



Perspective

Russia's war on Ukraine, European energy policy responses & implications for sustainable transformations

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ABSTRACT

Russia's February 2022 invasion of Ukraine sent shockwaves throughout Europe and has painfully exposed the continent's dependence on a geopolitical adversary. Energy is closely tied into the ongoing battle: Europe is committed to phasing out Russian fossil fuel imports, whilst Russia, in turn, has cut gas supplies to a number of countries and significantly reduced flows to others. Given historical tensions between delivering supply security and other social goals we analyse what energy policy responses to the crisis so far mean for: environmental sustainability, energy equity and social justice. In doing so, we reveal strong potential for an acceleration of clean energy supply across Europe, complications for fossil fuel phase out, negative knock-on effects for sustainable transitions in the Global South, significant implications for energy equity within and beyond Europe, and a relative return of the state as an energy actor. Reframing energy as a geopolitical security concern has, in acute crisis, tended to obfuscate and/or downplay other energy policy goals, raising a number of difficult questions for policymakers seeking to pursue lasting sustainable and equitable transitions.

1. Introduction

Energy policy is framed in terms of meeting varied social demands encapsulated in the 'energy trilemma': energy security, environmental sustainability, and energy equity [1,2], with social justice increasingly recognised as a fourth important element [2]. In Europe, attempts to balance energy policy goals can be significantly impacted by external events, whilst implications of European energy policy choices cascade outwards around the world. This perspectives paper brings together a group of scholars to analyse rapidly emerging energy policy responses in Europe to the latest external crisis: Russia's war on Ukraine. We analyse responses at national and European Union (EU) levels, starting from the observation that the Russian invasion has led to a refocus in policy circles on geopolitical energy security with a range of potential implications for complex, ongoing sustainable transitions in Europe and the world. Balancing energy policy goals as systems transition is difficult, involving various tensions and trade-offs, but in times of crisis it is even more so.

Europe is no longer as peaceful as many had assumed, leading to observations that the 'geopolitical holiday' is over [3]. One central

aspect of Europe's sanctions against Russia has been to commit to phasing out Russian oil and gas imports, whilst Russia has cut and/or reduced gas supplies to inter alia Poland, Bulgaria, Finland, Latvia, the Netherlands, and closed the Nord Stream 1 pipeline indefinitely on September 2nd 2022. The associated geopolitical energy supply crisis has led to complex and evolving new political programmes, unlikely to have been attempted outside of an emergency situation, with the aim of weaning Europe off Russian fossil fuels. This crisis has also highlighted two uncomfortable facts: although energy systems are undergoing sustainable transitions, fossil fuels still form the basis of most energy use in Europe; and, despite various Russia-Ukraine gas transit disputes and Russia's invasion of the Crimea in 2014, the EU has maintained high levels of dependency on Russian natural resources. To make things politically far more complicated, Europe was already experiencing painful spikes in consumer energy prices before the invasion whilst commitments to phase out Russian imports have further contributed towards cost-of-living crises and fears over energy affordability and access this coming winter.

Whilst we note that there are distinct differences between countries, energy policy in Europe had been increasingly set towards the creation

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of decarbonised energy systems and making the transition more equitable and just within and between EU member states [4–6]. The immediate commentary on the current crisis suggests that European energy is, indeed, at an inflection point. Broadly, there are two camps: there are those that argue that current policy responses will lead towards a significant acceleration in Europe's transition to clean energy [4,7–10]. Others, however, raise concerns that any rapid acceleration of clean energy, in particular renewable electricity, in Europe could further exacerbate difficult supply chains and potentially lead to new global resource super-powers [11–13]. Whilst these early commentaries are useful to imagine the road ahead, they only address part of the energy politics story. By framing our analysis in relation to Bridge et al.'s quadrilemma of energy policy goals, thereby explicitly including energy equity and social justice, we reveal an updated, more nuanced and globally inter-connected range of implications for sustainable transitions.¹

Lest we forget, all of this is taking place within a decade of the utmost urgency for sustainable and equitable change. Intergovernmental Panel on Climate Change (IPCC) analysis concludes that greenhouse gas emissions need to fall by 43 % by 2030 if we are to meet the 1.5 °C Paris target [14]. This infers considerable policy change given that a continuation of policies implemented by the end of 2020 would lead to global warming of 3.2 °C [14]. The urgency of the situation implies a need to devise new decarbonisation policies that can deliver GHG emissions reductions before 2030 [15], whilst sustainable transitions need to be made more possible for, and advantageous to, countries of the Global South given that they make up the bulk of future emissions growth [20]. Recognising and addressing energy equity and social justice issues between, as well as domestically within, nations is increasingly considered to be key to what makes transitions lastingly *sustainable* and, in turn, to keeping climate change on global political agendas [2,14,16,17].

The remainder of this paper is structured as follows. In Section 2, with reference to energy politics and securitisation literatures, we explore relationships between energy policy goals at times of crises. We argue that how energy is framed matters for policy choices, whilst a refocus on energy supply security can contribute towards energy (re-) politicisations and to reinterpretations of energy, of policy goals and how they can be delivered. Section 3 provides a quite comprehensive overview of policy responses across Europe so far, analysing them according to implications for environmental sustainability, energy equity and social justice. Here we make note of shifts in and accelerations of policy direction, as well as re-interpretations of the role of certain technologies and policies in relation to delivering energy policy goals. In the conclusion we reflect on imbalances between quadrilemma policy goals and identify key emerging themes and how they might affect the unfolding crisis and political responses.

2. The return of geopolitical energy security

This war follows on from a series of overlapping crises in Europe, including Covid-19 with its promise and somewhat disappointing reality of 'build back better' [18,19]. Crises are, of course, viewed as moments for political change. Drawing on critical security studies [20], energy politics scholars have noted that speaking about energy in traditional, geopolitical security terms has been an historically common practice that has led to energy politicisation, policy reinterpretations, and rapid

¹ Bridge et al.'s quadrilemma is defined as: energy security in relation to society's demands for reliable energy services; environmental sustainability is defined broadly but recognises tendencies in energy policy to focus on decarbonisation; energy equity in relation to affordability and access issues; and social justice in energy in relation to who governs and how. We do not suggest that energy policy in Europe is always written with all four goals in mind, but do argue that questions of energy equity and social justice have become more relevant recently.

policy responses [21–24]. A re-focus on security of supply goals has, in the past, tended to coincide with a relative demotion of environmental and energy equity goals [2,21,25,26]. It is, however, noteworthy that the re-emphasis on securing energy independence, during the 1970s energy security crises, also underpinned a nuclear renaissance and boom in energy efficiency, whilst the 2000s energy crises led to a reframing of renewables as an explicitly domestic source of energy [27].

As with today, geopolitical security framings are often informed by genuine, and sudden, reflections on what new world events mean. Energy securitisation is especially likely after a period where questions of safety and security had slipped down political agendas, leading to associations of shock with recognition of insecurity [20,28]. This is partly why securitising and 'emergency' discourses tend to engage public audiences in ways that other frames do not [20,28], but this is especially the case with energy given that it is so deeply embedded within modern societies. As such, external events that threaten a defined area's reliability of supply, and raise questions about access and affordability, can be highly politically visible – indeed, recent polling across Europe has revealed an 85 % support for reducing dependency on Russian fossil fuels [29]. In turn, increased public attention often leads to demands for urgent government responses to solve the crisis, thus granting government bodies political licence to intervene in liberalised energy markets – going against the tide of liberal reforms [28].

This view of securitisation would suggest that geopolitical energy security is currently being evoked both as a genuine reflection on Russia's relationship to Europe, but also as a means of garnering sufficient political capacity and attention to underpin the significant changes required to phase out European imports of Russian fossil fuels by 2027. The main aim of the EU's new REPowerEU framework is explicitly 'to rapidly reduce dependence on Russian fossil fuels' [29]. This is no mean feat. Meeting the goal of phasing out two-thirds of gas imports by the end of 2022 will require the EU to replace a 102bcm of gas [11]. Within the context of this new phase of energy policy in Europe, ensuring security during the phase-out becomes the urgent, overarching energy policy goal, with clean energy and saving energy seen as part of the package of policies to deliver this goal. This ties in with observations that security crises have, in the past, led to a relative demotion of other goals, particularly decarbonisation. Whilst it is true that not all non-climate crises necessarily distract from active climate policymaking [19,27], this security refocus may make it complicated to dedicate sufficient policy resources at this crucial time.

The literature on securitisation and other 'emergency' framings points, however, to other potential consequences of this discursive route towards energy politicisation and policy change. Indeed, how an issue is framed at times of crisis can have implications for the types of actors deemed appropriate, and types of policies chosen, to address it. This is as much as question of focus, and which problems new policies are designed to solve, as it is about the difficulties of policymaking at extremely fraught times.

Firstly, when policymakers feel that they must respond as a matter of urgency, they are more likely to draw on what is to hand, including known technologies and policies [28]. This can be accompanied, in the rush to identify what can be done now, by a somewhat reductive logic that crowds out more nuanced approaches, including planning for the longer-term, and can leave less time available for more deliberative and inclusive decision-making processes [28]. The downsides of short-term thinking in relation to clean transitions, and the need to better manage the process long-term, are well documented [31], but we also note that there are potential energy equity issues associated with a refocus on security.

Secondly, relatedly, the need to act with urgency to solve a crisis can privilege centralised, top-down, responses. Traditional security narratives infer that the state, as responsible for security, is the primary actor in resolving such crises [20,21,31]. As such, geopolitical security thinking places greater emphasis on government intervention than on markets or sub-national actors in terms of fixing energy security issues

[32]. Governments, in turn, often turn to large-scale energy providers for assistance because they tend to have the resources to act quickly and because part of that which is being secured, i.e. energy supply, is delivered by them. This can reinforce pre-existing asymmetries [30], for example between the interests of vulnerable households and large energy corporations, in who has a say in policies and in the distributions of costs and benefits of those policies – with clear equity and social justice implications.

Lastly, geopolitical security framings, related as they are to realist understandings of the world, tend to be accompanied by political thinking that places a greater emphasis on the group of actors perceived to be at threat from external actions, on ‘us’ as it were [20]. ‘Us’ in this case is European countries who have come together to send a clear message of solidarity in the face of Russia’s aggression [33]. The degree of political, and policy, concentration required to replace Russian resources might, however, lead to a somewhat inward-looking position, less space for consideration of wider implications for countries outside of Europe, and polarising effects. This can be as much about the degree of emphasis on defining and implementing new solutions to fix European energy issues, and target Russia, as about any deliberate notion of ignoring consequences for others.

3. Policy responses & implications

This section identifies and analyses energy policy responses at the time of writing, August 2022. This is a very fast-moving landscape and most relevant documentation has so far been produced either by governing bodies, such as the EU, or by academic blogs, media outlets, think tanks and other research groups in a position to provide quick reflections and analysis. We regularly reference the EU’s extensive new REPowerEU framework, but we also refer to national responses, including non-EU European countries, like the UK and Norway, that are also committed to Russian fossil fuel import phase-out. We structure our analysis according to implications of securitisation for environmental sustainability, energy equity and social justice in turn.

Overall, whilst commitments to clean energy alternatives, electrification and protecting consumers look promising for sustainable transitions in Europe, the wider picture in terms of balancing quadrilemma goals is, in fact, more mixed. In the previous section we claimed that how crises are framed can influence what kinds of policy responses ensue, and this insight helps to explain why this picture is so mixed.

3.1. Environmental sustainability

There has been a great deal of policy change that effects prospects for environmental sustainability and, in particular, decarbonisation. We sub-divide this section according to three main strands of sustainable energy policy: developing clean energy alternatives, demand side response, and phasing out high carbon energy [34].

3.1.1. Accelerating clean energy in Europe

Responses so far explicitly reinforce the notion of an embedded energy-security-climate nexus in Europe [35]. Two of the three pillars of the REPowerEU strategy, accelerating clean energy and energy savings, are built around sustainable energy [36]. In terms of the ‘accelerate clean energy transitions’ pillar, the EU estimates that renewables will replace 20bcm of gas imports by the end of 2022 [37]. To deliver this the European Commission has: raised the 2030 renewables target to 45 % from 40 %, committed to a doubling of solar energy capacity by 2025, announced a Commission Recommendation to tackle slow and complex permitting for major renewable projects, and an associated amendment, to the Renewable Energy Directive, to recognise renewable energy as an overriding public interest [36]. Relatedly, there will be an additional investment of EUR 29 billion in electricity projects of common interest (PCIs), such as cross-border interconnected grid infrastructure [36], to balance increasingly variable grids.

Individual countries have also announced big changes: Germany has committed to 100 % renewable electricity by 2035; Denmark, the Netherlands, the UK, France and Germany have announced accelerations of renewable project deployments [4,38,39]; and Norway and Italy have announced new windfarm projects [4,40]. Norway’s plans to increase the number of windmills from the current two to 1500 (30GW capacity) by 2040 suggest a break in direction of renewable energy policy [4]. If all of these renewable policies are successfully implemented, this suggests potential for rapid growth in solar, on- and offshore wind in Europe [41] – an overt acceleration of existing clean energy trends [42].

Heat pumps emerge as another technology winner. REPowerEU commits to increased decarbonisation of heat through electrification, with the goal to install 10 million new heat pumps in the next five years [36]. France, Denmark, UK, and Italy have also announced new packages of support for heat pumps [39,43]. For some countries, i.e. Denmark, the Netherlands, and Germany, this constitutes a continuation of existing policy direction, but for many others electrification of heat had remained a more controversial issue. The UK is one example. Its new strategy warms up to electrification by adopting zero-rating VAT on heat pumps, launching an ‘upgrade’ scheme to encourage moving from gas boilers to heat pumps, setting up an investment scheme for British-made pumps, and by committing to rebalance the costs of energy bills to encourage electrification [39].

A new ‘hydrogen accelerator’ plan under REPowerEU includes the commitment to develop integrated infrastructure, storage facilities and port capacities for renewable hydrogen [36]. In addition to the 5 million tons already planned, the Commission estimates that 5 million more tons of renewable hydrogen can be developed in the EU, and that it can import 10 million tons from diverse sources. At the country level, Germany has accelerated its green hydrogen production and supply chain deal with Australia, whilst the UK has doubled its domestic hydrogen capacity target to 10GW by 2030 [36]. Notably, the UK commitment includes blue hydrogen, which is less positive in environmental sustainability and energy equity terms [39]. Overall, however, greater investment in green hydrogen is positive in terms of clean technology development and dissemination, and well may be needed to balance grids given the acceleration of variable renewables.

Lastly, on accelerating clean energy supply, momentum behind nuclear electricity has increased. Belgium has announced the near-term extension of current facilities as a means of getting off Russian gas [45], and President Macron’s support for significant new French nuclear builds has received a further boost [46]. The UK has announced that it will develop eight new nuclear plants, such that nuclear will form 25 % of electricity supply by 2050 [39]. For France and the UK this is an acceleration of existing policy directions. Arguably, however, the inclusion of nuclear (and gas) in the EU’s ‘green taxonomy’ marks a policy departure. In March, a Commission delegated act argued that nuclear energy does qualify for investment if there is no technologically and economically feasible alternative to move to decarbonisation [47]. The European Parliament voted in favour of the amendment in July 2022, despite opposition from the Environmental Committee of the European Parliament, Germany and various groups of European lawmakers [48,49].

Nuclear remains environmentally controversial: it produces toxic waste, little is known about where waste will be stored long-term, the mining of uranium can be environmentally and socially damaging, whilst it does not operate well when water levels are low and under extreme heat. Indeed, it can only be considered environmentally sustainable under energy policymaking conditions, which have been encouraged by the crisis, where sustainability is judged narrowly, according to GHG emissions. At the same time, nuclear new builds remain notoriously difficult, costly, tend to take longer than planned [50,51], whilst the latest round of large-scale builds in the UK have all faced serious delays [51]. Importantly, for the task at hand, new nuclear does not offer a route to reducing dependence on Russian exports by 2027,

neither is it an affordable electricity source. The irony of European countries relying on Russian supplies of uranium to run their nuclear plants is also not lost on some commentators [52], whilst the failure of several of France's nuclear reactors over the Summer, partly due to low water levels, have had negative knock-on effects for the EU's drive to reduce gas imports [49]. Only time will tell, then, if new policy commitments will result in any long-lived renaissance.

Overall, clean energy supply is now explicitly framed as a pathway towards energy systems where the risks of fossil fuel 'weapons' deployed by external actors are brought to a minimum. Interestingly, the United States has also deployed energy security as a justification for recently announced investments in clean energy [53]. Under this return to geopolitical framings of energy security this makes sense - renewables and nuclear are considered 'home grown' and thereby as boosting independence. This refocus seems to downplay previous concerns that variable renewables are less reliable in terms of domestic electricity systems. We would note, see below, that significant new integration measures will need to be implemented to ensure that the current movement towards viewing renewables as secure is not reversed. And there would also need to be a large-scale shift towards recycling within renewable infrastructures and supply chains to take the pressure off critical minerals.

3.1.2. Demand side policy

In terms of its 'energy saving' pillar, REPowerEU observes that the case 'has never been stronger' [36], and this argument has been reflected in much academic, think tank and other analyses [54,55]. The EC estimates that energy saving will contribute 14 % of required reductions in Russian gas imports [37]. It initially proposed that the 2030 Energy Efficiency Directive target be raised from 9 to 13 % compared to baseline projections, whilst EU Minimum Energy Performance Standards for buildings will be brought forward [51]. Under the proposed EU Social Climate Fund, revenues from the EU Emissions Trading Scheme should be spent on energy efficiency [35,51]. There was some initial emphasis, in 'EU Save Energy' strategy, on short-term behavioural change as leading to a near-term 5 % reduction in gas and oil [56].

In terms of other demand-side policies, we note a relative lack of policies and investment to support energy efficiency and electricity grid transitions. Indeed, beyond mention of new investment in electricity interconnection Programmes of Common Interest (PCIs), the EU's planned acceleration of renewable energy roll-out has not been accompanied by much detail in terms of storage or demand side response policies [36]. This matters because such policies were already lacking, whilst if Europe is to deliver a super-charged shift towards renewables, then developments here become yet more vital to the acceleration of sustainable transitions [57]. We see this as a clear missed opportunity and potentially as an example of reductive logics, like an overemphasis on supply side solutions, crowding out more complex solutions.

In July 2022, in a further refocus on demand reduction as a security measure, all EU member states, aside from Hungary, have agreed to reduce gas demand by 15 %. Each country can choose how to ration gas as long as household supplies are protected, implying that industrial users will be rationed first [59]. Yet more recently, to account for nuclear and hydro-electricity outages over the Summer, the Commission proposed a mandatory 5% reduction in peak electricity demand from 1st December 2021 to the 31st March 2022. Any further expansion of this policy over time would assuage some of our concerns about a relative lack of demand-side-response measures. At the country level there has also been some recent acceleration in activity - after a relatively slow start. At the end of July 2022, Germany committed a substantial €56.3bn to an acceleration of energy efficiency retrofits up to 2026 [59]. Interestingly, Germany has framed this not only as reducing dependence on gas and lowering emissions, but also as 'economic modernisation' [59]. Italy, Ireland, France and the Netherlands have also introduced new demand reduction programmes this year.

Europe's heavy policy focus on reducing demand for imports from Russia indicates a new way of thinking about demand reduction in energy security terms. Historically, preferences for energy efficiency and independence were supported by fears about the energy weapon being deployed by certain fossil fuel producers, who were also perceived as holding the upper hand. Now, whilst European energy savings narratives still reflect the more traditional desire to increase independence, they also in effect implement a different view: that reducing demand for fossil fuels by consumer nations can be deployed in conflict situations to harm the exporter. This is not a completely new strategy, the West cut off Iranian oil post the 1979 crisis [60], but on a larger scale and with far greater associated domestic difficulties.

This view also explicitly recognises that revenues from sales of fossil fuels can be spent on building up military forces in Russia but also builds on the notion of a 'boomerang' effect where Russian aggression contributes towards the long-term demise of its most valuable export market [61]. This view is made more possible by the fact that Europe, this time around, has more developed and affordable sustainable energy options, which already infer medium to long-term demand reduction for all fossil fuels. The question remains, however, whether this policy will be successful - and who will 'crack' first. Tight gas markets have resulted in increased revenues for Russia near term [62], but the effect on Russia's oil revenues has been negative so far [63]. The near-term economic costs for the EU are high, in terms of cost-of-living crises and potential implications for industry, albeit there are also economic benefits of developing sustainable energy longer-term.

3.1.3. Fossil fuel phase out

The war initially reignited debates about the role of gas as a medium-term transition fuel [38], with some claiming that it made arguments for continued medium-term reliance on gas more tenuous [41]. Indeed, new clean energy policies, if properly implemented, will mean lower demand for gas over the medium to long-term, whilst the EU now predicts that gas demand will decrease at a faster pace than foreseen under 'Fit for 55' [36].

In the near to medium-term, however, European countries remain more or less reliant on gas - hence the third pillar of the REPowerEU strategy to 'diversify energy sources'. The intention that new LNG and other non-Russia gas imports will deliver 60bcm by the end of 2022 has resulted in a scramble to locate new suppliers [62]. The EU has extended existing LNG relationships with the USA, is in strategic partnership talks with Qatar, Algeria, and Azerbaijan amongst others [62,64,65], whilst these discussions are replicated at the country level across Europe. These policies, a willingness to pay above the odds for LNG imports [36], the inclusion of gas in the EU's green taxonomy, and the new EU Energy Platform, are all indications of how desperate Europe is to secure near-term gas supply. As is Hungary's new deal with Gazprom in the midst of the war [58].

To diversify imports into Europe new gas infrastructures are needed, such as LNG terminals, pipelines and storage [65]. REPowerEU commits €10bn to gas projects of common interest, but there is no clear idea of how much this will amount to across Europe [36], whilst Germany is committing \$3bn to build floating LNG terminals [6]. The EU has plans to invest in thirty gas projects, albeit they also face some legal opposition [66]. Such investments risk embedding gas use medium-term and locking investment into new infrastructures thereby underpinning gas usage [67], but it might also lead to more stranded carbon assets. The degree of focus on securing short-term gas supplies also means that vital new commitments to high carbon energy phase-out planning are conspicuously absent [61,68].

Different decisions need to be made by European gas producers. The Netherlands remains committed to phasing out gas production, but Norway has committed to helping Europe's gas security through increased production [69]. Likewise, also argued on the basis of energy security, the UK has decided to issue 100 new North Sea oil and gas drilling licences [39], and allow fracking. Again, as with nuclear, new

gas fields would not produce for many years to come, potentially decades, making this another non-starter in terms of weaning Europe off Russia in the near to medium term.

The picture for coal is also increasingly complicated. On the one hand coal is largely considered to be on the way out in Europe [70], whilst policy, including carbon pricing, goes against the grain of any large-scale coal comeback, as do escalating prices due to fears about Russian supplies. On the other hand, as part of post-Covid economic recovery, global power generation from coal in 2021 surpassed 2019 levels, and coal generation estimates are being revised up again since the war. Indeed, some European countries are (re-)turning to coal, at least in the near-term [61]. The Czech Republic, given that 90 % of their gas supplies come from Russia, is considering moving the recently agreed coal phase-out target date beyond 2033. Germany, UK, Austria and the Netherlands have all, temporarily, lifted restrictions on coal-fired electricity generation, but whilst keeping exit dates in place [68,71]. Although a recent report claims that the war will only have a small impact on Europe's emissions [72], increased coal usage in- and outside the EU bodes badly for environmental sustainability [73].

3.2. Energy equity

The analysis of policy responses in this section is separated out according to implications for energy equity – emphasising affordability and access – in Europe and for countries of the Global South. Although there are many new policies to protect European consumers, Europe's strategy to reduce Russian imports has placed significant upward pressure on global prices with clear potential for rising inequities within Europe and globally.

3.2.1. Europe

REPowerEU places heavy emphasis on the principle that 'fairness and solidarity are defining principles of the European Green Deal' and this, as well as soaring household energy bills and cost-of-living crises, underpins a wide array of new policy commitments [74]. The EU's policy 'toolkit' initially included measures such as: temporary windfall taxes on energy company profits, energy subsidies and vouchers, tax reductions, and measures to avoid electricity and gas disconnections [74]. It has, since then, proposed a solidarity contribution from oil and gas companies and a cap on the revenues of companies producing electricity with low costs.

At the country level, Poland has intervened several times to support consumers since late 2021 [75]; Spain, Portugal and Greece approved rules to cap natural gas prices [76]; France has limited the increase of final electricity and gas prices; Belgium and the UK have agreed measures to assist consumers with their energy bills [44]; and Romania and Germany have legally obliged power suppliers to reduce bills for consumers [38]. Germany, Italy, Spain and the UK all intend to partially finance support measures through windfall taxes on energy companies in a bid to redistribute some of the significant profits being made. Indeed, by mid-August 2022, EU governments had spent €280 billion to cushion the blow of the energy crisis [77], not including Germany's rescue package of €65 billion announced in September [78]. All of this indicates some recognition of an exacerbation of existing asymmetries between the interests of vulnerable households and large energy corporations [30], and that these need to be addressed given the political visibility of questions of affordability of, and access to, energy.

These interventions indicate some degree of commitment to energy equity, but European energy policy responses have also directly caused affordability issues. One wonders if the Russian fossil fuel import phase-out policy, which is currently popular, will remain so in a cold winter – whilst the EU's commitment to it may lie at the heart of its, and national governments', considerable financial outlay to protect consumers.

Such measures are, however, also limited in their positive effects on vulnerable consumers over time - short-term relief, in the form of price caps, does not solve long-term affordability and access issues [79],

Better alternatives, like energy efficiency, have been underplayed. Arguably, the focus on energy efficiency, in REPowerEU and elsewhere, as a method of reducing gas demand and ensuring security of supply, distracts from its health and energy equity credentials [56]. A considered, Europe-wide extension of residential and commercial buildings efficiency programmes would do much to protect citizens from high energy prices and alleviate the need for future social spending [55,68]. Fixing cost-of-living vulnerabilities through payments, rather than extensive new energy efficiency programmes, is another example of short-term, supply logics crowding out others.

3.2.2. The global south

Europe's responses are not, of course, just about Europe whilst energy equity issues sit at the heart of vital UNFCCC negotiations. Developing and transitioning countries rights to develop economically and expand access to affordable energy are just as important to many nations as transitioning to clean energy, whilst many developing countries reserve the right to access their own fossil fuel reserves. European responses to the war, however, vastly complicate this global equity picture.

The scramble for gas has placed European countries in direct competition for LNG with other markets, particularly in Asia and Latin America, leaving millions without access to power and heating [80]. This has resulted in pressure on import dependent economies, electricity shortages, and further short and medium-term spikes in energy prices, often for those that can least afford it [54,62]. Some developing economies, for example Pakistan, Bangladesh and Sri Lanka, have in recent years sought to increase their dependence on LNG in an attempt to offset the need for imports of fuel oil and coal. But now Pakistan, for example, has had to import more coal from Afghanistan to secure its electricity supply, whilst the associated energy crisis also contributed towards the ousting of the Pakistani Prime Minister in April 2022 [62]. So hard is it for Pakistan to now secure access to LNG that one recent tender received no bids. India, meanwhile, turned to Gazprom for LNG and investments in coal production to address the lack of fuel for electricity during the Summer heat wave [81,82].

European actions, in particular the uncoordinated LNG shopping spree [54], further complicate fossil fuel phase-out in transitioning and developing countries - not least by creating incentives, directly or indirectly, for investment in coal, gas and associated supply chains. Algeria will now continue to prop up its gas industry in a bid to secure long-term contracts with European importers [64], whilst there is a clear hypocrisy inherent in EU willingness to import African gas whilst discouraging African countries from burning their own within UN COP negotiations [80]. Indeed, whilst European countries rapidly seek gas deals, there are as yet few new international partnerships around renewables or other forms of clean energy [54].

Furthermore, as Europe moves to accelerate its roll out of renewable energy and electric vehicles, this will most likely lead to further pressures on supply chains and the availability of vital commodities [83]. If, in turn, prices of critical minerals place upward pressure on production costs for renewable infrastructures, such as turbines and batteries, this might make it harder for some countries to transition to renewables [84].

There is already a long-standing frustration in developing and transitioning economies given that the Global North has failed to live up to financial promises to support climate change mitigation [85], and around tense negotiations for payments for loss and damage. One of the main outcomes of COP26 was formal agreement on the need to accelerate coal phase outs, but new policies in Europe now muddy this narrative, leaving Europe open to accusations of hypocrisy [64,86]. Further, given what we now know about the percentages of fossil fuel reserves that will have to stay in the ground for 1.5 °C to be met [87,88], political management of that process is vital at the global level. This is not least as, for global energy equity reasons, most fossil fuel reserves kept in the ground should be in countries, like the UK and Norway, that

are relatively well-off and that have already benefitted from fossil fuel extraction [89]. This, too, stands in strict contrast to commitments to extend North Sea drilling by the UK and Norway. Negative energy equity effects of some European energy policy responses may well come to a head at COP27 negotiations and cast some doubt on the EU's claims of global climate leadership by example.

3.3. Social justice

Energy is, of course, deeply socially embedded and decisions about how it should be governed, and by whom, and whose voices are heard within energy policy debates have long been of interest to political economy of energy scholars [2,21,90,91]. Including energy social justice brings to the fore questions of unequal access to energy policymaking, whilst a refocus on geopolitical energy security might infer that top-down, centralised energy governance systems are further reinforced.

The way in which energy has been politicised in this crisis, and associated short-term, reductive logics, have largely crowded out more decentralised energy solutions, which have the potential to redistribute energy wealth and governance [30]. The EU had explicitly recognised the importance of distributed energy with the inclusion of support for community energy in its 2019 'Clean Energy for All' legislation. The new policies outlined above, however, tend to reinforce large-scale actors, approaches and technologies, whilst consumers are protected with price caps and payments but not empowered through efficiency and ownership. There is also little official recognition of, or additional support for, the important role of local actors within increasingly distributed electricity systems. REPowerEU does mention regions and cities as important to developing energy savings measures and permitting for renewables but limited its policy response to a vague reference to member states supporting and working with local government [36]. Local governments are increasingly engaged in sustainable transitions and now, also, in dealing with the fall-out from Europe's energy price spikes and cost of living crises [6]. We see this another missed opportunity and represents a continuation of the mismatch between local roles and formal energy responsibilities.

The geopolitical framing of energy has, however, further potential implications for questions of who governs, and on behalf of whom. The role of the state in energy governance has long been another area of significant contestation, whilst some now claim that governments will actively transform energy [6]. The direction of travel in the 1980s and 1990s had been towards market actors taking more significant roles in energy, as exemplified by gas and electricity liberalisation, and the EU's commitment to market-based policies and Competition Law. But the picture had already become more mixed since the 2006/2009 gas transit disputes, moves towards energy 'solidarity' in the EU, and policies of direct investment in new gas pipelines [25,93]. These shifts have also been evident, albeit to a lesser extent perhaps, in recent debates about the need for state action to support sustainable energy transitions [93]. Examples of associated changing policy approaches include: the development of 'green' industrial policies in many countries, the 2017 EU battery alliance, and the EU's Critical Raw Materials Alliance, as a response to China's dominance of critical minerals, in 2020.

Arguably, European responses to Russia's invasion of Ukraine indicate a distinct acceleration of this trend [6]. The EU has committed to further public financing of clean energy, to playing an active role in the easing of permission processes for renewables, and to bringing in power purchasing agreements (PPAs) [36]. Germany's new €177bn Climate and Transformation and €200bn Transition Funds recognise the need for state investment and to redistribute energy transition costs and benefits domestically. The planned renaissance for nuclear in the UK and France is also hard to leave the market. The UK government plans to take a 20% stake in Sizewell C to re-start that stalled project, whilst in France a return to full state ownership of EDF is being debated [38].

Accelerated commitment to state intervention is most evident, however, in the increased practice of governments leading in the

provision of protection for energy consumers during crises. REPowerEU overtly recognise both that there is a need to redistribute revenue from high energy sector profits to consumers to alleviate cost-of-living crises and, interestingly, that such measure go against the grain of energy marketisation. Hence, there has been some suggestion of bringing in temporary changes in EU State Aid rules [94]. As noted above, almost all European countries are actively intervening in energy markets and implementing redistributive energy measures of one form or another. In late August 2022, the EU also announced its intention, after a long debate, to intervene directly in energy markets [95], whilst in early September Finland and Sweden announced liquidity guarantees for energy companies [96].

State interventions, even though sometimes couched in temporary terms, follow on from the wide range of government led responses to Covid-19 and stand in clear contrast to the austerity approach of the post financial crisis period. This direction of travel is interesting for energy and transitions scholars who argue that to enable economy-wide, world-wide sustainable change there will need to be even greater degrees of state intervention and dedicated political capacity [35,90,97,98]. The question remains, however, whether the relative return of the state in European energy represents a new norm, and will in practice infer greater dedicated political capacity, or a temporary shift until there can be a return to a more market-oriented 'normality'.

4. Reflections, key themes & tensions

In sum, if the EU's Fit for 55 represented a shift towards greater consideration of environmental sustainability, equity and social justice in energy policy, responses to the current crisis represent a relative shift of political focus back to geopolitical supply security. As part of this refocus, clean energy supply has emerged as the best solution to European energy security long-term, as is evident in the scale of new commitments made, and in line with arguments in the 2019 IRENA report about renewables energy systems as geopolitically safer [42]. Renewable electricity is also a more practical economic choice now given that prices have fallen drastically. This refocus has also contributed towards European policy choices that have exacerbated energy affordability and access issues. However, this has also indirectly raised the political profile of these issues and resulted in extensive new social policies aimed at alleviating the pressure, if not at providing many long-term affordability solutions. Lastly, concerns about short-term energy supply security may further extend coal and gas use and contribute to growing international tensions around sustainable transitions just when greater global action is crucial for meeting IPCC goals.

These varied, unintended tensions might well be interpreted as examples of inward-looking, short-term and reductive thinking, but also of the stakes at play when states, and regional governing bodies like the EU, seek to respond to conflict. It would be extremely hard for European countries to back down in the face of clear aggression on their doorstep, not least as seems to be what Russia would most like to happen. Whilst Europe continues to send unambiguous and strong signals that they will ride this out, and that Europe has the means at its disposal to do so, differences between countries' reliance on Russian energy and experiences of crisis have caused some to question whether cracks may appear [99]. However, despite the UK and Hungary having developed crisis contingency plans allowing for a reduction in energy exports [100,101], and Hungary having signed a new deal with Gazprom [58], solidarity in relation to demand reduction appears to be holding fast inferring a potentially hard winter ahead.

We can speculate as to whether the refocus on geopolitical security will switch back to sustainable and equitable transitions before too much harm is done in relation to the need for global emissions to peak by 2025. We suggest that there are some key variables here. The first has to do with Europe recognising and seeking to address some of the knock-on effects of its current policies. There is already some clear push-back within Europe on various aspects: Von der Leyen's recent

pronouncements on not ‘backsliding’ into coal; arguments over whether gas should be included in green taxonomies; and legal challenges to the fast-tracking of new gas projects. European countries, and the EU, may also find themselves in a position where they can better recognise international sustainable transitions outcomes at COP27, as a forum within which the focus will be back on GHG emissions and equity for the Global South.

The second set of variables hinges on whether the projected reduction in EU gas demand via accelerated clean energy and energy savings, and any lower emissions that might result from predicted recessions, can offset any extra emissions associated with bringing coal-fired electricity production back in the near-term. Much of this will hinge on how cold winter 2022–23 is. In terms of recession and falling emissions it is, however, notable that even under conditions of global lockdown energy related emissions only fell 5.8 % [102]. Lastly, it will be worth following whether views about the unreliability of fossil fuel imports remain fixed on Russia, or whether it develops into wider assumptions about all fossil fuels as less reliable in absolute terms and/or relative to renewable and other clean alternatives [103].

Declaration of competing interest

The authors declare that there is no conflict of interest and that the authors do not have any financial or personal relationships with other people or organisations that could inappropriately influence, or otherwise bias, their work.

Data availability

No data was used for the research described in the article.

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