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THE ROLE OF INTERNATIONAL PARTNERSHIPS IN STRENGTHENING ENERGY SECURITY IN TIMES OF CRISIS

ENERGY TRANSITION TOWN TWINNINGS

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ABSTRACT

Russia's war of aggression against Ukraine and the Hormuz blockade in the armed conflict between Iran, the US and Israel demonstrate the vulnerability of societies when it comes to their energy supply. In Ukraine, power stations and grid infrastructure are being systematically destroyed, whilst the Hormuz blockade is causing 'energy shortages' and 'price shocks'. The persistent neglect of redundancies in the energy supply sector is now taking its toll. The focus on cheap gas and fossil fuels is unsustainable. It is neither cost-effective nor a viable way to maintain peace through economic interdependence. It is clear that centralised energy structures are a risk in times of crisis. This has become apparent in the EU and the candidate countries on two separate occasions in the last four years. But what really protects democracy? Renewable energies are expanding and international and local partnerships are strengthening. It is clear that this is a key issue that has accompanied all twin towns in the “Energy Transition Town Twinning” project, which is funded by the Federal Foreign Office, and will continue to do so.

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STARTING POINT

VULNERABILITY OF THE SYSTEM

The fossil fuel lobby often cites security of supply as the most obvious argument against the expansion of renewable energies and in favor of adhering to fossils as a guarantee of safety. However, a look at the SAIDI[1] values underlines the opposite. For example, the growing share of renewables in electricity generation in Germany has not led to any negative effects. The expansion leads to the creation of redundancies in the energy supply through decentralisation. This is because it systematically reduces dependence on large power stations prone to disruption and centralised supply routes. A diversified, small-scale generation mix increases resilience against physical sabotage and attempts at geopolitical blackmail. This leads to independence from undemocratic regimes.

CO-FINANCING OF WARS

It is clear that both Russia's war of aggression and the armed conflict involving Iran make it obvious that dependence on fossil fuels from these countries also fills the war chests of these undemocratic regimes, thereby exacerbating the situation. Since the invasion of Ukraine on 24 February 2022, Russia has taken in over €1,060 billion from the sale of fossil fuels worldwide. The EU is the second-largest importer of Russian fossil fuels. According to the Centre for Research on Energy and Clean Air (CREA[2]), an independent, non-profit research organization, it purchased Russian fossil fuels worth 228 billion euros. Gas accounts for the largest share at 50 per cent, followed by oil (47 per cent) and coal (3 per cent). Now let's turn our attention to Iran. The Strait of Hormuz has been a geopolitical lever not just since spring 2026.Gas plays the largest role here at 50 per cent, followed by oil (47 per cent) and coal (3 per cent). Let’s turn our attention to Iran. The Strait of Hormuz has been a geopolitical lever not just since spring 2026. Between 20 and 30 per cent of the world’s traded crude oil, more than a quarter of nitrogen fertiliser and around a fifth of LNG, etc., must pass through the strait[3]. Rising prices caused by blockades not only increase economic pressure but also result in high energy costs and inflation in Western economies.

RENEWABLES AS A GUARANTEE FOR A FUNCTIONING CIVIL SOCIETY

When we talk about energy security, this largely concerns the economy, but also civil society in particular. The power cut in Berlin at the start of 2026 gave us here in Germany a foretaste of what had been feared since the sabotage of the gas pipeline. More than 45,000 households were without electricity and heating for four days, some even for up to five. When key hubs fail, cascade effects occur. In addition to electricity and heating, mobile networks and trams are often affected as well. This has massive repercussions not only on the supply itself, but also on public morale, which is an extremely valuable asset in times of crisis.

In the winter of 2025/2026, Russia pursued the destruction of Ukraine’s energy infrastructure as a military strategy. The report of 13 February 2026 by the UN Monitoring

1 www.unendlich-viel-energie.de/mediathek/grafiken/unterbrechungen-der-stromversorgung-in-deutschland-und-anteil-erneuerbarer-energien3, Last access 17.4.2026

2 www.russiafossiltracker.com/

3 www.goldmansachs.com/insights/articles/how-the-conflict-in-the-strait-of-hormuz-could-affect-global-agriculture-prices, letzter Zugriff 17.4.2026

Mission in Ukraine (HRMMU[4]) states: The Russian military deliberately damaged or destroyed key components of the Ukrainian energy system in around 17 regions and Kyiv, such as combined heat and power plants or infrastructure supplying cities with district heating.

Danielle Bell, Head of the HRMMU:

> "The scale and persistence of these attacks underscore a grave disregard for the lives and well-being of civilians. When electricity, heating and water repeatedly fail in the middle of winter, mere survival becomes a daily struggle. (...) The destruction of critical infrastructure has predictable and devastating human consequences. It disrupts civilian life, undermines basic needs and human rights, and exposes millions of people to extreme hardship. Civilians should never have to pay the price for attacks on the services that sustain their livelihoods."

A SHIELD FOR DEMOCRACY

Decentralisation is the key to protecting against cascade effects, safeguarding critical infrastructure such as hospitals, etc., and making a coordinated attack considerably much harder to orchestrate. Independence, decentralisation and preparedness have become essential to increase the resilience of local authorities and to strengthen the psychological and physical resilience of civil society itself. To complement technical decentralisation through renewables, there is a simultaneous need for networking among local authorities. International partnerships should form the core of this. Ukrainian local authorities are not the only ones with extensive expertise on resilience in times of crisis. Those in Bosnia and Herzegovina and other regions also have this expertise, as demonstrated by their ability to carry out repairs under extreme pressure. The value of exchanging these experiences and perhaps also the protective concepts developed in this context cannot be overstated. At the local level, this exchange is more direct and rapid. It is not constrained by national dependencies or those tied to international treaties. Furthermore, cross-border standards for decentralised networks can be developed to provide assistance in an emergency.

4 https://ukraine.un.org/en/310140-energy-attacks-amid-unusually-harsh-winter-are-exposing-ukraine%E2%80%99s-civilians-extreme-hardship, Last access 28.4.2026

SURVIVAL IN GORAŽDE (1992–1995)

In the south-east of Bosnia and Herzegovina, about two and a half hours' drive from Sarajevo, lies Goražde. Situated in the Bosnian Podrinje Canton (BPC) and home to over 20,000 people, the municipality is nestled among hills, with the River Drina—its lifeline—dividing the town into two. Goražde is the partner municipality of Greifswald in the 'Energy Transition Town Twinning' project, and a delegation from Greifswald had the opportunity to visit the municipality in August 2025.

During the Bosnian War, the town of Goražde, like Srebrenica, Sarajevo, Tuzla, Žepa and Bihać, was declared a UN safe area. These were supposed to be free from armed attacks by Serbian forces – a promise that was tragically broken. Like Srebrenica, for example, Goražde was the scene of horrific crimes, fierce attacks and total isolation. The town was surrounded. All external water and electricity lines had been systematically cut; people were starving and feared for their lives. In addition to the original population of around 30,000, roughly twice as many refugees arrived in the municipality during the war. Over 7,000 people died in the enclave or are listed as missing. Anyone visiting the town quickly realises that virtually everyone living here lost loved ones in the Bosnian War. Despite the people's resilience and openness, the war remains palpable and visible throughout the municipality.

One thing becomes clear very quickly: given the high number of refugees and the almost hopeless situation, the death toll would have been significantly higher if not for the population's ingenuity in times of need, alongside the town's strong defences. Alongside homemade weapons fashioned from bicycle frames and a concealed bridge beneath the bridge used as cover, the energy supply also played a vital role.

"The instinct for survival led to a creative surge among the inhabitants of Goražde, which will be remembered as a symbol of resistance. This creativity was often evident in the ability of individuals to use various materials under difficult conditions to produce items that provided the bare minimum for survival," states an information board near the River Drina, commemorating this achievement[5].

5 dokumentiert am 29.08.2025

As for electricity, bicycles were converted into low-voltage generators to power light bulbs or radios (Pictures below, center and right). Even more crucial, however, were the mini-hydroelectric power stations[6] (Pictures below left) that were developed by the inhabitants. The first was invented by the mechanic Jusuf Velić from Goražde who used parts from cars, washing machines and even four barrels for this purpose. Attached to the bridge, a cable from this device led to the medical supply unit. Numerous others followed. According to Edin Ćulov, Prime Minister of the Bosnian-Podrinje Canton (BPC), Velić built five of these mini-hydroelectric power stations.

Another prototype, which could have generated even more electricity in the Podhranjenski stream using a concrete mixer, was never put into operation, as Serbian troops had seized the area along the stream in 1994. These small, decentralised power stations supplied the hospital, where numerous war wounded patients were being operated on, and powered the mills and bakeries to maintain at least some a basic level of bread production.

The events in Goražde not only highlight the importance of security of supply in times of crisis through decentralisation. Knowledge transfer between international municipalities is particularly relevant here. In fact, there was an exchange between the municipality of Goražde and Ukraine.

Edin Ćulov reports in the Sarajevo Times[7] in May 2024 :

> "First, we got involved through the Delegation of the European Union (EU) to Bosnia and Herzegovina (BiH) to send data on those wartime power plants we made in Gorazde. They have large areas with rivers, and the idea from the EU was to send them what we have so that they can start production, and even that some experts from our area would make the first few power plants for them to be able to supply themselves with electricity."

6 https://sarajevotimes.com/how-creativity-during-the-war-brought-light-to-gorazde-and-30-years-later-to-ukraine/, Last access 17.4.2026

7 https://sarajevotimes.com/how-creativity-during-the-war-brought-light-to-gorazde-and-30-years-later-to-ukraine/, Last access 17.4.2026

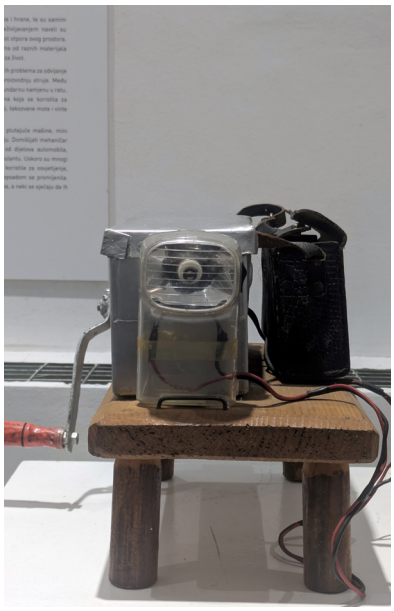

Photo © aee

SURVIVAL IN NOVOVOLYNSK

Alongside Goražde and Greifswald, Stuttgart and Bălți, as well as Düsseldorf, Czernivtsi and Hoyerswerda, have also joined the "Energy Transition Town Twinning" project with Novovolynsk. Novovolynsk, with a population of around 58,000, is located in western Ukraine, just five kilometres from the Polish border. Since the start of Russia's war of aggression in 2022, the city has taken in between 10,000 and 15,000 refugees.

Iryna Semenenko, senior expert for project management and investment at the Executive Committee of Novovolynsk City Council:

> "Russia is deliberately attacking Ukraine's energy infrastructure. In these circumstances, energy independence is security. If a community has its energy sources, it will survive. This is not just a matter of technology, but of national sovereignty. They are decentralized and less vulnerable to shocks. They provide a basic level of autonomy in shelters, hospitals, schools, and utilities. In times of war, RES are a source of sustainability and humanity.[8]"

The targeted Russian attacks on infrastructure in Ukraine also hit Novovolynsk.

> "In times of unprecedented challenges to the energy grid, local renewable energy sources (RES) have shifted from being an environmental choice to a critical tool for survival. For Novovolynsk, developing local generation represents a strategic transition toward energy autonomy. We have seen firsthand that during systemic failures, solar power installations at critical infrastructure sites—specifically at our municipal water utility—allow us to maintain essential services. Local resources provide the necessary resilience, enabling utilities to function even when disconnected from the centralized grid."

8 www.unendlich-viel-energie.de/projekte/energiewende-partnerstadt_2024/interview-iryna-semenenko, Last access 17.4.2026

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SOCIAL RESILIENCE

In times of unprecedented challenges for the electricity grid, local renewable energy sources have evolved from an environmental choice into a crucial 'tool for survival'. Novovolynsk is currently seeking to develop energy storage systems and create so-called microgrids. This transition towards decentralised renewable energy as the basis for the security of supply in municipalities in general, and particularly in times of crisis, is essential in Ukraine and also in municipalities such as Goražde – not least with regard to social resilience.

Asima Džambegović, Head of the Office for Local Economic Development and Strategic Planning, European Integration and Technical Affairs in the City of Goražde:

> "Of course, energy security is of great importance, particularly in times of crisis. By installing solar panels on their buildings, the population feels less dependent on grid systems, which are the most frequent targets of attack in times of crisis. It gives them a sense of security."

Iryna Semenenko:

> "We view energy security not merely as a technical indicator, but as the foundation of social stability. Decentralising the energy supply gives residents the feeling that the situation remains manageable despite external threats. When citizens see that the local authority is implementing energy-independent technologies, it changes their perception: away from passively waiting for help, towards trust in our collective capabilities. Such projects demonstrate that we can secure our own future, which significantly strengthens trust in local leadership and reinforces social cohesion."

Nevertheless, this is not a phenomenon limited to potential EU accession candidates, but rather a shift in direction that must gradually take place in other European countries as well, including Germany.

INTERNATIONAL TOWN TWINNING AS A NEW SECURITY ARCHITECTURE

Confidence in the EU's democratic capacity to act – as evidenced by the increasingly positive perception of the Union over the past two and a half years – does not arise through hegemony. Instead, cross-border knowledge exchange, particularly regarding agility and overcoming bureaucratic hurdles in times of crisis, provides a decisive edge over hostile actors: it is a matter of pragmatism over perfectionism. Michael Haufe from the Environment Department of the City of Greifswald, drawing on experiences from the 'Energy Transition Town Twinning' project, highlights, for example, the slow pace of grid expansion, grid connection and grid capacity, as well as financial and human resources. He continues:

> "For municipal utilities and energy suppliers, the issue of resilience and redundancy in the event of a disaster is of great importance. However, largely due to a lack of suitable alternatives, the focus remains on maintaining sufficient fossil fuel reserves."

According to Haufe, however, storage facilities microgrids, and the expansion of rooftop photovoltaic systems should play a significantly larger role.

Asima Džambegović:

> "The exchange of experiences, the monitoring of technological achievements and the exploration of new technologies that offer the possibility of individual independence are of great importance – particularly for countries that were devastated during the war and were unable to keep pace with these developments."

Iryna Semenenko:

> "International cooperation is a key driver of our resilience. Working in European consortia such as Horizon Europe (e.g. our OASIS-GRID project) and maintaining links with partners in Germany, France and Sweden provides access to cutting-edge engineering knowledge and expertise in crisis management. (...) This exchange helps us to act more quickly by implementing models that have already proven their worth elsewhere."

In Düsseldorf, this path has now been taken. For instance, the "Office for Fire Services, Emergency Medical Services and Civil Protection in Düsseldorf is also seeking to exchange ideas with Ukrainian municipalities regarding urban resilience in order to learn from their experiences," explains Lucas Milbert from the Office for International and European Affairs of the State Capital Düsseldorf.

CONCLUSION

In contrast to the often cumbersome German planning practices, transnational knowledge exchange with current and former crisis regions acts as a decisive accelerator. This technological 'leapfrogging' makes it clear that resilience is above all a question of the speed of implementation. Ongoing international exchange between local authorities enables rapid knowledge transfer, allowing us to benefit from the experiences of others without having to laboriously 'go through' every process ourselves. True security arises here through a bold reduction of bureaucratic hurdles in favour of the ability to act immediately. Germany and the EU must massively increase their rate of adaptation and consistently continue down the path of decentralised renewables – not merely as an ecological project, but as a necessary protective shield for security in the EU and its neighbouring countries.