved to the point where they can compensate for intermittent supply. The transition is now underway, and the discussion has turned from whether it would happen to how we will achieve it.

Meanwhile, political priorities have changed. The pandemic, Russia's invasion of Ukraine and the US election of President Trump have combined to put security at the top of the agenda – ahead of climate risks, social concerns and pretty much all other political objectives. The path forward for the energy transition will be shaped by a new set of guidelines.

Consequently, the focus of energy transition analysis is evolving. Instead of predicting a transformation driven by technological development, it now centres on evaluating how the rollout of relatively well-understood new energy systems is influenced by, and in turn influences, competing socioeconomic priorities. This also means that it feels like a natural time to change the analysis we present in SEB's flagship sustainable finance report.

We hope you will continue to enjoy the insights and analysis from SEB's experts in this report and will continue to provide occasional updates on the developments of the transition both here and in SEB's Equity Strategy publications. And thanks for sharing the journey until now!

Enjoy your reading,

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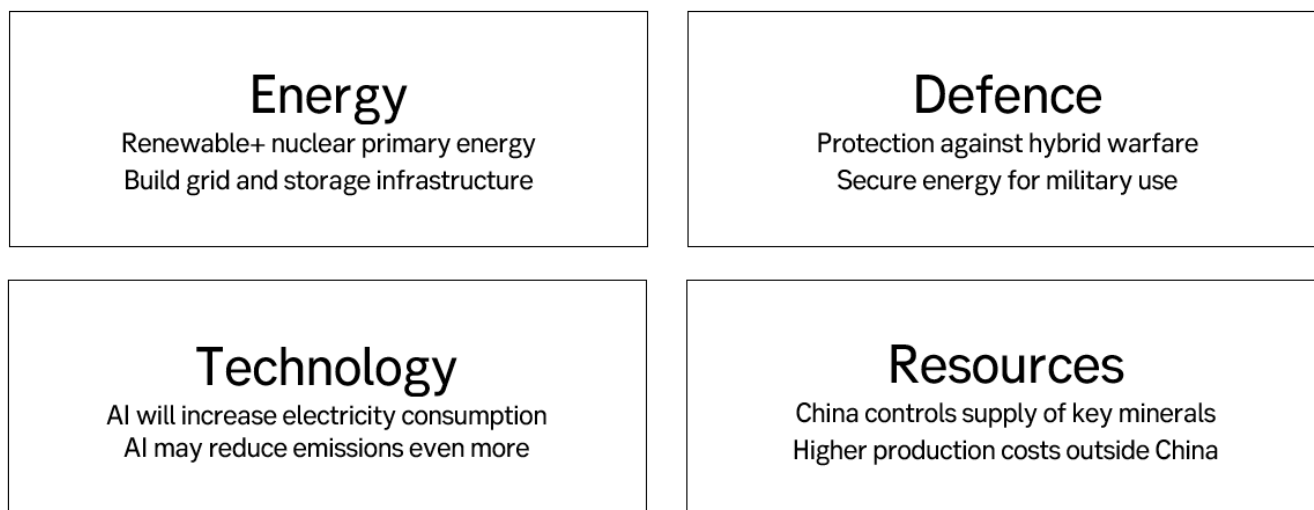
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# Transition update

A holistic approach to energy security in Europe

It is now clear that Europe will pursue geopolitical independence. This means that security is now at the top of all policy priorities. An independent and secure energy system will require big investments, but it can be done.

**Figure 1 Security is Europe's top priority – multifaceted**



Source: SEB

## Geopolitical fragmentation now a reality

Since the last issue of this report was published in February, it has become increasingly clear that the US and Europe are no longer playing on the same geopolitical platform. The heavy-handed US attempt to end the war in Ukraine, keeping the possibility of military intervention in Greenland open and the general deterioration of economic relations after Trump's tariff shocks, have all combined to trigger a monumental change in Europe's political climate.

As a result, security in the broadest sense, has become the top priority in European policy. This is not just about reducing the dependence on the US for military protection, by spending more on military equipment. If Europe is to carve out an independent path as a major geopolitical actor, it must be independent of foreign powers in a whole range of areas including technology, resources and energy.

However, after 30 years of relying on the US for security, this will require large and fast investments across all these areas. From an energy perspective, the focus on security also changes some important priorities, but the case for rapid transition still stands.

The first objective is to increase the supply of locally produced energy to secure access in a geopolitical crisis. This provides a strong argument for investment in renewable energy. Securing stable output in an energy system with more intermittent energy output also requires substantial investments in grids and storage systems.

However, energy security also means making sure that this new energy system is protected from other threats like hybrid warfare in the shape of both physical attacks and cyber-attacks. An independent European AI platform would require a substantial increase in electricity supply, but would also open for using AI to improve energy efficiency,

Finally, access to key resources required for electrification must be secured. Today China controls the supply of most key inputs. Increased mining investment coupled with recycling of batteries and other energy equipment.

In this Transition Update, we outline how a security-oriented energy policy with higher priority on guaranteeing supply is likely to turn out. We do not pass judgment on whether the policy is optimal but only focus on the probable outcome.

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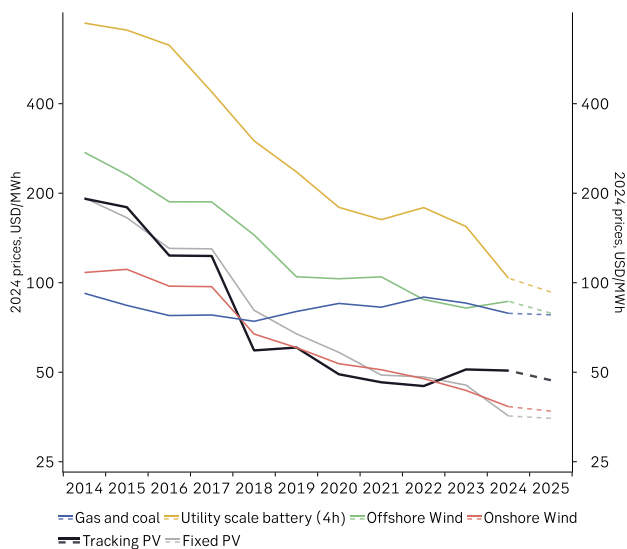
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## Energy: Europe is still in the race

The first priority is to increase the supply of locally produced energy. There are strong geopolitical as well as economic arguments for focusing on renewable energy.

The geopolitical argument is a) that renewable energy deploys faster than any other type of electricity generation, and b) that once it is installed it does not require any input from abroad to generate electricity. This latter argument is most likely also an important driver for China's decision to accelerate the transition, while the US, with domestic oil & gas supply, is under less pressure.

**Figure 2 LCOE benchmarks**



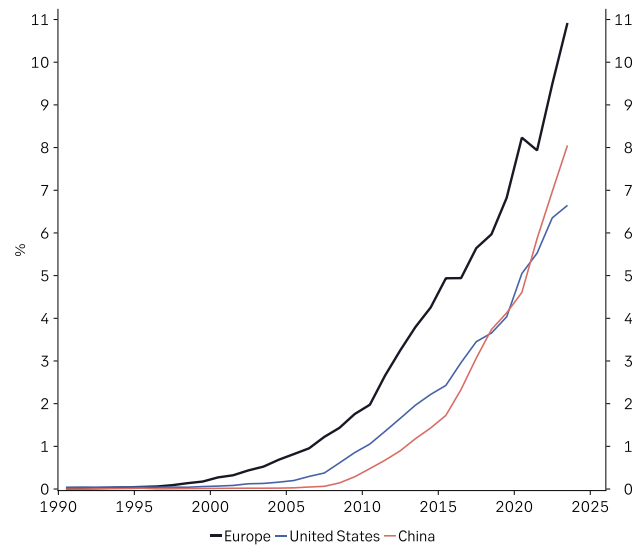
Source: BloombergNEF (forecast), SEB

Data from BNEF continue to highlight the economic argument with renewable energy offering a levelized cost of electricity that is almost 50% below that of gas and coal (Figure 2). However, it is also becoming clear that the cost of generating electricity is not the only parameter.

The Spanish blackout this spring was not directly caused by renewable energy, but by the inability of the grid to cope with the intermittent nature of the supply from wind and solar. Storage is also crucial to avoid excess supply and negative prices when the sun is shining, and the wind is blowing. The good news is that the LCOE of utility-scale batteries has declined almost 40% in the last two years.

Building an independent energy supply with a high degree of reliability and the lowest cost possible will require significant investment in both primary energy supply, grids and storage. It is important to note that Europe still has a relatively strong starting point due to its early lead. China invested almost twice as much as Europe in clean energy in 2024, but Europe has a head start and invested a lot more than China in the years before 2015. While China's transition curve is steeper, Europe still has a higher share of renewable energy in the total energy mix (Figure 3).

**Figure 3 Renewable fraction of primary energy**

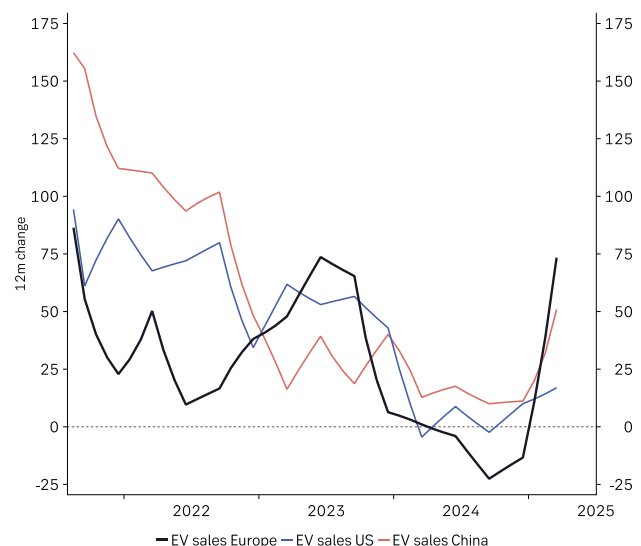


Source: BP, SEB

Electrified transportation is key to the success of an approach that limits dependence on imported fossil energy. China is also far ahead in this respect with total EV sales of more than 7 million, compared to 1.8 million in Europe and just 1.2 million in the US.

According to data from BNEF, battery EV sales as a % total of all vehicles sold in Q1 2025 increased to 25% in China. However, Western Europe is not that far behind with a BEV share rebounding from 18.5% at the end of Q4 to 20.4% in Q1 while the development in the US remains relatively modest with BEV sales as % of total at 7.9%.

**Figure 4 BEV sales**



Source: BloombergNEF, SEB

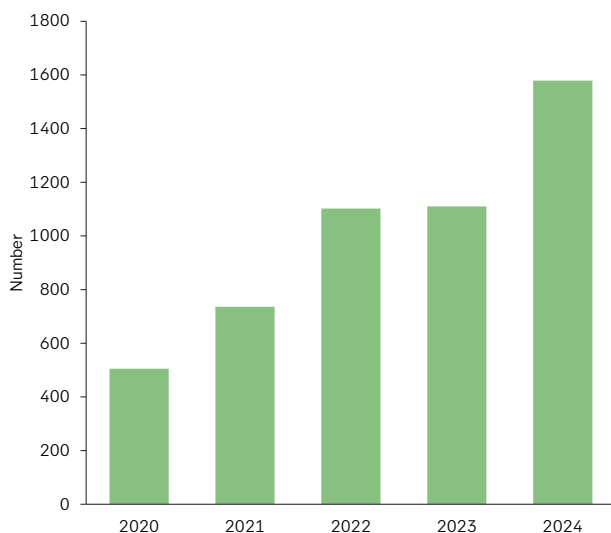
This was caused by a major rebound in European BEV sales, which had declined 25% over the course of 2024, but jumped 50% to a new all-time high in Q1 2025. This was not the result of subsidies but mainly reflects another step forward in the price/quality of electric vehicles.

## Defence needs energy, energy needs defence

It is not only technical factors that can lead to blackouts. In a more geopolitically fragmented world with more military threats it is also crucial to protect the energy supply from disruptions that stem from foreign powers.

Critical infrastructure such as cables, power plants and IT systems are at risk from hybrid warfare. We have already seen examples of physical damage to sub-sea cables and pipelines. However, energy companies are also increasingly subject to cyber-attacks, which according to the IEA have quadrupled since 2020 (Figure 5). As IT will increasingly be used to optimize the energy system, the risk of disruption from cyber-attacks will also increase, unless security is improved at the same pace.

**Figure 5 Weekly cyber-attacks on energy organisation**



Source: IEA, SEB

Furthermore, increased military readiness also requires a certainty that resources are available when needed. With most military equipment still running on fossil energy, maintaining an adequate local supply of e.g. diesel oil to drive tanks and other moving equipment and jet-fuel for airplanes also is a security obligation.

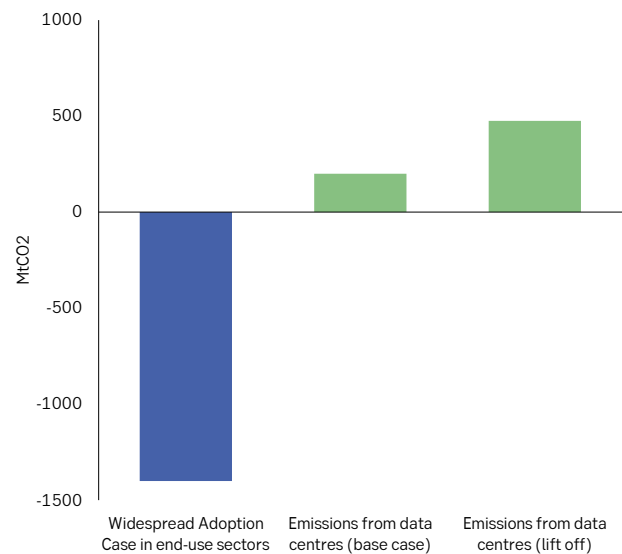
## Technology: AI is a double-edged sword

AI is the key to both growth and military power. This means that Europe must develop its own independent AI capability, which will require the construction of a significant amount of energy intensive infrastructure. This increased demand for electricity will increase emissions. According to IEA, the electricity demand for data centres will increase to 1.5-2.5% of global energy consumption by 2035 and this will increase emissions by 200-500 Mt CO<sub>2</sub> depending on the speed of adoption (Figure 6).

However, the IEA also tried to quantify the potential positive effects from AI on emissions if it is used to improve energy efficiency. According to the IEA this could

potentially reduce emissions by 1400 Mt CO<sub>2</sub> by 2035 if AI is used to improve energy efficiency in sectors like industry, transportation and buildings. As energy is likely to remain a scarce resource in the early stages of transition, investing in energy efficiency is likely to be an integral part of building a secure energy system.

**Figure 6 AI, datacentres and emissions by 2035**

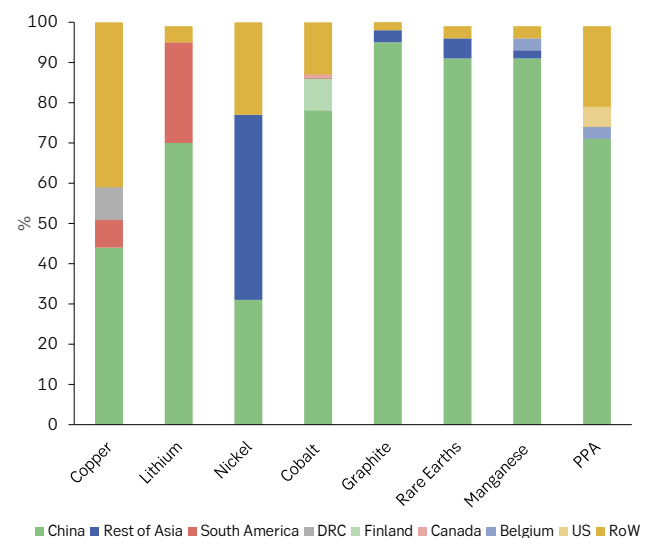


Source: IEA, SEB

## Critical minerals and circularity

The final key component in a more security-oriented energy system is to secure the physical resources needed for both energy production and electrification. Today, China controls access to many key inputs. For example, most of the refined production of key minerals is produced in China, particularly when it comes to graphite, rare earths and manganese. This both means lower prices in China and a risk of supply disruptions in the rest of the world.

**Figure 7 Geographical distribution of refined material production for key minerals (2024 data)**



Source: IEA, SEB

According to the IEA, the levelized cost of battery cell production is 40% higher outside of China and if graphite becomes more expensive levelized costs are 70% higher in US and Europe. This makes it hard for the US and Europe to compete in electrification technology – and gives China the possibility to hurt their economies in a crisis by withholding supplies altogether.

Given the relative scarcity of critical minerals like lithium, cobalt, and nickel in Europe, recycling used energy equipment like batteries can contribute to a domestic supply of these materials. We expect both significant investment in mining and circularity, with the recycling ultimately becoming a regulatory issue.

### Conclusion: a new transition path

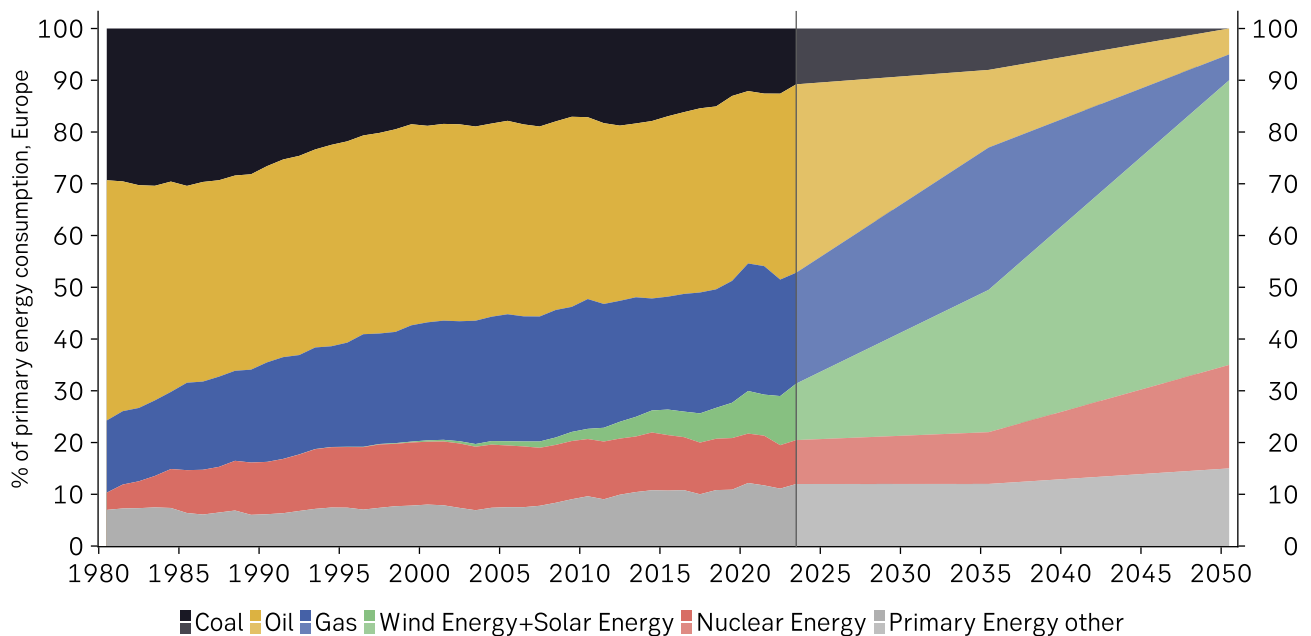
Europe has embarked on a structural transformation to take back control over its geopolitical destiny. In the energy space, this is likely to involve not only a significant increase of investment in renewable energy, but also in grids, storage, AI, security/cybersecurity and resources. It will be expensive and difficult to achieve, but Europe has a big saving surplus to tap into for funding, and the starting point is not as bad as many appear to believe.

The change in focus from emission reduction to resilience as the policy driver will have an impact on Europe's energy mix going forward. Renewable energy will remain the fastest growing segment, providing more than 50% of all energy by 2050, while oil will play a less dominant role from the onset as electrification reduces the use of oil for transportation.

There are limits to the speed with which renewable energy may be deployed and also questions about the intermittency of supply. To guarantee the security of supply, natural gas is initially likely to remain a key part of the energy mix in the early stages of an accelerated transition until nuclear power can provide an alternative base load. After 2035, new, safer and more efficient types of nuclear power are likely to replace natural gas at the base of the electricity infrastructure.

The stylized scenario presented here is one possible future. Energy technology is still evolving rapidly, and the technological constraints we see today may ultimately ease faster than expected. However, the chart below is in our view the most likely outcome given what we know today about the energy opportunity set

**Figure 8 A stylized scenario for European energy consumption in a security-based framework**



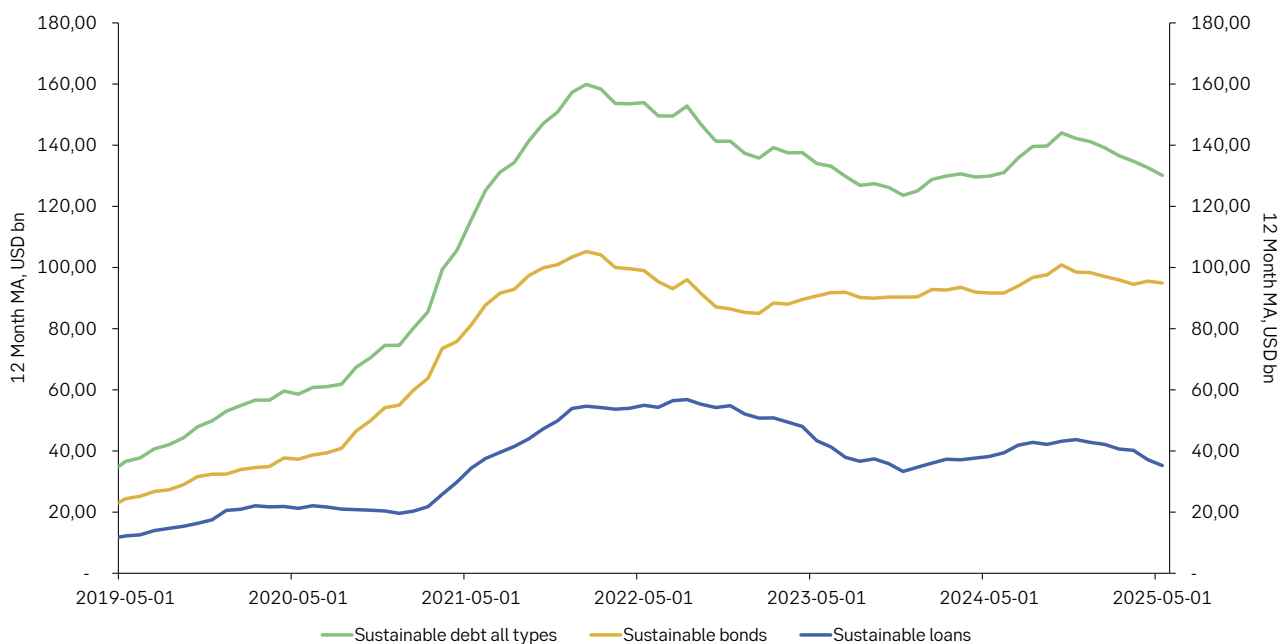
Source: BP, SEB

# Sustainable finance market update

## Drop in new transactions across market segments

The sustainable debt market is contracting, with new labeled bond and loan volumes declining across almost all categories and markets. This decline in sustainable debt is particularly challenging for Europe, which needs to raise significant capital to strengthen its security.

**Figure 9 Sustainable debt transaction moving average**



Source: BloombergNEF, SEB

### Broad decline across market segments

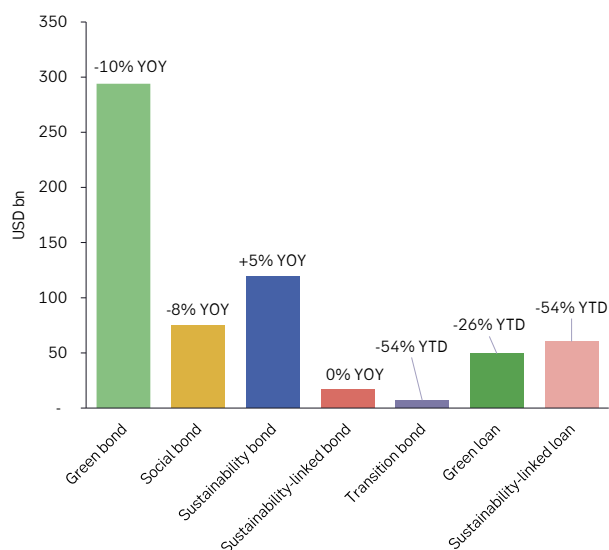
In the first five months of 2025, the sustainable finance market registered USD 628 billion in new transactions, marking a 17% year-over-year decrease. This downturn affected all categories of labelled debt except for sustainability bonds, which notably saw a 5% increase in new issuances.

Overall, new sustainable bond issuance fell by 7%. This downturn was significant enough to impact green bonds, which experienced their first decline in new issuance for the January-May period since the early stages of the global pandemic in 2020. Adding to the notable shifts in the bond market, new transition bond issuance was halved compared to the first five months of last year.

The sustainable loan market faced even steeper challenges, suffering a 44 %year-over-year contraction. Sustainability-linked loan transactions plummeted by half to just over USD 60bn. Although green loans also saw significant declines,

the volume for the first five months of 2025 still represents the second highest ever recorded.

**Figure 10 Sustainable debt transactions by type YTD 2025**



Source: BloombergNEF, SEB

Gregor Vulturius, PhD

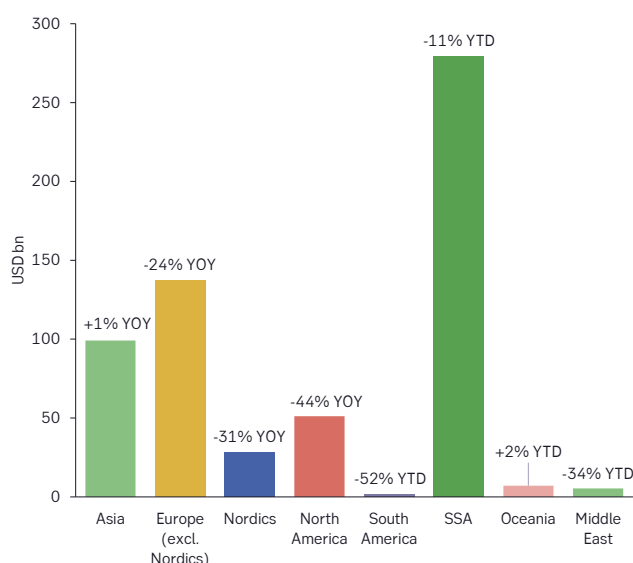
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Sustainable debt contracted across all global markets, with the sole exception of Asia and Oceania. Europe (including the Nordics) bore the brunt of this decline, seeing new sustainable bond and loan transactions drop by USD 45 billion. The Americas experienced the steepest relative decline, as conditions for sustainable debt soured after several large financial institutions pulled back from their climate ambitions since the Trump administration took office. On a slightly brighter note, sovereigns and supranational institutions witnessed a less severe decline in sustainable debt transactions than initially feared.

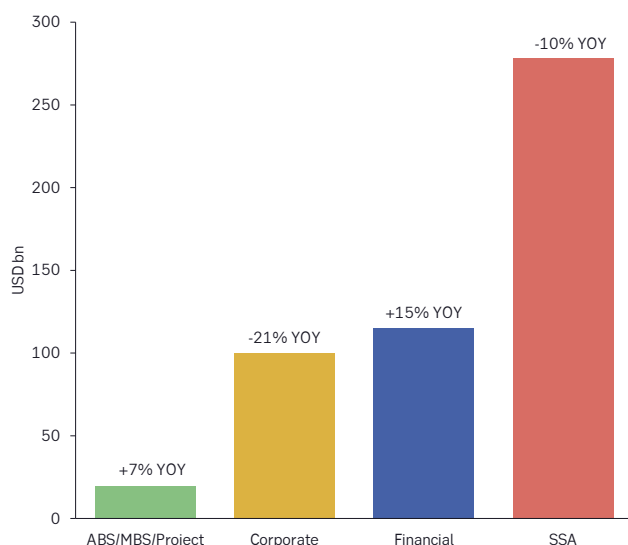
**Figure 11 Sustainable debt transactions by region YTD 2025**



Source: BloombergNEF, SEB

Corporates saw the biggest decline in sustainable borrowing. Surprisingly, sustainable debt raised by financial institutions saw year-over-year rise.

**Figure 12 Sustainable debt by sector YTD 2025**

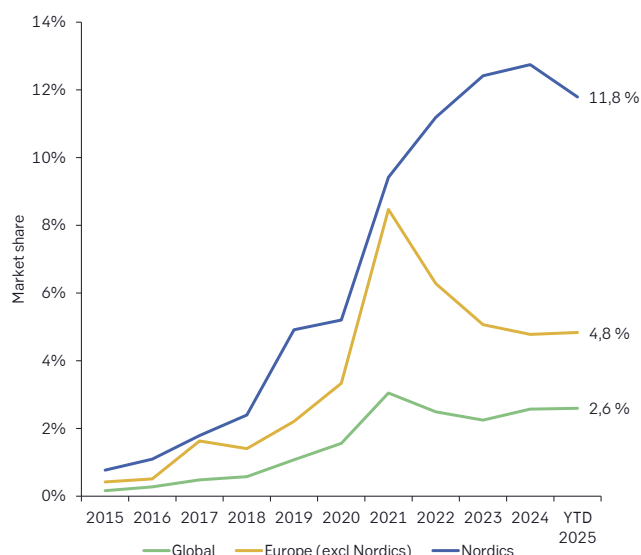


Source: BloombergNEF, SEB

## Sustainable bond market struggling

The market share of sustainable bonds has stagnated, maintaining 2.6% and 4.8% globally and in Europe (excl. Nordics), respectively. The Nordics saw a decline in sustainable bond market share.

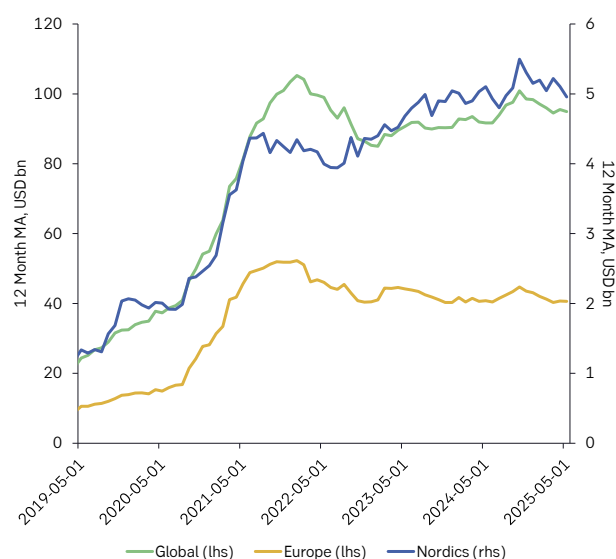
**Figure 13 Sustainable bond market share**



Source: Bloomberg, SEB

Looking at the 12-month moving average reveals a similar picture. Europe (incl. Nordics) has seen no increase in new sustainable bond issuance since summer of 2022. Growth has been subdued globally and in the Nordics.

**Figure 14 Sustainable bond issuance moving average**

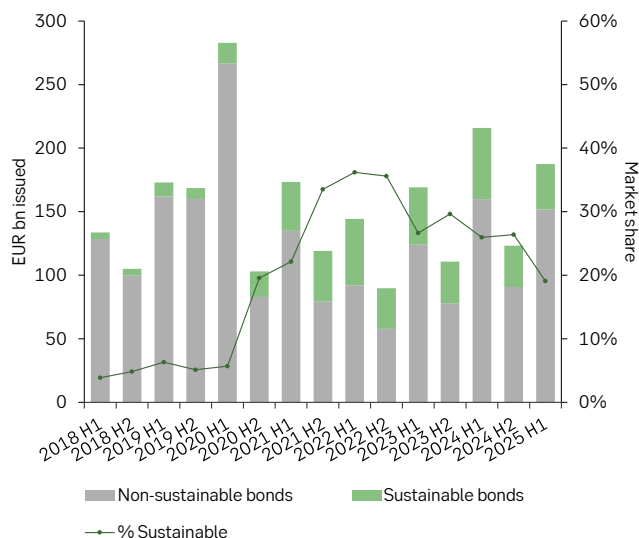


Source: SEB, EPFR, and Bloomberg as of 2 June 2025

A drop in both the share and volume of sustainable bonds has impacted the investment-grade market. In the first six months of 2025, sustainable bonds made up less than 20 percent of EUR-denominated bonds in this sector, a low not seen since 2020. With June's numbers yet to be finalized,

we expect that EUR-denominated investment-grade sustainable bond issuance for the first half of 2025 will be roughly EUR 15bn less than the first half of 2024.

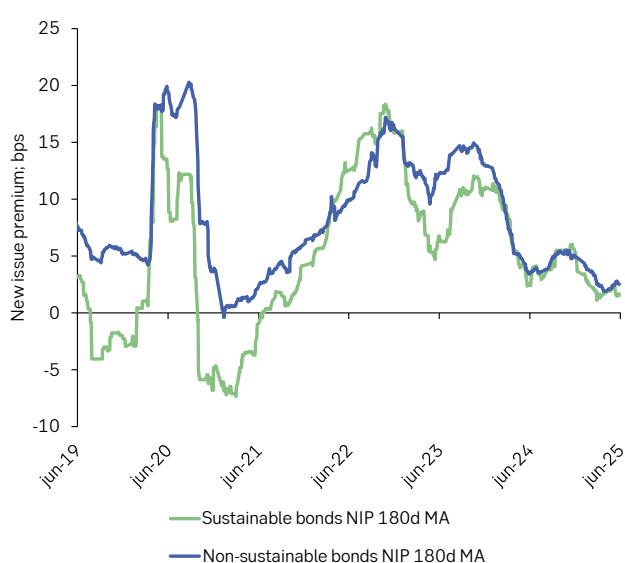
**Figure 15 Sustainable bonds among EUR denominated IG bond issuance**



Source: SEB, EPFR, and Bloomberg as of 2 June 2025

On a brighter note, the new issuance premium (NIP)—the extra yield a newly issued bond provides over similar, already-trading bonds from the same issuer in the secondary market—has been in steady decline since inflation peaked in 2022. Despite this, sustainable bond issuers haven't seen any more benefit from the shrinking new issue concessions than regular bond issuers.

**Figure 16 NIP of sustainable and non-sustainable EUR denominated IG bond issuance**



Source: SEB, EPFR, and Bloomberg as of 2 June 2025

## Drop in sustainable finance also visible in the secondary market

The secondary market for equity and bonds has been in decline even longer than the primary sustainable debt market. With a few exceptions, inflows in Article 8 and 9 funds according to SFDR have been negative since the start of 2024.

**Figure 17 Sustainable fund flows according to SFDR**



Source: Factset, Morningstar, SEB

## Contraction in sustainable debt spells trouble for EU security

The sharp decline in sustainable debt is especially troubling for Europe, which urgently needs more investment to tackle its deteriorating geopolitical, economic, and climate-related challenges. Sustainable finance clearly has a part to play in building a more integrated security framework. Promisingly, recent moves by the EU and its member states are now set to better align sustainable finance regulation with current political priorities including defence, competitiveness and self-reliance (see *chapters Regulatory update and Interaction of sustainability and security for more information*).

# Regulatory update

## Sustainable finance regulations face new political realities

Europe faces major challenges—from rising geopolitical tensions, cyber-attacks, declining competitiveness to the climate crisis. In response, the European Commission is aligning key policies to strengthen security.

### Defence investments and the EU Sustainable Finance Framework

In 2023, an EU Commission notice on the EU Taxonomy clarified whether the recent sustainable finance regulations imposed any hurdles to defence investments<sup>1</sup>. Generally, the position of the Commission was that the frameworks apply horizontally across all industries equally and do not single out any specific sector. There was however a reference to a Principal Adverse Impact (PAI) indicator on controversial weapons in the Sustainable Finance Disclosure Regulation (SFDR), which is only a disclosure requirement. Although not mentioned in that specific clarification, the Benchmark Regulation (BMR) in fact requires exclusion of companies involved in controversial weapons (which have also been banned by EU Member States).

In the 2024 “A new European Defence Industrial Strategy”<sup>2</sup>, the Commission provided further elaboration on the EU Sustainable Finance Framework in relation to defence. The Commission stated that “the EU sustainable finance framework is fully consistent with the Union’s efforts to facilitate the European defence industry’s sufficient access to finance and investment. It does not impose any limitations on the financing of the defence sector.”

The strategy also clarified that since no social taxonomy exists and no defence activities are included in the EU Taxonomy, access to finance by defence companies could not be affected by the EU Taxonomy.

### Mobilizing capital to strengthen European defence capabilities

Moving to 2025 and in the new geopolitical landscape vis-à-vis the US, the Commission initiatives around defence have accelerated. The ReArm Europe Plan or formally “White Paper for European Defence –Readiness 2030”<sup>3</sup> sets a

number of initiatives to boost financing of the defence sector. EIB, which historically has been avoiding defence, will reduce the scope of its defence exclusions.

The Commission highlights the announced Savings and Investments Union (SIU) as a tool to support mobilization of capital to MidCaps and SMEs in the context of ReArm Europe. However, the SIU will be horizontal and support financing of productive investments across industries. The Commission also communicates that it will provide more clarification on the relationship between defence and the investment goals of the sustainable finance framework in the review of the SFDR that is taking place in autumn 2025.

### Action on cybersecurity ramping up

In February, the EU Commission published its Action Plan on the Cybersecurity of Hospitals and Healthcare Providers.<sup>4</sup>

This action plan sets out a series of EU-level actions to better protect the healthcare sector from cyber threat. Key elements include addressing the rising number of ransomware attacks targeting healthcare, establishing a European Cybersecurity Support Centre for hospitals and healthcare providers within the EU Agency for Cybersecurity (ENISA).

The Commission went a step further in April 2025 by presenting its ProtectEU Strategy.<sup>5</sup> This strategy positions safeguarding critical infrastructure from physical, cyber, and hybrid threats, positioning cybersecurity at the heart of European resilience. The Commission is also expected to present a revision of the EU Cybersecurity Act in Q4 2025.

### Competitiveness and decarbonisation as security imperatives

The Clean Industrial Deal (CID) was published in late February 2025, and lays out a plan aiming to accelerate decarbonisation, reindustrialisation, and innovation

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<sup>1</sup> Commission Notice C/2023/267

<sup>2</sup> European Defence Industrial Strategy 2024

<sup>3</sup> Introducing the White Paper for European Defence and the ReArm Europe Plan- Readiness 2030 - European Commission

<sup>4</sup> European action plan on the cybersecurity of hospitals and healthcare providers - European Commission

<sup>5</sup> Commission presents ProtectEU Internal Security Strategy - European Commission

simultaneously across Europe, reinforcing resilience. A central goal of the CID is to make the EU the world leader on circular economy by 2030, reducing dependencies and increasing resilience. We have covered the CID in our most recent report.<sup>6</sup>

### **Increasing EU resilience against climate-related extreme events**

In March, the European Commission presented its Preparedness Union Strategy which aims to enhance the EU's civilian and military preparedness and readiness for future crises.<sup>7</sup> The strategy takes a whole-of-society approach, involving citizens and the private sector. An accompanying action plan sets out 30 key actions with timelines up to 2028, addressing foresight and anticipation, resilience of vital societal functions, population preparedness, public-private cooperation, civil-military cooperation, and crisis response coordination.

The European Water Resilience Strategy (EWRS) published in June 2025 addresses the increasing pressures on water resources due to climate change impacts like droughts and floods, overexploitation, and pollution.<sup>8</sup> It highlights that water resilience is a matter of security and crisis preparedness for the EU. The EWRS aims for a water resilient EU by 2050, with objectives to restore and protect the water cycle, build a water-smart economy, and secure clean and affordable water for all. Water resilience is outlined as important to support the clean industrial and digital transformation, as key sectors like battery production, semiconductors, and data centres rely on large volumes of water.

### **Significant financing is needed to achieve integrated security in the EU**

Considerable resources are needed to achieve the EU's aim of a more integrated security that includes defence capabilities, greater competitiveness in clean technologies, self-reliance on materials and energy, and resilience against natural hazards.

Rearm Europe aims to mobilize EUR 800bn for defence-related investments. Of this amount, EUR 150bn will be raised through joint borrowing, while the remaining EUR 650bn is expected to come from national budgets, made possible by activating the escape clause in the Stability and Growth Pact. This allows member states to temporarily exceed deficit limits due to increased defence spending.

Achieving the clean transition requires significant financial effort, with annual investments in energy, industrial innovation, and transport needing to increase by around

EUR 480bn compared to the previous decade. The CID aims to mobilise over EUR 100bn to improve the business case for EU-made clean manufacturing, including EUR 1bn in guarantees under the current MFF. EU-level funding will be strengthened, notably through the Innovation Fund and the proposed Industrial Decarbonisation Bank, aiming for EUR 100bn in funding. Private investment is a priority, leveraging tools like an amended InvestEU regulation to mobilise around EUR 50bn additional financing. Simplified state aid rules and tax incentives are also part of the financial toolkit outlined.

The European Water Resilience Strategy highlights an estimated annual investment gap of around EUR 23bn required to implement existing water legislation effectively. It stresses the need for significant additional public and private investments across all stages of water management. Financing will be supported by encouraging member states and regions to reorient cohesion policy funds for water resilience, potentially with up to 100% EU financing. Cooperation with the European Investment Bank (EIB) is central, with the EIB Water Programme planning over EUR 15bn in financing during 2025-2027 as is leveraging private investment.

In conclusion, all recently announced policies underscore the need for significant investment and highlight efforts to mobilise public and private finance, including through EU instruments like InvestEU, the EIB and joint borrowing.

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<sup>6</sup> [TheGreenBond\\_20250305.pdf](#)

<sup>7</sup> [Preparedness Union Strategy - European Commission](#)

<sup>8</sup> [Water Resilience Strategy - European Commission](#)

# Intersection between sustainability and security

Exploring broader dimensions and potential synergies

Security today goes beyond military defence, requiring an integrated approach to interconnected risks like climate change, resource scarcity, and infrastructure vulnerabilities. This perspective is sparking new dialogue on the links between security and sustainable finance.

## Sustainable finance facing a brave new world

Sustainable finance aims to direct capital toward activities that foster long-term sustainable development. Historically, investments in security, and in particular defence, have been excluded from this framework. However, considering rising global instability, there is now a conversation about whether certain security investments could be aligned with sustainable finance goals and practices.

In this article, we discuss the intersection between sustainable finance and investments in security. Here we follow a broader definition of security, outlined below, which envisions a broader concept of long-term state of well-being at individual, societal, national, and global levels in the face of interconnected socio-economic and environmental threats. Our intent is to contribute to ongoing discussion about the role of sustainable finance in holistic and long-term security.

## Increased defence spending comes with trade-offs and synergies for sustainable development

Following Russia's full invasion of Ukraine in 2022, security has re-emerged as a critical concern for EU member states. Whilst the political will to increase defence budgets remained limited at first, this dynamic shifted dramatically after the installation of Donald Trump's administration, which has repeatedly questioned the security umbrella provided by NATO and the United States.

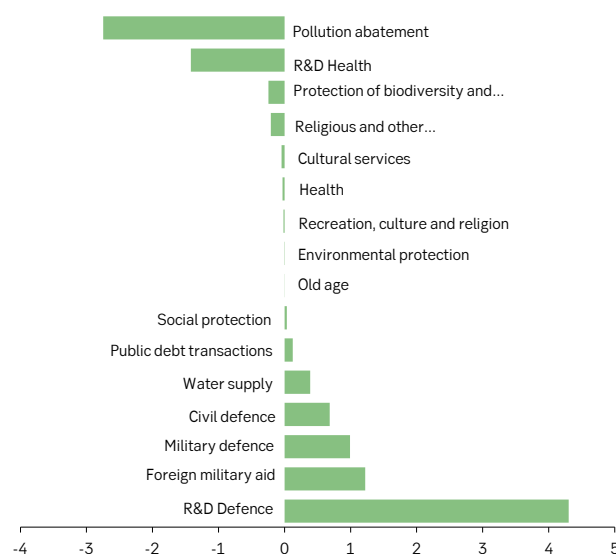
To address these challenges, the EU has launched ReArm Europe, outlining a plan to mobilize €800 billion for security-related purposes. Higher security spending will increase economic activity, by stimulating manufacturing and increasing employment, with exporting countries like Sweden and Germany, standing to benefit from "Made in EU" regulation regarding defence material purchases.

On the other hand, defence spending has a low fiscal multiplier, meaning that increasing spending on defence would not significantly contribute to GDP growth over time whilst potentially increasing debt servicing costs for many governments. Another concern is that larger public

spending on defence could crowd out investments in other areas including those related to sustainable development.

Figure 18 shows by how many percent a given public budget category changes when defence spending increases by 1 percent historically. This analysis is based on a comparison of public budgets from 1995 to 2023 of each EU member country, accounting for cross-country differences and the varying economic, political, and institutional characteristics of EU member state.

**Figure 18 Public spending change from 1 percent increase in defence spending**



Source: Eurostat, SEB

Our analysis indicates that an increasing defence budget could risk displacing environmental and health spending. A one percent increase in defence spending is linked to a more than three percent decline in public funding on pollution reduction. The data also suggests that there are some synergies between defence spending and other areas that directly or indirectly, support national security objectives. For example, a greater defence spending can be associated with greater budget for civil defence and water supply.

Sustainability critical for integrated security

For much of the 20<sup>th</sup> century, security has mainly been understood in military terms, focused on using armed force to defend territories and national borders<sup>9</sup> – which could affect other social and environmental objectives. But in today’s complex world, we have been reminded that this narrow view is no longer adequate.

In the 21<sup>st</sup> century, lasting security is not just about defence; it is about creating conditions for people and societies to thrive in the face of interconnected threats like climate change, resource scarcity, social polarization, global pandemics or hybrid attacks on critical infrastructure.<sup>10</sup> Only by looking at security in this integrated way can we respond effectively to the main threats of today.

Sustainability plays an important role in this integrated understanding of security. As outlined below, sustainable technologies, optimized resource utilization, and strategic risk mitigation—whether through climate resilience or digital safeguards—can collectively foster more secure and resilient societal systems over time.

Figure 19 Evolution of security

Time period	Dominant Security Paradigm	Key Focus	Main Threats
Pre-Cold War	State-Centric Realism	State survival, integrity	Interstate conflict
Cold War	Balance of Power	Deterrence, military strength, ideological conflict	Nuclear war, proxy conflicts, superpower rivalry
Post-Cold War	Comprehensive Security	Human well-being, environmental stability, societal resilience	Terrorism, environmental degradation, economic instability
21st Century	Integrated Security	Interconnectedness of all dimensions, resilience, sustainability	Hybrid threats, cyberattacks, climate change, resource scarcity, social polarization

Source: Friedrich Ebert Foundation, SEB

Responsible defence finance

A growing trend in defence and ESG discussions is the distinction between "responsible" and "sustainable" investment. Responsible investment is a broader approach that involves “considering environmental, social and governance (ESG) issues in investment decisions and ownership, complementing traditional financial analysis and portfolio management<sup>11</sup>. In comparison, sustainable

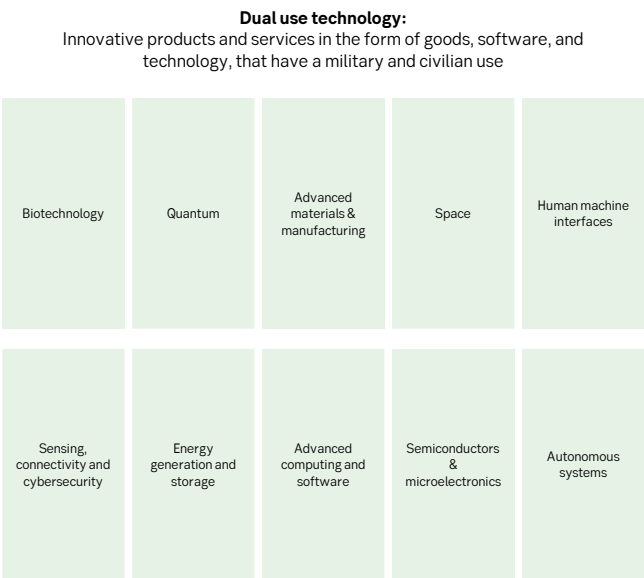
investing is a more proactive and intentional approach that aims to create long-term financial returns while actively contributing to positive sustainable outcomes.<sup>12</sup>

This distinction may allow for responsible defence investments without diluting the meaning of sustainable finance. In a position paper by the CEO of Mirova, an asset manager specializing in sustainable investing, the firm advocates for leveraging insights from sustainable finance to structure responsible defence financing. This approach ensures that funds are directed towards defence-related purposes while meeting ethical and responsibility criteria. Mirova also refrains from labelling the financing as ‘sustainable,’ opting instead for the term ‘responsible’ to more accurately reflect the nature of the investment.<sup>13</sup>

Dual-use technologies

A significant area where defence-related activities are increasingly being framed within a sustainability context is through the development and promotion of dual-use technologies, which have both military and civilian applications. The EU defines dual use as “goods, software and technology that can be used for both civilian and military applications.”<sup>14</sup>

Figure 20 Dual-use technologies



Source: SEB

Examples of dual-use technologies relevant to sustainability, non-exhaustively, include advancements in artificial intelligence, cybersecurity, the development of advanced and lightweight materials for energy efficiency, and autonomous systems that can be used for both defence

<sup>9</sup> Mearsheimer, JJ (2001). The tragedy of great power politics.

<sup>10</sup> [LSE-IDEAS-Human-Security-Background.pdf](#)

<sup>11</sup> [An introduction to responsible investment | PRI](#)

<sup>12</sup> [Categorisation of products under the SFDR: Proposal of the Platform on Sustainable Finance](#)

<sup>13</sup> [Position-Paper-Defence\\_EN.pdf](#)

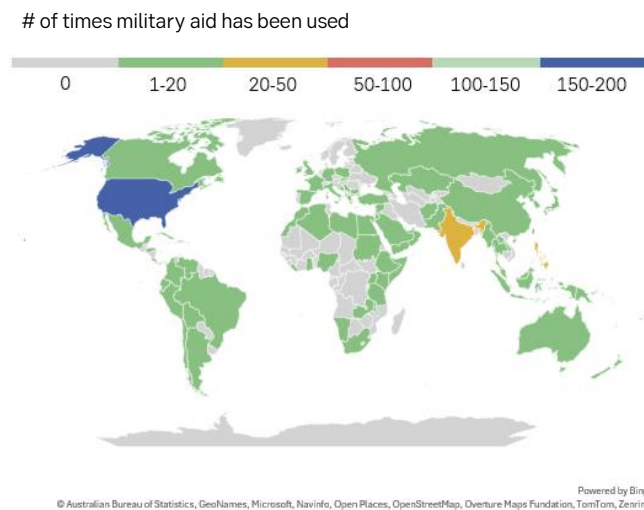
<sup>14</sup> [Exporting dual-use items - European Commission](#)

and environmental monitoring. These technologies are often more appealing to venture capital investors, including those with ESG mandates, as they offer potential for both financial returns in the defence market and positive social or environmental impact through their civilian applications.<sup>15</sup>

### Civil preparedness against climate extremes

An emerging area where sustainable investments and security intersect is investments in disaster prevention and response. While primarily focused on increasing spending for defence, infrastructure, and climate protection, the recent cross-political agreement to partially lift the German debt break does explicitly include civil defence and protection.

**Figure 21 Growing number of military interventions in climate change related disasters**



Source: Bloomberg, SEB

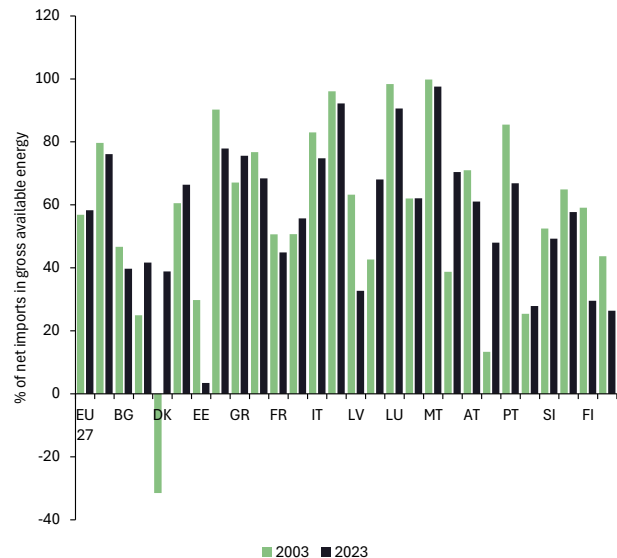
Recently, Spain has allocated 17% of its military spending towards natural disaster relief, where the country plans to use the budget for expanding rescue fleets, bridge-launching vehicles, and airtankers to extinguish fires. This comes after a year of significant flooding events in Spain, which required significant relief.<sup>16</sup>

### Energy security and climate change

Russia's full-scale invasion of Ukraine in 2022, and its use of energy as a political tool, has made it clear that energy security is not just about economics; it is a core part of national security. This is particularly important for the EU, which imports almost two thirds of the fuels it consumes. By sharply cutting natural gas deliveries to Europe, Russia showed how reliance on a single energy supplier can be used for political pressure and how it can put the prosperity of the entire region at risk. Finding an alternative to Russia,

which was the main supplier of petroleum oils and natural gas to the EU until 2022, has proven expensive. In 2024, the EU still spent on average 5 billion euros more a month on fossil fuel imports than before Russia's invasion of Ukraine.

**Figure 22 EU fossil fuel import dependency**



Source: Eurostat, SEB

Lack of domestic fossil fuel resources and increasing import costs mean that renewables are no longer valued solely for being clean— but also because they offer substantial advantages in terms of energy security and superior economics. Solar and wind power projects have a mean cost overrun of 1% to 8%, compared to nuclear power, oil and gas projects that on average exceed their initial budget by 120% and 34%, respectively<sup>17</sup>. Furthermore, the average net present cost of new-build new solar projects is around half the cost of new gas plant in many EU countries like Germany. And once installed, renewables generate energy without any foreign inputs and minimal operational costs.

The strategic advantages of the energy transition were also highlighted by the Draghi report, which views clean domestic energy as a strategic tool to bolster energy resilience and economic competitiveness. This combination, reducing reliance on potentially hostile energy providers while building a sustainable economy, is making a strong case for significant investments in renewables, energy efficiency, diverse energy sources, and modernizing power grids. As a result, energy security and sustainability are no longer just environmental or economic issues, they have become key priorities in European defence planning<sup>18</sup>.

<sup>15</sup> [Why VCs Are Investing in Dual-Use Military/Civilian Technology](#)

<sup>16</sup> [Spain Is Using Defence Budgets to Combat Climate Change Effects | BloombergNEF](#)

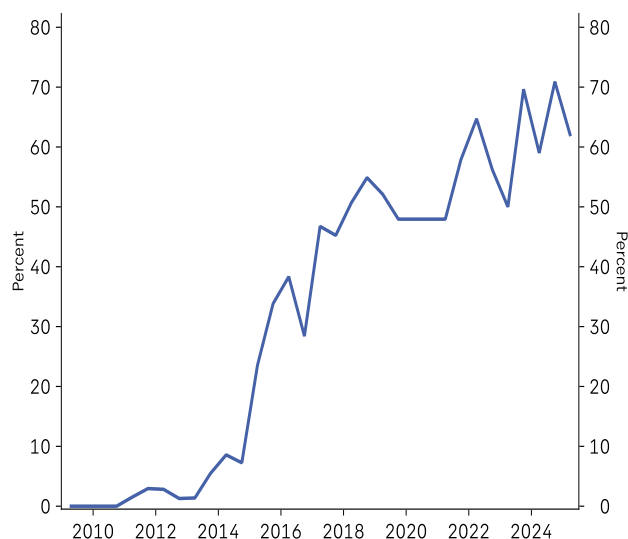
<sup>17</sup> Flyvbjerg and Gardner (2023): How Big Things Get Done.

<sup>18</sup> [Enhancing National Security and Climate Resilience Through Energy Sovereignty – FP Analytics](#)

## Cybersecurity and digital sovereignty

Increasing digitalization of critical infrastructure including energy, health services and food and agriculture systems creates numerous benefits but also potential entry points for cyberattacks<sup>19</sup>. cybersecurity is crucial for ensuring societal resilience and maintaining investor confidence.

**Figure 23 Most challenging issue to manage as a firm, cyber attack**



Source: Bank of England, SEB

The necessity to invest in cybersecurity becomes apparent when considering that the transition to renewables involves fundamentally changing how energy is generated, distributed, and consumed. This shift towards a more electrified, distributed, and digitally interconnected energy system introduces a host of new vulnerabilities that require proactive and comprehensive investments.

Attacking renewable infrastructure could be a form of asymmetric warfare, low-cost to the attacker but potentially high impact in terms of economic damage and political instability for the target nation. A major cyber incident causing prolonged outages or physical damage to renewable assets could also devastate investor confidence<sup>20</sup>.

A less well-understood area where cybersecurity and sustainable finance interconnect is digital sovereignty. Digital sovereignty refers to a nation's ability to control its digital infrastructure, data, and technological capabilities. Having control over digital infrastructure and technologies can enhance a nation's ability to respond to and recover from cyberattacks or other disruptions.

Ensuring that the digital systems controlling energy and food infrastructure are under local control reduces dependence on foreign technology providers and the associated risks. This includes hardware, software, and data storage which – like the modern energy system – are increasingly decentralized.

## Conclusion

In conclusion, defining security solely through the lens of military defence is no longer adequate to confront the multifaceted challenges of today's world. A more comprehensive approach is required—one that goes beyond traditional defence to encompass the interconnected risks posed by non-military threats such as climate change, resource scarcity, and disruptions to critical infrastructure.

The concept of integrated security challenges the outdated notion that investments in security and sustainability are mutually exclusive. In fact, sustainable finance already targets many of the interconnected risks that an integrated security approach seeks to address. By adopting a more holistic perspective—one that prioritizes long-term well-being at individual, national, and global levels—there is substantial potential to unlock meaningful synergies between security and sustainable finance.

Specifically, the intersection of sustainable finance and integrated security presents a range of investment areas—including, but not limited to, renewable energy, resource efficiency, disaster preparedness, and cybersecurity. Scaling up investments in these areas can drive long-term sustainable development while enhancing resilience to both current and emerging security threats.

<sup>19</sup> [How cyberattacks on grocery stores could threaten food security | IBM](#)

<sup>20</sup> [Why Should Governments Prioritize Renewable Energy Cybersecurity Programs?](#)

# Europe's energy pivot: A strategic blueprint for a prosperous and secure energy future



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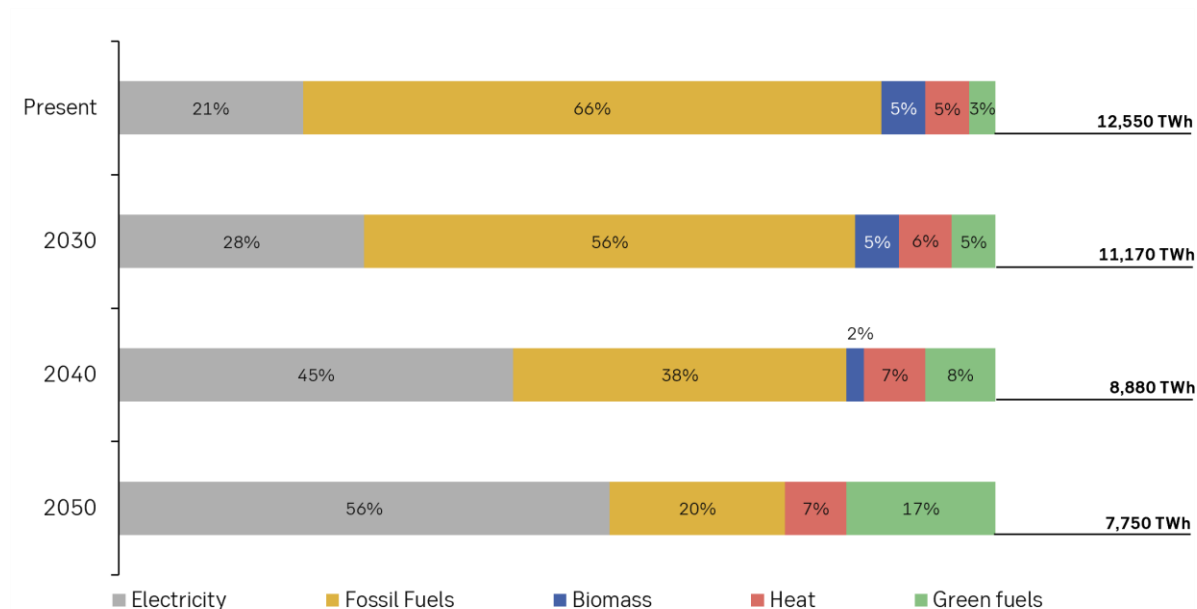
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Vice President

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**Figure 24 Final energy demand by source**



Source: Copenhagen Infrastructure Partners

In an era marked by geopolitical tensions, market volatility, and urgent climate imperatives, Europe's energy landscape is at a critical crossroads. A recent white paper by Copenhagen Infrastructure Partners (CIP) in partnership with Oxford Economics and EA Energianalyse presents a vision for transforming Europe's energy system, emphasizing the pivotal role of low-cost renewable energy sources. The underlying message is clear: Europe's future economic competitiveness and energy security depend on ambitious investments in renewable energy infrastructure, combined with strategic system integration and grid expansion. These renewable assets will form the backbone of Europe's future energy mix, with the ultimate goal of delivering over 90% of energy from clean sources by 2050.

## The Context: Navigating a Volatile Global Energy Market

The global energy sector is experiencing unprecedented shifts. Political instability in key oil and gas-producing regions, fluctuating commodity prices, and the ongoing transition to decarbonized energy have created a landscape where traditional fossil fuel reliance is increasingly unsustainable and risky. Europe, heavily dependent on energy imports, particularly fossil fuels, finds itself vulnerable to global supply disruptions and price shocks.

The whitepaper underscores this vulnerability, revealing that Europe currently imports approximately 56% of its final energy demand at a cost of about EUR 450bn

annually. This dependency not only poses economic risks but also undermines energy sovereignty. To counter these challenges, we advocate for a strategic overhaul of the continent's energy system, grounded in accelerating the deployment of clean energy technologies.

## Electrification Will Spark European Competitiveness and Improve Energy Security

Electrification will not detrimentally change the way we live. Instead of driving petrol cars and heating our homes with natural gas, we will drive electric vehicles and heat our homes and industry with electric heat pumps.

Electrification is key to obtaining an affordable, resilient and clean energy system driven by the sometimes-overlooked energy efficiency gain. As we gradually replace fossil energy with electricity, through the electrification of transportation, household- and industrial heating, we increase our electricity consumption while reducing the overall energy consumption by ~40 % from 12,550 TWh to 7,750 by 2050 (see Figure 24).

To support this change in energy demand, a significant build-out of new electricity generation is required with our study investigating the economically optimized road to low energy prices in Europe.

### Figure 25 Examples of electrification

#### Cars

Fueling your diesel car with 1MWh equivalent of diesel will take your car approximately 2,700km. A modern electrical car being fueled with the same electrical energy will take you 5,000km

Electrification of vehicles

**1 MWh of electricity = 5000km**



1 MWh of diesel = 2,700km

**=Energy efficiency gain, electricity over diesel, -90%**

#### Homes

Heating an average European household for a year requires 18,500KWh of natural gas. Heating the same house with a modern heat pump would require just 5,800KWh

Electrification of heating systems

**Yearly electricity consumption by heat pump = 5,800 KWh**



Yearly consumption by natural gas= 18,500 KWH

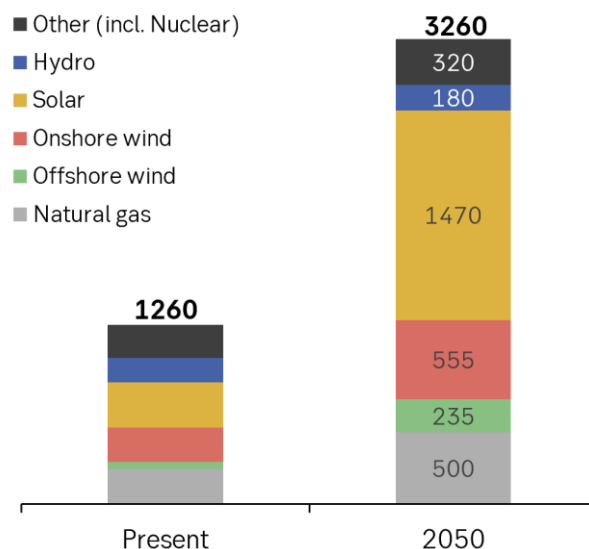
**=Energy efficiency gain, heatpumps over gas burners, -215%**

Source: Copenhagen Infrastructure Partners

## Building a Cost-Effective, Secure and Sustainable Energy Mix

Of three scenarios modelled in our analysis (Net Zero, Low Price and Slow Transition), our base case, the Low-Price scenario, aligns with current geopolitical agendas focusing on reduced energy pricing and increasing energy security to enable European industrial growth and competitiveness while reducing GHG emissions.

### Figure 26 European electricity production capacity in GW



Source: Copenhagen Infrastructure Partners

In this scenario, the energy landscape by 2050 involves a total clean generation capacity of around 2,760 GW (increased by x3 from today's installed capacity), primarily driven by building cheap solar PV and wind technologies. This build-out is ambitious but not unrealistic, with onshore wind only requiring a doubling of Europe's current capacity and solar PV footprint equating to three to four times the area currently dedicated to golf courses in Europe.

## The Critical Need for Investment

To deliver the build-out and supporting infrastructure, we forecast an investment requirement of about EUR 5tn (roughly EUR 200bn annually) by 2050. This figure aligns with estimates from other prominent analyses, such as the Draghi report, and underscores the scale of transformation needed. These investments encompass renewable generation, grid infrastructure, and hydrogen systems—integral components for a resilient, low-carbon future.

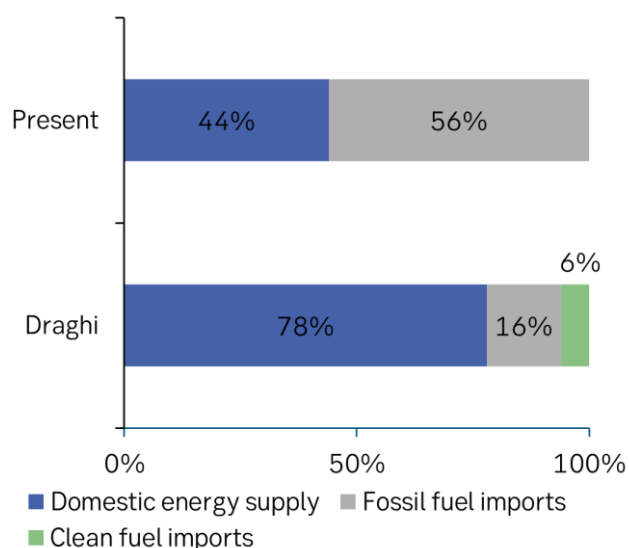
Of particular importance is the focus on electricity generation. CIP estimates that approximately EUR 2tn will be necessary specifically for new generation capacity, including offshore wind (EUR 445bn), onshore wind (EUR 715bn), and solar PV (Approximately EUR 435bn).

## Lower Energy Costs and Greater Resilience

A transition to this renewable-dominant energy system offers substantial economic benefits. In our Low-Price scenario, we project that demand weighted energy prices will fall by ~30% from present day to 2050 - resulting in significant savings for households and industries. Lower energy prices translate directly into reduced production costs, improved competitiveness, and increased disposable income for consumers.

Moreover, reducing dependence on imported fossil fuels could have profound geopolitical and economic implications. Europe's reliance on fossil fuel imports currently costs about EUR 450bn annually. By 2050, this reliance could decrease to just EUR 75bn—roughly a quarter—and reliance on domestic renewable energy sources would substantially boost energy sovereignty and resilience against international market shocks.

**Figure 27 Energy sourcing in Europe (% of total energy)**



Source: Copenhagen Infrastructure Partners

### Catalysing Economic Growth and Societal Benefits

Investing in the transformation of Europe's energy system is not solely about climate mitigation; it is a powerful driver of economic growth. We estimate that by 2050, the continent could see a cumulative GDP increase of approximately EUR 2.9tn attributable to energy infrastructure investments. This equates to a multiplier effect of about 1.9, meaning each euro invested in energy infrastructure could generate EUR 1.9 in economic output.

This growth is driven by several factors:

- **Job Creation:** Construction, manufacturing, and maintenance of renewable assets and grid infrastructure will generate millions of new jobs.
- **Industrial Competitiveness:** Lower energy costs bolster the competitiveness of European industries in global markets.
- **Resilience and Security:** A diversified, locally sourced energy system reduces exposure to international disruptions, ensuring steady supplies during crises.

Investing in new cost-competitive energy, system integration assets, and building the infrastructure to support it is Europe's most effective path to securing affordable energy, strengthening resilience, and enabling robust, long-term economic growth. At Copenhagen Infrastructure Partners, we are committed to powering this transition – building a stronger, more sustainable and competitive Europe.

### About CIP

Founded in 2012, Copenhagen Infrastructure Partners P/S (CIP) today is the world's largest dedicated fund manager within greenfield energy renewable investments. The funds managed by CIP focus on investments across energy transition technologies, including offshore and onshore wind, solar PV, biomass and energy-from-waste, transmission and distribution, reserve capacity, storage, advanced bioenergy, and Power-to-X.

CIP manages 13 funds and has to date raised approximately EUR 33bn for investments in energy and associated infrastructure from approximately 200 international institutional investors. CIP's open-ended evergreen fund, Global Energy Transition, is available for qualified, private investors through SEB in Scandinavia.

CIP has projects in more than 30 countries and more than 2,500 employees across platforms and projects globally. The full white paper "Powering the future – a vision for Europe's Energy System in 2050 can be found [here](#).

# Treading the path to Lithuania's energy independence and security: the role of EPSO-G



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Over the past few years, much of Europe has experienced a transformation in its energy landscape — from accelerating the shift towards renewables to reducing dependence on fossil-fuel imports from unreliable neighbors to the East. Lithuania, however, has pursued these changes longer than most - for several decades in fact.

For the past twenty years, Lithuania's primary aim was to diversify its energy imports and eliminate reliance on a single supply source, which was Russia. The objective was realized incrementally and finished in 2022, when, following Russia's invasion of Ukraine, we became the first EU member to end all imports of Russian electricity, natural gas and oil — a landmark achievement in diversifying away from Eastern sources. At the forefront of this effort stands EPSO-G, Lithuania's state-owned group of energy companies, that has been one of the main drivers towards energy independence for more than a decade.

## **EPSO-G group: a driver of change in the energy system**

At its core, EPSO-G oversees several critical segments of the energy value chain. Its two largest subsidiaries operate Lithuania's electricity and gas transmission networks, transporting vast quantities of energy domestically and facilitating exports, imports, and transit to neighboring markets. Beyond transmission, EPSO-G also owns a network-construction company, Europe's first biomass exchange platform, and one of the largest European battery-energy storage facilities. Most recently, EPSO-G has expanded into defence industry investments, partnering with Germany's Rheinmetall to build an artillery-munitions factory in Lithuania.

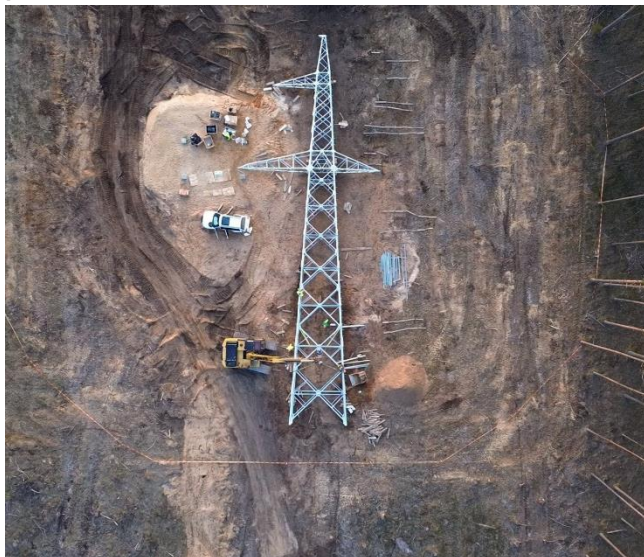
In EPSO-G's Strategy 2035, "Provider of Security and Reliability" stands alongside "Driver of Tomorrow's Energy Infrastructure" and "Vital and Skilled Strategic Partner" as one of three key strategic directions. Over the past decade, EPSO-G has enhanced Lithuania's energy security through projects such as increasing Lithuanian security of supply by building electricity connections with Poland and Sweden and a gas interconnection pipeline with Poland. We have also completed one of the first of its kind in Europe, a transmission grid connected battery energy storage park with 200 MW/MWh capacity. All of these initiatives paved the way for the Baltics' synchronization with the Continental European Network (CEN), a twenty-year ambition realized in February 2025.

## **Cutting off the last ties with the East – synchronization of the Baltic states**

Even though commercial electricity trade with Russia was cut-off already in 2022, until 2025, Lithuania, Latvia, and Estonia still operated in the same synchronous area as Russia and Belarus — the so-called "BRELL ring". To put it simply, being synchronized meant we are part of the same power system as Russia and Belarus. This arrangement limited the Baltic states' control over key grid parameters, notably system frequency. Baltic states have historically not considered Russia to be a reliable partner and knowing the risks we had being part of the same system, the three states set out to join the CEN synchronous area. Over the years, new power lines and other infrastructure were built or reconstructed in the Baltic states, as well as developing interconnectivity with neighboring Poland. The total cost of the Baltic states' synchronization projects comes to EUR 1.8bn.

This preparation bore fruits in the early hours of February 8, 2025, when the electricity grids of the three Baltic states desynchronized from the Russian-Belarusian synchronous area. For the next 27 hours, our subsidiary Litgrid along with the other two Baltic electricity transmission system operators conducted an isolated operation test, meaning their power systems worked as if it were an island – not part of any other energy system. On the afternoon of February 9, the transmission system operators successfully synchronized again – but not to the BRELL ring, rather to the Continental European Network – and have been successfully operating in it ever since. The connections with Russia and Belarus have been cut and the power lines connecting to these states are demolished.

**Figure 28 Construction of Vilnius-Neris transmission power line in Lithuania, 2024 March**

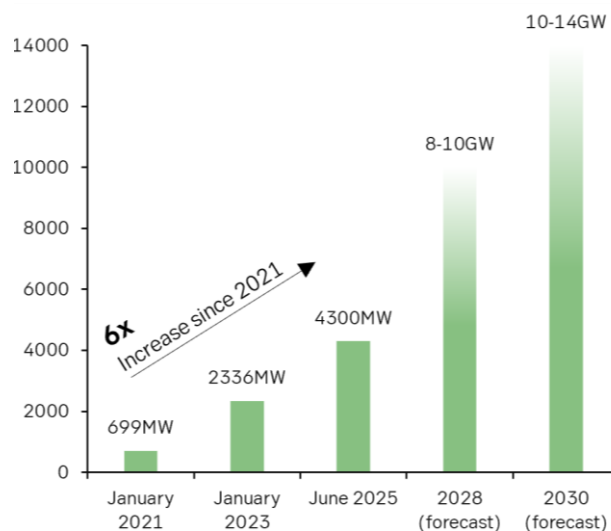


Source: EPSO-G

### The next big challenge – connecting a growing capacity of renewable energy

EPSO-G is proud to have taken part in this huge project that increased the energy security of the whole Baltic region. We now turn our attention to the next big Lithuanian challenge – once again becoming self-sufficient with domestic electricity production no later than by 2030. After more than a decade as a net importer, Lithuania takes part in the energy transition with remarkable speed, hoping to fill this import gap with 100% renewable energy. In January 2021, Lithuania had only 699 MW of installed solar and wind energy capacity. By June 2025, strategic investments had driven that figure past 4 300 MW – more than a 6-fold increase, covering the bulk of domestic demand. To fully satisfy the local demand, renewables capacity must grow even further. Lithuania aims that by 2030 there will be at least 10 GW of wind and solar generation capacity domestically.

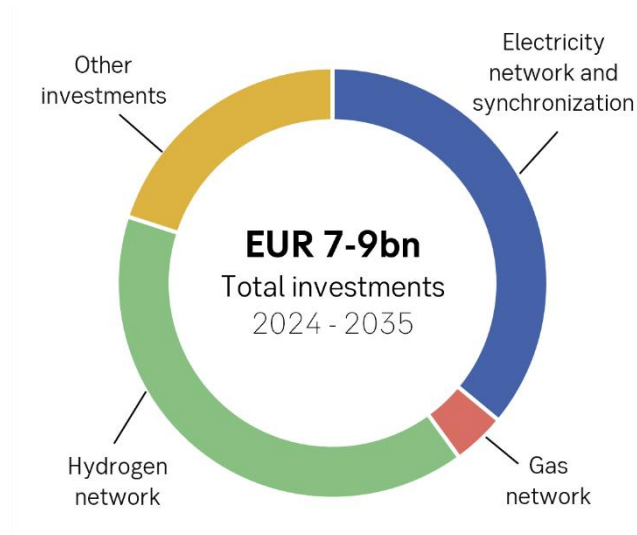
**Figure 29 Renewable solar and wind power installed capacity in Lithuania**



Source: EPSO-G

We currently see that this goal may even be exceeded in the coming years as growth of renewables has not yet stopped. Indeed, last year Lithuania was 3rd in the world by the amount of solar power capacity connected to the transmission and distribution grids per capita. As the country's transmission system operator, EPSO-G plays a key role in making these renewable ambitions real. We need to ensure that all these growing numbers of renewables can connect to the grid, as well as make sure the network is safe by balancing the intermittent generation of wind and solar power plants. Over the coming years, our main investments will focus on reinforcing and extending our high-voltage network, upgrading substations, and enhancing cross-border links with other EU states. Between 2023 and 2030, EPSO-G planned investments constitute nearly EUR 4bn, of which more than half will be spent on the modernization and maintenance of the electricity network.

**Figure 30 EPSO-G investment plan for 2024-2035**



Source: EPSO-G

## **Protection against threats and new options in the defence industry**

However, we are aware of the evolving threat landscape. Russia's assaults on Ukrainian power systems, suspected sabotage acts in the Baltic Sea and to various infrastructure objects across Europe, and an increase of cyber-attacks widely attributed to Russian actors have all shown how vulnerable critical infrastructure can be. In response, we are increasing both our physical and digital defences: deepening our cooperation with government institutions, intensifying staff training on emergency response, and hardening key installations with physical barriers, anti-drone systems and advanced threat detection technologies. At the same time, we're bolstering our cyber-security incentives and response capabilities. By combining these measures, we are mitigating the risks to power system disruptions, both in peacetime and otherwise.

Over the years, EPSO-G has a track record of stepping beyond its role in the energy sector. Today, we are part of a joint venture with Rheinmetall to build a state-of-the-art 155 mm artillery - munitions factory in Lithuania, due to begin production in 2027. This facility will not only strengthen the much-needed regional ammunition supply but also deepen our expertise in the defence industry. Looking ahead, EPSO-G will take part to further support government initiatives in other important projects for the growth of the national defence industry.

Europe today faces renewed geopolitical uncertainty and the imperative of strategic autonomy in both energy and defence. Lithuania shares the EU's ambition to reduce dependence on external actors in these sectors, and EPSO-G is committed to delivering the projects that will make it possible. Whether by securing our grids, integrating renewables, or contributing to defence-industry capacity, we remain dedicated to strengthening security, resilience and sustainability at home and across the region.

# Cybersecurity for a sustainable future



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## Global cybersecurity landscape

The increasing reliance on digital solutions and cross-sector interconnectivity has, on the one hand, benefited societal and economic development, but on the other hand, introduced new vulnerabilities and security challenges. A cyber incident can lead to significant disruption in the physical world. This highlights the urgent need for robust cybersecurity measures to protect critical infrastructure, which is an enabler of sustainable development. Key sectors such as energy, information and communications technology (ICT), transport, and finance are widely recognized by major cyber powers, including China, the European Union (EU), Russia and the United States, as particularly vital.

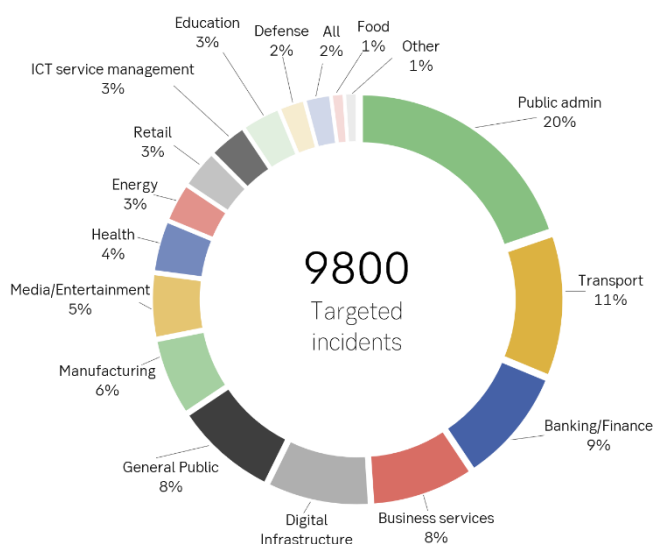
In particular, the banking and financial services sector faces mounting challenges in enhancing its cybersecurity posture while also fostering innovation and sustainable growth. The global information technology (IT) market is valued at over USD 5tn, with cybersecurity accounting for approximately USD 250–270bn and expected to double by 2030.<sup>21</sup> Of this, the banking and financial services sector represents a significant and growing share, valued at USD 74.3bn in 2022 and projected to reach USD 282bn by 2032. The sector's investment in cybersecurity is driven by increased reliance on cloud infrastructure, AI-enabled fraud detection, digital identity platforms, and other tools.<sup>22</sup> While this digitalization can act as a powerful enabler of innovation, competitiveness, and financial inclusion, it also exposes financial actors to a range of cybersecurity risks. These risks threaten not only operational continuity but also public trust, potentially stalling ongoing efforts to strengthen

cybersecurity governance at both regional and international levels.

## Cyber threat trends

Despite substantial investments and continued efforts to enhance cybersecurity and safeguard digital development by both the public and private sector, the scale, frequency, and complexity of cyber incidents continue to rise. This escalating threat landscape is driven by a range of factors, posing serious implications, particularly for critical infrastructure sectors, which are essential for enabling sustainable development of modern society.

**Figure 31 Targeted sectors per number of incidents, July 2023–June 2024**



Source: European Union Agency for Cyber Security

<sup>21</sup> Grand View Research, Cybersecurity Market Size Report, 2024

<sup>22</sup> World Bank. (2022). The global digital ID toolbox: Technical standards, functional building blocks, and procurement guidance. World Bank Group.

## Increasing targeting against the EU

Cyberattacks targeting EU countries have surged significantly, primarily driven by the war in Ukraine and the EU's support for Ukraine. In the last six months of 2022 only, the number of cyberattacks targeting EU countries surged, rising from 9.8% to 46.5% of all global attacks.<sup>23</sup> Beyond these, another contributing factor is the EU's increasing engagement in the Asia-Pacific region. As noted in the 2022 Threat Landscape Report of the EU Agency for Cybersecurity (ENISA), there is a development of state-sponsored threat actors targeting 'Member States of the EU that had established closer ties with Taiwan' with cyber operations.<sup>24</sup> This trend is only likely to grow amid intensifying geopolitical tensions.

## Spillover effects

The risk of being impacted by cyberattacks, even without being directly targeted, is expected to persist. For example, coinciding with Russia's invasion of Ukraine in February 2022, a cyberattack targeted the KA-SAT satellite broadband network, operated by Skylogic (a subsidiary of French satellite operator Eutelsat) on behalf of the US company Viasat. While the attack likely aimed to take down Ukraine's military satellite communications, it affected tens of thousands of fixed broadband customers across Europe—including emergency services in France and the remote monitoring and control of approximately 5,800 wind turbines in Germany.

## Kinetic escalation

Cyberattacks—especially those targeting dual-use critical infrastructure used both for civilian and military purposes, such as satellite services—have the potential to trigger kinetic escalation. The above mentioned Viasat case that disrupted civilian services across Europe is one example of how civilian assets used for military purposes may be targeted deliberately in the future. There is currently no consensus among states on whether dual-use infrastructure constitutes a legitimate target for initiating attack or retaliation during armed conflict.

## Decoy operations

An emerging and increasingly concerning trend is the use of cybercrime tactics—typically associated with financial gains—for cyberwarfare purposes, such as facilitating military operations or gathering intelligence. Specifically, decoy ransomware and DDoS attacks are increasingly being employed to deliver destructive wipers and remote access trojans for cyber operations aimed at data exfiltration and even destruction. One illustration of this is the ransomware attack reportedly carried out by the hacker group KillNet in 2022, targeting an Italian chemical factory.<sup>25</sup> Forensic report later revealed that the ransomware lacked any payment information and was designed to overwrite files with random data, making them unrecoverable — suggesting the aim was not financial gain but rather data destruction.

## Undefined role of non-state actors

Recent regulatory initiatives in the EU increasingly delegate responsibility and liability to the private sector, encouraging private entities to secure their own networks.<sup>26</sup> As a result, the private sector may adopt more proactive approaches to enhance monitoring through cyber incident preparation, remediation and resilience. For instance, Deloitte emphasized the necessity of the private sector engaging in more 'proactive' and 'zero-trust' approaches, even advocating industry to 'go on offense' in hunting for potential threats in their own information technology networks.<sup>27</sup>

Meanwhile, there are ongoing discussions that suggest the potential for private sector engagement in 'hack back' tactics. The situation becomes even more problematic when the private sector contributes to armed conflict through digital means. In the context of the war in Ukraine, for example, there is an urgent need to raise awareness not only among private companies, but also among their employees - such as those involved in the IT Army of Ukraine if their cyber operations amount to direct participation in hostilities - regarding the potential of being

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<sup>23</sup> Thales Group, 'From Ukraine to the whole of Europe: Cyber conflict reaches a turning point', Press release, 29 Mar. 2023.

<sup>24</sup> European Union Agency for Cybersecurity (ENISA), 'ENISA Threat Landscape 2022 (July 2021 to July 2022)', 3 Nov. 2022, <<https://www.enisa.europa.eu/publications/enisa-threat-landscape-2022>>.

<sup>25</sup> Acronis Security Team, 'Killnet ransomware — a wiper from the Chaos family', 25 Nov. 2022, <[https://www.acronis.com/en-](https://www.acronis.com/en-gb/cyber-protection-center/posts/killnet-ransomware-a-wiper-from-the-chaos-family/)

[gb/cyber-protection-center/posts/killnet-ransomware-a-wiper-from-the-chaos-family/](https://www.acronis.com/en-gb/cyber-protection-center/posts/killnet-ransomware-a-wiper-from-the-chaos-family/)>.

<sup>26</sup> Su F., Saveleva Dovgal, L. and Saalman L., 'Advancing the Role of the European Union in Promoting Global Cyber Stability', SIPRI, Dec. 2023. Su F., Saveleva Dovgal, L. and Saalman L., 'Advancing the Role of the European Union in Promoting Global Cyber Stability', SIPRI, Dec. 2023.

<sup>27</sup> Deloitte, 'Is your critical infrastructure resilient against cyber threats?', <<https://www2.deloitte.com/us/en/pages/risk/articles/is-your-critical-infrastructure-resilient-against-cyber-threats.html>>.

targeted by counter-attacks and losing protection under international humanitarian law.<sup>28</sup>

## Mitigating cyber risks

To mitigate cyber risks, the EU has placed strong emphasis on cyber risk management. This includes the identification, analysis, and evaluation of risks, as well as the treatment and monitoring of risks across network and information systems, physical critical infrastructure, and ICT products. These include the updated Network and Information Security Directive (NIS2 Directive), which expands cybersecurity obligations to cover 18 critical sectors; the Cyber Resilience Act, aimed at enhancing the security of digital products; the EU Cybersecurity Act, which introduces a voluntary cybersecurity certification framework for ICT products, services, and processes; and the Digital Operational Resilience Act (DORA), which focuses specifically on financial systems and information security.

Through a consolidated set of initiatives, the EU has sought to promote a 'single rulebook' for cybersecurity across all member states. These efforts aim to foster a safer and more secure digital environment by providing clear guidance and establishing minimum standards to enhance overall cyber resilience across the entire EU, while emphasizing the need to ensure compliance. Accordingly, both NIS2 Directive and DORA introduce fines and penalties for non-compliance,

alongside heightened accountability for senior management, which are intended to drive top-down implementation.

Moreover, there is growing emphasis on addressing cybersecurity risks in supply chains and supplier relationships. At the EU level, this includes a coordinated risk assessment of critical supply chains, considering both technical factors including critical dependencies, and non-technical ones, such as 'undue influence by a third country on suppliers and service providers' through hidden backdoors, technological lock-in, or provider dependency.<sup>29</sup> Similar concerns are echoed by other major cyber actors: the USA has used trade restrictions and executive orders to mitigate similar concerns, while China and Russia have gone further by mandating the replacement of foreign technologies in key sectors with indigenous alternatives.

Given the above trends, effective cyber risk mitigation will depend on more than regulatory compliance—it will require close collaboration between the public sector and private sector to keep up with the evolving cyber threats and collaborate in cyber incident response and cyber defence.

This article is based on a series of SIPRI reports on cyber postures and cyber risk reduction conducted by Dr Lora Saalman, Fei Su and Larisa Saveleva Dovgal.

You can find the publications in this [link](#).

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<sup>28</sup> ICRC, '8 rules for "civilian hackers" during war, and 4 obligations for states to restrain them', 4 Oct. 2023, <[https://blogs.icrc.org/law-and-policy/2023/10/04/8-rules-civilian-hackers-war-4-obligations-states-restrain-them/?utm\\_source=chatgpt.com](https://blogs.icrc.org/law-and-policy/2023/10/04/8-rules-civilian-hackers-war-4-obligations-states-restrain-them/?utm_source=chatgpt.com)>.

<sup>29</sup> European Commission, 'Directive (EU) 2022/2555 of the European Parliament and of the Council of 14 December 2022 on measures for

a high common level of cybersecurity across the Union, amending Regulation (EU) No 910/2014 and Directive (EU) 2018/1972, and repealing Directive (EU) 2016/1148 (NIS 2 Directive)', 27 Dec. 2022.

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