EUI FLORENCE SCHOOL OF REGULATION

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POLICY BRIEF

Between Crises and Decarbonisation: Realigning EU Climate and Energy Policy for the New 'State of the World'

Introduction

The Russian invasion of Ukraine in February 2022 compounded an already difficult policy landscape characterised by rising energy prices, international supply chains' disruptions, growing greenhouse gas emissions and exacerbating geopolitical tensions. This combination of crises ushers in a new 'state of the world', where energy security is a much more pressing concern, and calls for an intervention in the short term to address the social and economic consequences of the surge in the cost of energy. In this context, support must be targeted and mute efficient price signals in energy markets to the minimum possible extent. In the medium and longer term, the transition towards a low-carbon economy must be accelerated, duly considering the significant efforts needed for a major reorganisation of the energy supply to European citizens and firms. The scale of the acceleration required questions the ability of the EU and its Member States to make it happen. Ensuring the feasibility of the investments in new infrastructures, the procurement of sufficient raw materials and manufactured components, and the deployment of a skilled and abundant workforce is fundamental.

The acceleration of the transition questions the adequacy of the existing European electricity market design as well, which must be carefully assessed and possibly amended in order to be future-proof. It questions, finally, the existing European governance for energy, which must evolve to support a long-term collaborative decision-making process and deal with a multi-vector and highly integrated energy

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system at multiple levels. This policy brief, which summaries a joint research initiative between the FSR and the European Climate Foundation, addresses these issues in three sections:

1) what are the key characteristics of the new state of the world?
2) what are the policy priorities in the near and longer term?
3) what are the process and governance to make it work?

Part 1 – The New 'State of the World': What are its Key Characteristics?

1. The invasion of Ukraine by the Russian Federation in late February 2022 has transformed the European energy crisis that started already in Summer 2021 into a structural one. In this new context, the energy security of the European Union is severely undermined. Other ongoing crises at the world level further complicate the policy landscape.

Russia represents the main supplier of energy to the European Union (EU). Every year it exports large amounts of oil, gas, coal and uranium fuel rods to the EU. European dependency on Russian export is particularly relevant for natural gas because of the volumes (roughly 40% of total EU imports) and the rigidity of the relevant infrastructure.

A tight global market for liquified natural gas (LNG) and lower export from Russia to Europe via pipeline set off a surge in wholesale gas prices during the summer and fall of 2021, which quickly spilt over into the electricity market due to gas-fired turbines being often the marginal power generation technology. High prices observed in wholesale electricity markets then reflected the increased cost of power generation. From this point of view, wholesale electricity markets continued to fulfil their main purpose: providing an efficient price signal to optimise power plants dispatch based on short-term marginal generation costs.

The invasion of Ukraine by Russia increased enormously uncertainty about international energy flows, prolonging the surge in wholesale gas and electricity prices, which were initially expected to weaken with the end of the winter. Furthermore, the war extended the rise in prices to oil and its derivatives.

The decision of the EU to sanction Russia for its military aggression on Ukraine and to gradually interrupt its energy imports implies a major reorganisation of the energy supply to European citizens and firms. In this context, ensuring reliable and affordable energy cannot be given for granted, at least for 2022 and 2023.

Beyond Europe, price explosion of several raw materials, disruption of many supply chains and increasing tensions between global powers like the US and China exacerbate problems in international cooperation and suggest a broader shift towards a more complicated global order. This development has several implications for the energy transition, including the need to extend the notion of 'energy security' to incorporate critical raw materials and intermediate goods.

2. Accelerating the transition towards a low-carbon economy in Europe is key to address the causes of the crisis the European Union is experiencing and to support its energy security in the medium and long term.

Diversification of energy imports in terms of routes and countries of origin is much needed in the short and medium term to reduce the European dependency on Russian energy supply. However, the potential for diversification remains limited, for natural gas in particular, and eventually does not solve the long-lasting issue of Europe's reliance on external imports for fossil fuels from a limited number of countries.

The transition to a low-carbon economy the EU has embarked on for a few years and the public policies adopted to foster it are not a significant factor in the observed increase in energy prices. On the contrary, the pricing of carbon emissions, the growing reliance on renewable energy sources and the promotion of energy efficiency represent a major part of the solution not only to the enduring climate crisis but also to the energy security crisis that the EU is confronted with. By drastically reducing Europe's dependence on imported fossil fuels, an acceleration of the transition can ensure that European citizens and firms have access to a more reliable and affordable energy supply in the medium and long term.

3. **The socio-economic consequences of the energy crisis and the policy responses to it are very significant. Dedicated policy interventions are needed to ensure a fair and just transition for European citizens and firms.**

The surge in energy prices is heavily impacting on Europe. Price inflation is rising to levels never seen for decades and the post-Covid 19 economic recovery seems to be slowing down. Several industries, such as agriculture, fertilisers and steel, have to reduce their output due to increasing energy costs. However, the impact is particularly significant for the poor and for those consumers that do not have many options to deal with rising energy prices other than reducing consumption or squeezing other essential expenses. These vulnerable consumers can be both households and businesses, in particular the smallest ones.

Accelerating the transition to a low-carbon economy without addressing the social and economic consequences of the surge in energy prices for the most vulnerable households and businesses is impossible. Conversely, addressing the social and economic consequences of the surge in prices without accelerating the transition towards a low-carbon economy bears significant risks of missing the long-term climate targets and further increases the vulnerability of the EU to future shocks.

Protecting the energy poor and the most vulnerable consumers should be done through targeted support that mutes efficient price signals in energy markets to the minimum possible extent. Regulating prices should be used as a last resort measure and for limited durations, based on clearly defined and objective criteria, which may include an attempt to cool down inflationary pressures and avoid central banks implementing growth-destroying restrictive monetary policies.

In the current context of high energy prices, strengthening existing carbon price signals is still needed, but raises significant challenges in terms of economic impacts and public acceptance. This further highlights the importance of creating the conditions for a fair and just transition, regarding in particular distributional implications and compensating measures, in order to respond to the needs and specificities of the most vulnerable consumers. Current price levels provide an opportunity to think about a general reform of energy taxation at the European level and the place and role of carbon price signals in this context, including the necessity to extend them to sectors that are today not covered by the EU Emission Trading Scheme (ETS).

Part 2 – The New 'State of the World': What Policy Priorities in the Near and Longer Term?

4. **In the near term (i.e., until spring 2023 or 2024), the European Union and its Member States have to urgently address the shock caused by the dramatic surge in energy prices. Targeted lump-sum transfers can be used to support the 'losers' of the crisis, while a tax on the windfall profits earned by the 'winners' can be used to finance it.**

The EU and its Member States should support those segments of the society and the economy that have been hurt the most by the increase in energy prices and their volatility, and that will continue to be hurt until the end of the most acute phase of the crisis, now foreseen only in spring 2023 or even 2024. Support measures should ideally be targeted and distort to the minimum possible extent the signalling of the cost of the resources via market prices. This can be implemented with specific lump-sum transfers. The introduction of a dual pricing mechanism for energy retail is also advocated but looks much more difficult to fine-tune and implement. On the contrary, while they are easy to implement, general price caps do not target those consumers with the more pressing needs and water down any price signal. Hence, they are a poor and unnecessarily costly tool to tackle the current crisis.

Due to the extension of the crisis well beyond the time span initially forecasted and due to public finance constraints of most Member States, support might be financed not only via the general public budget but also by means of a temporary tax on the windfall profits earned by those that are benefiting the most from the surge in energy prices, i.e. the producers of fossil fuels and (some) electricity generators. This tax on windfall profits must be designed to target 'real' gains and not those increases in firms' revenue matched by similar increases in costs. Ideally, such a tax should not interfere significantly with the efficient allocation of resources in the market or discourage investments over the long term. Tariffs on fossil fuels imported from Russia should also be considered an important source of revenue to cover the cost of public inter-

vention and, simultaneously, a valuable incentive to diversify away from Russia.

Other interventions on the design of energy markets in the short term should be carefully considered, as they may undermine the signalling of real costs via prices and the integration of markets at the European level. This is particularly the case for any intervention in the electricity day-ahead market, which according to a recent assessment by ACER is contributing to the efficient allocation of scarce resources across the continent and the mitigation of local shortages.

In order to prevent as much as possible massive price spikes and energy shortages in case of a significant mismatch between supply and demand in the coming months, the EU and its Member States have to actively promote voluntary self-rationing by energy consumers and 'war-like' mobilisation on energy-saving measures across the board.

5. In the longer term (i.e., from 2024 onwards), the European Union has to preserve a primary focus on energy security and encompass all the building blocks necessary to implement an accelerated transition towards a low-carbon economy. The supply of raw materials and manufactured goods, the availability of a skilled workforce, and the presence of an adequate energy infrastructure must all be secured across Europe.

Accelerating the deployment of renewable energy and particularly of renewable-based electricity is essential to reduce the weight of imported fossil fuels in the European energy mix and simplify the phase-out of Russian energy imports. Equally important to achieve that result is the acceleration of investments in energy-efficient solutions in all the sectors of the economy, mainly transport and buildings. These priorities are duly acknowledged by the RePowerEU Plan proposed in May 2022 by the European Commission, which foresees, as an example, an increase in the renewable energy target for 2030 from 40 to 45% of gross final consumption. However, as the same Plan recognises, doing that requires a massive effort and sufficient access to raw materials and manufactured goods.

In the new state of the world, where energy security is a permanent concern, peaceful international relations and well-functioning global supply chains cannot be entirely relied upon for the provision of all the raw materials and manufactured goods necessary to implement the transition. Therefore, it is of paramount importance that the EU and its Member States monitor closely the available stocks and production of relevant raw materials – such as copper, lithium and cobalt – and the available stocks and manufacturing capacity of essential components and capital goods, such as batteries, electrolysers, and 'grid materials' (e.g., cables, switchgear and transformers). Beyond this scarcity and bottlenecks' monitoring, the EU should coordinate with the Member States and the industry to relocate within the EU key critical production processes (such as batteries for the EVs or essential components of heat pumps and grid materials) as to guarantee the achievement of our European energy targets. However, we have to be aware, in the EU, that problems in mineral supply chains are likely to be far worse than many thought. We have to be aware that the EU will hardly find an easy solution to this global problem; nevertheless, it needs a far more informed strategy vested with financial and political power to ensure critical supplies.

To secure the acceleration of the transition towards a low-carbon economy, the EU must also look at the creation of a sufficiently abundant and skilled workforce that can, for instance, install and maintain hundreds of GW of wind turbines, rooftop PV panels and heat pumps. Supporting targeted vocational training for the skilling or reskilling of workers, sharing national best practices, and facilitating the mobility of human resources at the European level are important measures for the EU to consider.

The integration of increasing amounts of renewable energy into the European energy system requires a rethinking of the existing infrastructure planning and operation. Electricity networks, in particular, must be both expanded and better interconnected to deal with the deployment of intermittent wind and solar power plants. Accelerating the planning and permitting phases is necessary to address some of the bottlenecks that are visible already today. Political commitment and a suitable regulatory framework for the interconnection of national systems are equally important. However, keeping pace with the change of load and generation patterns is impossible without a renewed approach to system operation based on a profound digitalisation of the energy infrastructure. Creating truly smart grids is essential for an efficient and timely transition; concluding this process by 2030 is crucial.

6. In the coming years, the European Union has to carefully review its electricity market design and implement the necessary adjustments to respond to its long-term twinned goals relative to security of supply and deep decarbonisation, via electrification and energy system integration. The details of this twinned evolution are not yet fully defined.

The existing electricity market design has proven to work relatively well in Europe and perform its main functions, especially regarding the short-term allocation of generation resources. However, the acceleration of the transition towards a low-carbon economy will imply a rapid transformation of the generation mix and the electrification of several end-uses that today rely on other energy vectors. Transformations initially expected for 2035 or 2040 will have to occur by the end of this decade or just after that. All of this challenges the adequacy of the existing market design. The EU must then carefully review it and ensure that it will be future proof immediately after the end of the current storm. That is, in the coming years.

A future-proof electricity market design means, first of all, a market that provides price signals incentivising an economically efficient use of the existing resources, not only on the supply side but also on the demand side. Demand response and storage will be essential to integrate the intermittent output of wind turbines and solar PV panels: variable short-term prices that reflect the relative abundance of generation… or its scarcity… are much needed to induce consumers to adjust their load. The state of the grid and its possible congestion, likely to be a frequent constraint in the future both at the local and transmission level, will have to be taken properly into account. This means preserving the current use of marginal prices but (gradually) moving from zonal to nodal prices that provide more granular locational signals to generators and consumers alike. On top of that, the EU needs to start conceiving a really pan-European grid, crossing all the continent, beyond the bilateral needs for better interconnections.

A future-proof electricity market design will have, nevertheless, to protect consumers from the higher volatility characterising electricity systems with massive renewables. A new line of 'flexible protection' has to be defined and implemented, as suggested by the 'affordability options' recently formulated.

A future-proof electricity market design also calls for efficient long-term signals that incentivise producers and consumers to invest in new capacity, enhanced flexibility and responsiveness with all the appropriate characteristics and in the right location. The limited ability of short-term wholesale markets to do that suggests that some dedicated arrangements such as long-term power purchase agreements (PPAs), either subscribed by private actors or by public entities auctioning them, will have a fundamental role to play. Their coordination with today's existing forward and spot markets must be properly considered and managed. The ultimate result will be a kind of hybrid market architecture, where merchant initiatives are mixed with and steered by system planning.

A future-proof electricity market design means, finally, that the market architecture can fully exploit the multifaceted opportunities that exist at the local level to combine and complement different energy sources, energy vectors and energy uses. Local markets for trading energy and flexibility have to become core parts of a market design that is inherently multi-level. Given the heterogeneity of local conditions, it is likely that no optimal way of organising these markets will exist. Experimentation should then be welcomed at all levels, as Nordic countries and Nordic districts will likely not have the same needs, resources and options as, say, districts in Greece, Spain and Portugal. In this respect, many issues remain open, such as the fundamental question of the interface of local interplays with the large, centralised market and system operation.

Part 3 – The New 'State of the World': What Process and Governance to Make it Work?

7. The European Union needs to establish a long-term collaborative process to re-build its strategic roadmap for energy and climate policies in light of the totally changed geopolitical landscape.

The invasion of Ukraine and the escalation of the energy crisis have shifted the focus of European and national policymakers on new short-term policy priorities and strategies, such as the containment of the impact of increasing energy prices on consumers and the identification of alternative gas supplies. The implementation of the strategies and policy priorities adopted before the outbreak of

the war may not seem appropriate or feasible at the moment (i.e., in 2022-23). However, it remains essential that the current national emergency strategies and priorities do not undermine the important achievements of the past, such as the internal energy market, or delete long-term policy goals, such as reaching net-zero carbon emissions on increasingly sustainable paths.

The current crisis has nevertheless profound and lasting consequences that go beyond the near term and call for a redefinition of the European strategy and priorities for 2030. The existing policy framework that dates back to the adoption of the Clean Energy Package in 2018-19 and the new framework proposed with the Fit-for-55 Package in July 2021 must be reformulated as clearly as possible, as the RePoweEU proposals suggested in May 2022. Energy security will not disappear as a policy priority for the EU after 2023; on the contrary, it will expand beyond the traditional concern for the supply of imported fossil fuels, which Europe will continue to use to a significant extent in 2030, and include the successful rollout of energy efficiency and renewable investments, the supply of raw materials and manufactured goods, and the availability of a skilled workforce and adequate infrastructure. All of this will have to be duly integrated into the redefined European strategy and priorities for 2030 and beyond.

Considering the inevitable delays in a process that involves the initial assessment of where we are and what is needed, the sharing of that assessment among all stakeholders, the definition of alternative reform options on a political and technical level, the adoption and implementation of the selected options, etc... it is crucial to start the process of re-building the EU strategic roadmap for energy and climate policies as soon as possible if we want to change anything by 2030.

Once the most acute phase of the current crisis is over, say in late 2023 or early 2024, the EU and its Member States will have to look at what to do in the decade to 2040. Such vision will have to be quickly translated into a roadmap based on no-regret options consistent with the strategy for 2030 and on all the major decarbonised technologies, such as green hydrogen, synthetic fuels and biomethane, which will be deployed on an industrial level after 2030, but whose potential and effective role are still hard to assess. In such a roadmap, energy security will continue to score high on the list of priorities and cover the supply of new energy sources, needed to deeply decarbonise not only road transport and the building sector but also maritime and aviation plus the entire industrial sector.

8. Therefore, the European Union has to evolve towards a new, multi-level governance system capable of dealing with a multi-vector and highly integrated energy system.

The existing energy governance system in the EU reflects, to a large extent, the traditional distinction in different energy vectors (e.g., electricity, natural gas, etc.) and in different national systems. During the past years, national distinctions have been somewhat smoothed (think of the creation of the ENTSOs and ACER for electricity and gas), while energy silos remain still strong.

In the coming years, the European energy governance will have to evolve towards multi-vector coordination and integration, and a multi-level (i.e., European, regional, national and local) decision-making system. The future will imply a more decentralised energy system and, therefore, a distributed decision-making process that must be incorporated into the policy framework to decarbonise Europe by 2040 and 2050. Within that framework, decisions will be shaped depending on local conditions and scenarios (local electricity generation, storage and demand response, dynamism of energy communities, building of regional offshore hubs and onshore corridors, etc.).

In this context, the EU has to learn how to quickly allocate decisions to different lines of authorities (like critical materials or manufactured supply or manufacturing capabilities to executive powers; market and grids for energy sectors or vectors to independent regulatory authorities).

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