Blog

Ukraine: War, energy, and net zero

by Alan R. Roe

Just over seven months ago the United Nations convened its 26th Climate Change Conference (COP-26) in Glasgow, with the world nervously emerging from the pandemic. Even before that, energy prices were already ticking up — a trend that accelerated when Russia invaded Ukraine. The global response to that invasion has included an urgent search for substitutes for Russian oil and gas thereby accentuating debate about both the intermittency of renewables, and also the case for continued use of oil, gas, and even coal. So, what are the overall implications for global net zero (https://energysavingtrust.org.uk/what-is-net-zero-and-how-can-we-get-there/) — the balance between carbon emitted and carbon removed from the atmosphere?

The first answer is not encouraging. The unwelcome energy crunch is causing the worst spike in the cost-of-living for decades, and many governments are now scrambling to offset it. There are calls to accelerate — not reduce — oil and gas extraction to bring costs down. Coal use has already increased and both Germany and the UK are considering reopening shuttered coal mines (https://www.eenews.net/articles/germany-to-demolish-village-for-coal-despite-phaseout-plans/) .

These events hint at a stark reversal of attitudes towards renewable energy alternatives. Such a reversal is intensified by dramatic rises in prices, to all-time highs, of some metals required for renewable energy. In part, rising prices are because Russia is a major metals exporter (especially of nickel), and because the war is also disrupting major aluminium and steel supplies from Ukraine. The price of rebar (https://www.lme.com/en/) , for example, has risen 55% in Europe since January.

So, wind turbines, large-scale battery storage, and other renewable infrastructures have quickly become more expensive. A further consequence is that global emissions are now on course for new highs in 2022. As the April IPCCC report (https://www.ipcc.ch/assessment-report/ar6/) points out, '... In sum, there is plenty to be gloomy about'. What further developments can we expect to impact the transition towards net zero? There are at least four.

The effective price of carbon should rise

Notwithstanding the possibility of new supplies (see below), the medium-term global supply response of oil and gas is likely to be low. So, the present demand pressures will continue to result in higher prices for both industrial and retail energy users for some time. This upward pressure will be amplified by the huge investment in new transit infrastructure needed to diversify away from Russian oil and gas supplies.

This should encourage households and producers to reduce consumption of electricity generated from fossil fuels and accelerate the adoption of renewables. In effect, the loss of Russian supplies could act as a *de facto* rise in the carbon price and help the push to net zero.

But trends in metal prices may compromise such a rise

Most attention on commodities since the start of the Ukraine war has been on oil, gas, wheat and other food grains and fertilizers (/node/239991) . But equally important from the stand-point of net zero are the effects on key metals. Even before the war, alarm bells were ringing about the global supply situation for critical metals, such as lithium and cobalt (I wrote about this in October 2021 (https://www.wider.unu.edu/node/239435)). But alarm is now intensified because Russia is a major global producer of some critical metals used in renewables and in major IT and defence applications. Russia's Nornickel is the world's largest nickel producer, Russia's RusAl is one of the world's largest producers of aluminium, and Russia supplies almost 40% of global scandium production, a critical rare-earth metal. Price increases in these and other affected metals (https://www.energypolicy.columbia.edu/research/commentary/supply-critical-minerals-amid-russia-ukraine-war-and-possible-sanctions) seem certain to dampen the uptake of renewable energy.

Global disruptions may help newer suppliers

Recent decisions by the EU and the UK to end dependence on Russian oil and gas are already resulting in increased commitments of US supplies, especially of liquified natural gas (LNG) to Europe — beginning in 2022, with longer-term commitments through 2030. Additionally, if higher prices persist, then otherwise marginal projects in the developing world will surely become commercially viable.

Certainly, there are new producers arriving on the scene — small maybe but nonetheless significant in the current context. Notably Mozambique and Tanzania for gas, and Uganda and Guyana for oil. Additionally, if the COP26 Methane Pledge (https://www.globalmethane.org/) is applied to eliminate the main gas flares in countries such as Nigeria, it can quickly yield large amounts of additional saleable gas, as

illustrated by a recent WIDER Working Paper (https://www.wider.unu.edu/node/237995) on the huge amount of gas unnecessarily wasted during extraction.

The last ten years has seen much discussion of when fossil fuels investments will eventually become 'stranded'. By its attacks on Ukraine, Russia has brought forward the date of its own stranding. Newer producers in the developing world will likely find companies and commodity traders knocking vigorously on their doors.

The uptake of newer technologies could accelerate

Since 24 February 2022 — the day of the Russian invasion of Ukraine — some shifts in policy attitudes have already firmed up:

- The UK government committed to build 16 Rolls Royce smaller modular nuclear reactors (https://www.gov.uk/government/publications/advanced-nuclear-technologies/advanced-nuclear-technologies) (SMRs)
- France committed to build up to 14 new nuclear reactors (https://www.theguardian.com/world/2022/feb/10/france-to-build-up-to-14-new-nuclear-reactors-by-2050-says-macron)
- Finland's anticipated sixth nuclear plant, on the other hand, has been cancelled (https://www.fennovoima.fi/en/press-releases/fennovoima-has-withdrawn-hanhikivi-1-construction-license-application-focus-now) . It would have moved that country to 60% nuclear dependence and eliminated Finland's coal imports from both Russia and Poland. Instead, Finland is now moving to replace Russian gas with imported LNG.

Gas prices also make the nascent green hydrogen industry more competitive. Among developing economies, China and Brazil have some cost advantage based on cheap solar and wind power. But several gigawatt-scale green hydrogen projects are already announced in Australia (https://www.rechargenews.com/energy-transition/new-6gw-green-hydrogen-project-in-australia-eyes-ammonia-export-to-japan-and-korea/2-1-1101390) , together with lengthy dedicated hydrogen pipelines to support substantial exports to Japan and South Korea, and even some export to Europe. Green ammonia too can be produced by using water electrolysis to make hydrogen and so obtain nitrogen from the air. Since 80% of conventional global ammonia is used in nitrogen fertilizer production, this aspect of 'greening' could be welcome news for Africa's low-input agriculture, and a partial mitigation to the losses of conventional supplies associated with the Ukraine war.

In summary, Russia's invasion of Ukraine is having devasting *short-term* effects on world energy markets. However, the overall *longer-term* effects on the global target for net zero are presently unclear — these effects will be a mix of positive and negatives. The main negative is that the scramble to substitute Russian oil and gas will surely enhance the case to extend use of some fossil fuel sources. The main positive is that the significantly increased price of carbon will improve the incentives to adopt renewable sources, even as the price of key metallic inputs rises. A further positive is that developing countries endowed with such metals, and also gas, might face a welcome increase in demand.

The views expressed in this piece are those of the author(s), and do not necessarily reflect the views of the Institute or the United Nations University, nor the programme/project donors.

Context

PROJECT

Extractives for Development (E4D) – risks and opportunities (/project/extractives-development-e4d-%E2%80%93-risks-and-opportunities)

RELATED

Blog | The 2022 energy shock (/publication/2022-energy-shock)

Blog | What political science can tell us about Russia's invasion of Ukraine (/publication/what-political-science-can-tell-us-about-russia%E2%80%99s-invasion-ukraine)

Blog | A food crisis was brewing even before the Ukraine war – but taking these three steps could help the most vulnerable (/publication/food-crisis-was-brewing-even-ukraine-war-%E2%80%93-taking-these-three-steps-could-help-most)

Blog | The war in Ukraine: Civilian vulnerability, resilience, and resistance (/publication/war-ukraine-civilian-vulnerability-resilience-and-resistance)

Blog | Could the war in Ukraine encourage Western leaders to finally deal with shadow finance? (/publication/could-war-ukraine-encourage-western-leaders-finally-deal-shadow-finance)

Blog | Zelenskiy's wartime transformation (/publication/zelenskiy%E2%80%99s-wartime-transformation)

Blog | From conflict preventor to security actor (/publication/conflict-preventor-security-actor)

Blog | Why Russian brutality may backfire (/publication/why-russian-brutality-may-backfire)

Blog | Can the electric vehicle revolution solve the climate crisis and create opportunities for developing countries? (/publication/can-electric-vehicle-revolution-solve-climate-crisis-and-create-

opportunities-developing)

Blog | Metals for the global energy transition (/publication/metals-global-energy-transition)

KEYWORDS

UKRAINE (/?F%5B%5D=FIELD_LOC1%253ANAME%3AUKRAINE)

CLIMATE CHANGE (/?F%5B%5D=FIELD_LOC1%253ANAME%3ACLIMATE%20CHANGE)

EXTRACTIVES (/?F%5B%5D=FIELD_LOC1%253ANAME%3AEXTRACTIVES)

RENEWABLE ENERGY (/?F%5B%5D=FIELD_LOC1%253ANAME%3ARENEWABLE%20ENERGY)

OIL AND GAS (/?F%5B%5D=FIELD_LOC1%253ANAME%3AOIL%20AND%20GAS)

GEOPOLITICS (/?F%5B%5D=FIELD_LOC1%253ANAME%3AGEOPOLITICS)

Previous

Solving the puzzle of peace

› Next

Pay inequality is high in South Africa

South Africa is one of the most unequal countries in the world . This income inequality is mostly due to high unemployment and large differences in wages...