

The crisis in Ukraine: another missed opportunity for building a more sustainable economic paradigm

Economic disruptions caused by the war in Ukraine provide insights into how climate change may threaten global supply chains in a not-so-distant future. The EU is addressing strategic vulnerabilities, particularly in the sphere of fossil fuel supply, while seeking to maintain its climate ambition. However, the EU has failed to make more far-reaching changes to its economic model and relations with international partners. These are urgently needed to address the root causes of the current crisis.

Rainer Quitzow , Ortwin Renn , Yana Zabanova 

The crisis in Ukraine: another missed opportunity for building a more sustainable economic paradigm | GAIA 31/3 (2022): 135–138

Keywords: circular economy, climate crisis, green industrialization, supply chains, Ukraine

Russia's invasion of Ukraine has transformed the geopolitical landscape in Europe. Russia has positioned itself as openly hostile to the post-World War II security order in Europe and signaled its willingness to employ military force to pursue its geopolitical ambitions (Fazal 2022). The crisis also revealed that the EU's, and in particular Germany's, dependence on Russian oil and gas is not merely a structural vulnerability. Rather it represents a direct threat to European security and a major source of funding for the Russian invasion of Ukraine. Russia is increasingly weaponizing its control over gas exports to Europe by creating uncertainty over future export volumes, thereby driving up prices. These price hikes, in turn, are helping it fund its war efforts; in the first 100 days of the war alone, Russia amassed 93 billion EUR through fossil fuel exports, with 57 billion coming from the EU (CREA 2022). As such, there is both a moral and a security imperative for rapidly reducing or even eliminating the consumption of Russian hydrocarbons in Europe.

The crisis in Ukraine highlights climate-related risks to global supply chains

Although the war in Ukraine and the related energy crunch in Europe is currently overshadowing the debate on the climate crisis,

Dr. Rainer Quitzow | Technische Universität Berlin | Germany | rainer.quitzow@iass-potsdam.de

Prof. Dr. Dr. Ortwin Renn | University of Stuttgart | Germany | ortwin.renn@iass-potsdam.de

Yana Zabanova, MA | University of Groningen | The Netherlands | yana.zabanova@iass-potsdam.de

all: Institute for Advanced Sustainability Studies e.V. (IASS) | Berliner Str. 130 | 14467 Potsdam | Germany

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Received April 12, 2022; revised version accepted July 26, 2022 (double-blind peer review).

it also reveals in stark terms how latent risks and vulnerabilities can rapidly transform into imminent threats to human security and major economic and social disruptions (Creutzig 2022). In the most immediate sense, the war represents a major human tragedy for the people of Ukraine and has led to the biggest influx of refugees to Europe since World War II. However, its impacts go far beyond just Ukraine and Europe. It has economic impacts across the globe by disrupting critical supply chains (Mbah and Wasum 2022).

In addition to its implications for energy prices, the war and the related economic sanctions are having severe impacts on a number of commodity markets, most critically in food production. Both Ukraine and Russia are major global exporters of grains – including 30% of the world's wheat – and fertilizers. They play a critical role for maintaining food security in countries around the world (Behnassi and El Haiba 2022, Glauben et al. 2022). In the first weeks of the war, fertilizer prices increased by 30% and wheat prices by up to 90% compared to January 2022 (OECD 2022). The prices have since retreated from this spring's peaks but remain well above levels before the war. The continuing war also puts into question the country's production and exports prospects for 2022 and 2023 (FAO 2022). In addition, both countries are important exporters of lumber and other construction materials. As a result of a halt in supplies, prices for these materials have risen sharply around the world. Finally, as a leading supplier of a number of industrial metals and critical minerals, such as platinum, palladium and nickel, Russia also plays an important role in a range of technology products, including semiconductors (Athanasia and Arcuri 2022). In response to Western sanctions, Russia not only blocked grain exports from leaving Ukraine's port of Odesa but has also restricted exports of palladium and inert gases required for the manufacturing of semiconductors (Schiffeling and Kanellos 2022).

These developments reveal serious vulnerabilities within the international economic system. Rather than the distraction from the climate crisis, these disruptions also highlight how climate

change may increasingly disrupt global supply chains in a not-so-distant future. Climate change and the related rise in the frequency of extreme weather events are already disrupting the smooth functioning of global supply chains and their ability to provide critical goods and services. According to a FAO (2021) report, between 2008 and 2018, the agricultural sectors of developing countries lost over 108 billion USD in damaged or lost crop and livestock production, mainly due to climate change. If not confronted, these climate change-related risks may translate into further socio-political tensions and displacement of people, especially in low-income countries, where households spend a much larger percentage of income on food. The rise in food prices due to the war has already been reflected in a surge of protests against rising food prices across the Global South (Behnassi and El Haiba 2022).

However, not only the agricultural sector is affected by climate change. Extreme weather events are also beginning to take their toll on industrial value chains. For instance, the extreme cold in Texas in February 2021 and the related blackouts forced three major semiconductor plants to close, exacerbating pandemic-related semiconductor shortages (Leslie 2022). This, in turn, disrupted automotive supply chains dependent on these components. It also drove up prices in the global plastics industry due to the important role of Texas in the sector (Vakil 2021).

Phasing-out fossil fuels reduces exposure to Russia while tackling climate change

So, the message is clear: rather than a distraction from the fight against climate change, the crisis in Ukraine further underlines the urgency of tackling the climate crisis while addressing strategic supply chain vulnerabilities. Indeed, these challenges can only be tackled jointly. And indeed, in many areas, European policymakers have already begun to do so. The Commission's *REPowerEU* package proposed in spring 2022 rests on three main pillars: energy savings through greater efficiency, speedy deployment of renewable energy, and diversification of energy suppliers. The package also prioritizes using renewable gases such as green hydrogen and biomethane (whether produced locally or imported) to replace part of the gas supplies from Russia. In response to the current crisis, the Commission envisions doubling its targeted consumption of renewable hydrogen in an effort to replace 25 to 50 billion cubic meters of gas imports from Russia annually by 2030. Even without these additional announcements, the Commission estimates that its 2021 *Fit for 55* proposals would reduce annual natural gas imports by 30% (EC 2022 d).

Moreover, the EU's new external energy engagement strategy, launched simultaneously with the *REPowerEU* package, acknowledges that a transition to climate neutrality will not end European dependence on foreign energy and natural resources (EC 2022 a). Rather it will create new dependencies as new industrial value chains develop. These include not only climate-friendly hydrogen but also a range of mineral resources (Hafner

and Tagliapietra 2020, Valero et al. 2018). The EU is already highly dependent on imports of critical raw materials for a range of climate-friendly technologies, and with the accelerating energy transition, this dependency will become even more pronounced. In the case of lithium-ion batteries, for instance, the EU accounts for only 1% of raw material extraction and 8% of related raw materials processing (EC 2022 e). Regarding hydrogen, half of this is expected to be met by imports, although it remains open whether this will be in the form of pure hydrogen, its derivatives (like ammonia), or intermediate industrial products produced with hydrogen, such as direct reduced iron. While it will not be possible to entirely reshore supply chains of rare materials and resources to the EU, future energy security will require a more diversified supply chain, avoiding so-called asymmetric dependencies (Renn et al. 2022).

To tackle this, the EU strategy pledges to increase efforts to develop a diversified supply of hydrogen and critical minerals for the transition to climate neutrality. Specifically, the EU wants to support the development of hydrogen partnerships to secure ten million tonnes of climate-friendly hydrogen from the EU neighborhood and Africa by 2030 as well as establishing additional raw material partnerships beyond the existing ones with Ukraine and Canada (EC 2022 a).

Missed opportunities for a more fundamental shift in economic paradigm

This portfolio of measures sends a strong signal that the EU is determined to combine its new energy security agenda with climate action. At the same time, it fails to capitalize on the crisis to initiate more far-reaching changes to its economic model as well as the relations with international partners underpinning this. We provide two examples, focusing on the internal and external dimensions of the EU's response, respectively.

Firstly, the supply chain vulnerabilities – brought to the fore first by the Covid-19 pandemic (Quitow 2022) and now by the war in Ukraine – highlight the urgent need to transition to more circular supply chain models. The reduction of primary material use offers an important pathway toward the creation of more sustainable and resilient supply chains. Moreover, this does not represent a trade-off to decarbonization. Instead, reducing the consumption of primary raw materials simultaneously reduces the carbon footprint of related products. Pauliuk and Heeren (2020) estimate that the reduction of primary material use can contribute 19 to 34%. In the buildings sector, a report prepared for the European Environmental Agency estimates that circular economy-related actions can reduce CO₂ emissions by 61% (Le Den et al. 2020).

The potential of the circular economy to reduce material use along with CO₂ emissions is also recognized by the Commission itself. In acknowledgement of this, the EU has long been a key proponent of the circular economy. It has recently stepped up

its engagement with its proposal for a new regulation on ecodesign for sustainable products (EC 2022c). This promises to set minimum criteria not only for energy efficiency, but also for circularity, durability and recyclability. It even proposes to provide minimum standards for public procurement in an effort to boost the market for the most sustainable products.

While these initiatives all point in the right direction, they are only mentioned in passing in the Commission's *REPowerEU* strategy. No new measures or initiatives are proposed. One key area in need of more action in this field is the automotive sector. Action so far has mainly focused on batteries for electric vehicles, while the remaining supply chain has been neglected (EC 2020). Despite the *Circular Cars Initiative*, launched by the World Economic Forum in partnership with various other stakeholders in 2019 (WEF 2021), no major EU initiative has been created so far to close this gap. There is an urgent need to further develop and support such sector-based approaches with tangible political and financial support as well as regulatory action at the EU-level. In the context of mission-oriented initiatives, the reduction of greenhouse gas emissions needs to be integrated with efforts to reduce the related material footprint and increase circularity. Otherwise, the EU risks locking-in new material intensive industrial pathways along with the related supply chain vulnerabilities.

Secondly, the strong focus on developing a diversified supply of climate-friendly hydrogen imports exemplifies the recreation of economic relations based on resource extraction in low-income countries to serve the needs of the highly developed industrial systems on the European continent (Hornborg and Martinez-Alier 2016). This cannot be the model for a future, climate-friendly economic paradigm. Rather, a successful strategy to mobilize new economic partnerships for a climate-neutral future must build on a shared vision of prosperity for both Europe and its partners.

In practice, this means developing multidimensional partnerships aimed at supporting decarbonization, socio-economic development and human security in both the EU and partner countries. Only if these different dimensions are considered can a stable and mutually beneficial relationship emerge, ensuring European energy security and the geopolitical stability of the European neighborhood. To begin with, it is uncertain whether African and Middle Eastern countries are interested in developing partnerships focused primarily on the supply of renewable hydrogen and other raw materials for the decarbonization of the European industrial system. Rather, emerging efforts in Morocco and Egypt signal a focus on domestic green industrialization efforts. Both countries have launched investments in green hydrogen supply as the basis for the production of green ammonia, seeking to position these countries as producers and potential exporters of climate-friendly fertilizers (Nweke-Eze and Quitzow 2022). The development of future economic relations will have to take into account the industrial development ambitions of these countries. An important case in point is South Africa. A recent study shows that the production and export of green primary iron

with the help of renewable hydrogen as an alternative to direct hydrogen exports in the country (Trollip et al. 2022). In this vein, the design of the recently announced *Just Energy Transition Partnership* between South Africa and the EU, France, Germany, the UK and the US could well offer a decisive test case for such an approach (EC 2022b).

Conclusion

Similar to the Covid-19 crisis, the war in Ukraine has demonstrated the EU's ability to sustain its Green Deal policies on climate and energy in spite of adverse international conditions (Quitzow et al. 2022). It has not, however, led to a more fundamental rethink of the EU's economic model and the vulnerabilities it implies. Its strong focus on hydrogen imports rather than the development of mutually beneficial green industrial partnerships replicates what Brand and Wissen (2021) call the "imperial mode of living", that is, lifestyles that hinge on a disproportionate claim on global and local ecosystems. The Ukraine crisis has made the risks of the related dependencies apparent in stark terms. Yet, policymakers have continued to adopt a stance focusing narrowly on strategies for the import of hydrogen into the EU. These initiatives also do not pay sufficient attention to the multiple benefits of boosting circularity in tandem with reducing greenhouse gas emissions. Indeed, as Hanusch and Schad (2021) have pointed out, scholars have similarly adopted a perspective focused primarily on the technical feasibility of large-scale hydrogen imports. Rather than making a normative argument for building a more equitable system of economic exchange, this article argues that the EU is ignoring this warning at its own peril.

Acknowledgement: We would like to thank two anonymous reviewers for their helpful comments.

Funding: This article has benefited from financial support from Germany's Federal Foreign Office within the context of the project *Geopolitics of the Energy Transformation: Implications of an International Hydrogen Economy (GET Hydrogen)*.

Competing interests: The authors declare no competing interests.

Author contribution: All authors have been credited.

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Rainer Quitzow

Doctoral degree in political science (Freie Universität Berlin, Germany). Since 2017 leader of research group *Global Energy Transition Politics and Policy* at the Institute for Advanced Sustainability Studies (IASS), Potsdam, Germany. Since 2014, senior lecturer in Innovation and Sustainability at Technische Universität Berlin, Germany. Research interests: green industrial policy/geoeconomics and the transition to climate neutrality, energy foreign policy.



Ortwin Renn

Doctoral degree in social psychology (University of Cologne, Germany). Professor for technology assessment and environmental sociology at the University of Stuttgart, Germany. Since 2016, scientific director of the Institute for Advanced Sustainability Studies (IASS), Potsdam, Germany. Honorary professorships for Integrated Risk Analysis at Stavanger University, Norway, and for Risk Governance at Beijing Normal University, China. Research interests: systemic risks as threats to sustainable development, structures and processes for public participation, energy systems and energy governance. Co-editor of *GAIA*.



Yana Zabanova

Master's degrees in international relations and European studies (Central European University Budapest, Hungary), and in public policy (Hertie School of Governance, Berlin, Germany). Since 2019, PhD candidate at the University of Groningen, The Netherlands. Since 2021, researcher at the Institute for Advanced Sustainability Studies (IASS), Potsdam, Germany, and leader of the project *Geopolitics of the Energy Transformation*. Research interests: geopolitics and geoeconomics of energy transition, international hydrogen economy, energy transitions in Eurasia.